A key to the spring flora of Missoula County

Millard E. Peterson
The University of Montana

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A KEY

TO THE SPRING FLORA OF MISSOULA COUNTY

by

Millard E. Peterson
B. S., Montana State College, 1923

In Partial Fulfillment

of the Requirements of the Degree

Master of Arts

Montana State University

1939

Approved:

Chairman of Board of Examiners.

Chairman of Committee on Graduate Study
Preface

The key bore presented is not intended as a complete treatise on the flora of the region but rather as a "lesson manual" designed for the purpose of opening up an interesting field to younger students.

A great deal of emphasis is being placed, during these days of shorter working-days and shorter working-week, on training the individual for worthy leisure-time hobbies and interests. The present key was designed with this point in view.

It is hoped that a simplified manual will not only stimulate such interests but will bring home to the students, through an orderly arrangement, an overview of plant relationships.

The key contains only those plants that attract the most attention and purposely follows the plan used by Coulter and Nelson in their New Manual of Rocky Mountain Botany, with two purposes in view. First, students becoming interested may branch out into that manual without too much difficulty. Secondy, if in keying some plant not in this key they can turn to the other without too much discouragement.

The key contains only those plants which the author has found blooming within the confines of Missoula County up to June 10th.

The current manuals for this region are F. A. Rydberg's Flora of the Rocky Mountains and Adjacent Plains, published by that author in 1922. The other is the one already mentioned: John H. Coulter and A. Nelson's New Manual of Botany of the Rocky Mountains, published 1909 by the American Book Company.
Historical Sketch.

Interest in the plants of this region dates back to the days of the early explorers. Possibly the earliest collections were those of the French, Spanish, and English adventurers who carried them back to Europe.

The first known collections made in the vicinity of Missoula were the meager numbers taken by Meriwether Lewis of the Lewis and Clark Expedition on its return journey to the East in 1806. These were published in Pursh's Flora and the collection placed in the herbarium of the Philadelphia Academy of Natural Sciences.

Nathaniel J. Wyeth, a Boston fur-trader who made collections during his travels passed through the Missoula vicinity in 1826 and may have picked up some of his plants here. His collections were worked over by Nuttall and turned over to the same herbarium in Philadelphia.

Other men who passed through this area making collections along the way were:

Charles A. Geyer, a German botanist, 1844.
John Pearsall, with the Kullen Expedition, 1850-62.
Sereno Watson of the Gray Herbarium, 1880.
David Griffiths, Division of Agrostology, Washington, D.C. and T. A. Williams, Professor of Botany at the Agricultural College of South Dakota, 1890.
J. W. Blankinship, Professor of Botany, Montana Agricultural College, Bozeman, 1898-1904.

Dr. M. J. Elrod, Professor of Biology at the University of Montana, whose local interest extended the collections for nearly forty years, started the University herbarium. More extensive collections have been made by other members

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of the botany faculty; particularly by Dr. J. S. Kirkwood, Dr. J. W. Severy, Dr. C. L. Hitchcock, and Dr. Fred A. Barkley. Thus it is that the herbarium has been built up until now there are more than 31,000 specimens. While connected with the University Dr. C. L. Hitchcock published his Key to the Grasses of Montana, to which interested students are referred. Dr. Hitchcock also worked on a key for the spring flora of the Missoula region for his botany classes. This was started in mimeograph form but was never published as other interests were greater.
The Parts of the Flower

Central or basal placenta

1. The petals and corolla together are known as the perianth, especially so when we cannot distinguish the one from the other as in the tulip.

2. If one part of the perianth is absent we say it is the petals that are wanting.

Parietal placenta

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Types of Inflorescence

Solitary (tulip)
Raceme (lily of the valley)
Spike (hollyhock)
Panicle (meadow-rue)
Thyrse (lilac)

Umbel (dill)
Corymb (outer flowers bloom first)
Cyne (inner, first)

Strap Flower
Head (daisy)

Tubular or Disc Flower

Note: After tracing the plant to its species read its description carefully. If the description does not fit you have made some mistake in "keying" the plant. Check back carefully. If you cannot trace your flower or if the description does not fit, possibly you have a plant not recorded in this key. In such case refer to some other key such as Coulter and Nelson's Rocky Mountain Flora.
Leaves

- Blade
- Petiole
- Stipule

Simple leaf

Ternately compound

Pinnately compound

Palmately compound

Leaf Shapes

Lanceolate

Oblong

Ovate

Obovate

Linear

Cordate

Digitate

Leaf Tips

Ecromate

Acuminate

Acute

Obtuse or blunt

Emarginate or cleft

Leaf Bases

Cuneate

Sagitate

Hastate

Leaf Margins

Serrate

Dentate

Entire

Crenate

Undulate
Floral parts usually in 3's or 6's;
Veins of leaves usually parallel;
Vascular bundles of the stem (in cross-
section) usually scattered.

Floral parts usually in 4's or 5's;
Veins of the leaves usually netted;
Vascular bundles of the stem (in cross-
section) usually arranged around a cylinder.

KEY TO THE SPRING FAMILIES OF MONOCOTYLEDONAE

A. Perianth (petals and sepals) none.
   Pistils and stamens enclosed in a scale or plume
   Stems hollow, round or flattened
   (Refer to C.L. Hitchcock's "Key to
   the Grasses of Lontana" or to A.S.
   Hitchcock's "Manual of Grasses of
   the U.S.")

   Stems solid, usually more or less triangu-
   lar. The sedges
   (Refer to Coulter & Nelson's "New Manual
   of Rocky Mountain Botany")

AA. Perianth (petals and sepals) present
   (if one part of the perianth is lacking the
   missing part is the petals)

   Pistils one and compound as shown by the
   lobes of the stigma, the number
   of cells or placentae in the ovary.
   Ovary superior (above the point where
   the other parts are attached.)
   Ovary inferior (petals etc. attached
   above it.)
   Flowers irregular

   LILIACEAE 1.
   ORCHIDACEAE 3.
KEY TO THE SPRING FAMILIES OF THE DICOTYLEDONS

PETALS UNUNITED

Flowers perfect (having both stamens and pistils)
Pistils many
Stamens attached below the ovary

Pistil one
Ovary 2 celled
Stamens 6
Stamens 2

Ovary 1 celled
Ovary superior

Flowers on a leafless stem
Flowers on a leafy stem

Pistils 2 to many, distinct or united as shown by the lobes of the stigma.

Pistils 1
Stamens attached below the pistil or

Pistils and leaves without stipules.

Corolla pink.
Corolla not pink.

PETALS PRESENT

Petals not united

Stamens many, more than 10
Stamens on the edge of a disc or cup, and leaves alternate, with stipules.
Stipules sometimes early deciduous so look for them on young leaves.)

Pistils 2 to many, distinct or united as shown by the lobes of the stigma.

Flowers imperfect (lacking either pistils or stamens)
Leaves simple
Leaves compound

RANUNCULACEAE 6.
CRUCIFERAE 9.
POLYGONACEAE 4.
Heuchera 12.
SAXIFRAGACEAE 4.
T. eliotrum 7.

ROSACEAE 14.
DRUGACEAE 16.
PORTULACACEAE 5.
RANUNCULACEAE 6.
Petals present, not united (cont.)

Stamens few; not more than 10
Stamens as many as, and opposite, the petals
Ovary 1-celled
Sepals 5
4
5

Sepals 2

Ovary 2-4-celled
Stamens not the same number as the petals or
if of the same number, alternate
Ovary wholly superior

Ovary simple, 1 parietal placenta
fruit a legume
LILIACEAE
17.

Ovary compound as shown by the number
of the placenta, cells or stigmas
Ovary 3-5 celled
GERANIACEAE
19.

Ovary 1 or 2-celled
Corolla irregular
VIOlaceae
21.

Corolla regular
Ovules on central placenta;
Stamens 5-10
CARYOPHYLLACEAE
5.

Ovules on parietal placenta;
Stamens 6 (4-2)
CRUCIFERAE
9.

Ovary at least half inferior
Ovules or seeds only 1 to each cell
Stamens 5 or 10
Herbs
ULMILIPACEAE
23.

Trees or shrubs
Crataegus
GERRYZEE
24.

Ovules or seeds more than 1 to each cell
Ovary 1 celled with two parietal
placenta
CROSASQUIOZAE
13.

Ovary 2 to many celled
Stamens fastened to a flat
disc which covers the
ovary; stamens 4
G L A S T R A C E A E
20.

Stamens fastened on the calyx;
Stamens 5 or 10; styles 2-3
SAXIFRGACEAE
12.

Stamens 4 or 8; styles 1
CRAGACEAE
22.
Petals United

Stamens more numerous than the corolla lobes
Ovary 3 to many called, stamens free from the corolla
Ovary 1 called with 1 parietal placenta
With 2 parietal placentas
Stamens as numerous as the corolla lobes or fewer
Stamens opposite the corolla lobes
Stamens alternate the corolla lobes or fewer
Ovary superior
Corolla more or less irregular
Fertile stamens 4 or 2
Ovules only 1 in a cell
Ovary 4 lobed
Ovules 2 or more; usually numerous
Ovary 2 called
Corolla regular
Stamens as many as the corolla lobes
Ovary deeply 4 lobed
Ovary not deeply 4 lobed
Ovary 1 called
Ovary 3 or more called
Stamens on the corolla tube
Stamens 4; corolla scarious
Stamens 5; corolla petaloid
Ovary 2-celled;
dry
Ovary 2-celled;
of ten fleshy.

Ovary inferior
Anthers united into a ring
Anthers not united
Stamens on the ovary
Stamens on the corolla
Stamens 1-3
Stamens 4 or 5
Ovary 2 to 5 called
Leaves whorled
Leaves opposite
Family - LILIACEAE

Perennial plants; leaves parallel-veined; flowers with 3 sepals and 3 petals; (sepals and petals often alike) ovary 3 celled; stamens 6.

Stems with leaves

| Leaves 1, 2 or 3, narrow alternate | Outer perianth segments narrower | CALOCHORTUS C. Gunnisonii |
| Leaves few in a whorl on upper parts of stem | CAU | TRILLIUM T. ovatum |
| Leaves broad 2 cm. or more broad | FLO | FRITILLARIA F. pudica |
| Leaves narrow 1 cm. or less broad | MEX | SIGADEUM E. severus |
| Flowers yellow | USA | D. trachycerum |
| Leaves many, alternate | VAC | V. stellata |
| Leaves linear, less than 1 cm. broad | V. amylophialis |}

Stems with no leaves

| Flowers solitary or in twos or threes | Blossoms erect | CLEMATIA C. uniiflora |
| Flowers drooping | Blossoms nodding | DELphinium D. peruviflorum |
| Simple racemes | Flowers more than three in a cluster | CALIADIA C. esculenta |
| Compound racemes | Flowers in racemes | DOD | B. douglasii |

Prodisea Douglasii Wats.

Flowers blue in a dense umbel; perianth tubular-campanulate, 2-3 cm. long, the tube longer than the lobes; stamens in two rows; stem tall; leaves 2-4, narrow, shorter than the stem.

Calochortus Gunnisonii Wats.

Flowers white or lillac, showy; petals hairy inside, with a dark spot near the base. Outer perianth segments more narrow than the inner. Leaves few, linear, those on the stem clasping. Petales yellowish-green below the middle, banded and lined with purple. Anthers acute. Mariposa Lily.

Zyadenus venerosus Wats.

**Camassia esculenta** Lindl.


**Erythronium**

Flowers yellow, nodding; quite large, terminal, usually one though often 2-3. Stamens 6, shorter than the perianth; ovary sessile, 3 celled. Stem simple; leaves 2, shiny, from the base. Dogtooth violet or Glacier Lily.

Anthers purple

*E. grandiflorum* Tursh.

Anthers white or yellow

Perianth white

*E. grandiflorum candidum* Piper

Perianth yellow

*E. paviflorum* (S. Watson) Goodding

**Fritillaria pudica** (Tursh) Sprung.

Flowers yellow, nodding, solitary or several. Perianth mostly campanulate of 6 separate and nearly equal oblong segments, each with a nectar-pit or spot at the base; stamens 6 on the ovary. Ovary 3 celled; ovules numerous in each cell. Stem simple, leafy. Yellow-bell

**Trillium ovatum** Pursh.

Glabrous erect unbranched herbs with short rootstocks; leaves 3 in a whorl at the top of the stem just under the flower. Flower solitary. The 3 outer perianth segments green, narrow; the 3 inner broader, white, pink, or purple; stamens 6 on the ovary. Ovary 3-6 angled or lobed. Petals to pink or red in age. Anthers yellow. Flowers peduncled. Trillium or Wake-robin.

**Dicentra formosa** S. Watson.

Stems more or less hairy; slender rootstocks; stems branching, scaly below, leafy above; leaves alternate, sessile or clasping; flowers terminal, drooping, whitish or greenish-yellow, solitary or few in simple umbels; perianth segments 6 narrow, equal, separate; stamens 6 on the ovary. In woods. Fairybells.

**Vaccaria** False Solomon's-seal

Herbs with slender or short and thick rootstocks; stem simple, scaly below, leafy above; leaves alternate, short petioled or sessile, ovate or oblong; flowers in a terminal raceme or panicle; flowers white or greenish, small; perianth of 6 separate spreading equal segments; stamens 6 on the base of the segments; ovary 3 celled, sessile; ovules 2 in each cavity.

Flowers small, numerous, in a dense panicle

*V. angustifolia* (Nutt.) Greene

Flowers larger, few, in a raceme

*V. stellata* (L.) Loureng.

**Clintonia uniflora** (Schult.) Hunt

Flowers stems pubescent, bearing a single white flower or rarely two. Leaves 2-5, oblong, acuminate, pubescent beneath, 10-30 cm. long. Calyx pubescent on the outside. Usually found in rich woods. Queenscup
Family - ORCHIDACEAE

Perennial herbs; leaves entire, sheathing, sometimes reduced to scales; flowers perfect, irregular, bracted. Perianth of 5 segments, the outer 3 alike or nearly so, 2 of the inner (petals) on the side alike, the third inner (the lip) very unlike the others, usually larger and often spurred. Anthers 1 or 2. Ovary inferior, 3-angled, 1-celled, ovules numerous.

Plants without green coloring
   Lip 3-lobed

Plants with green leaves
   Flowers reddish or rose color

   Flowers yellow

  CORALLORHIZA
  C. multiflora

  CALYPSO
  C. bulbosa

  CYPRIPEDIUM
  C. parviflora

Coralorhiza multiflora Nutt.
   Stem 2-5 dm. high, many flowered; flowers brownish-purple. Lip almost white and purple-spotted. Found in the woods. Coral Root.

Calypso bulbosa (L.) Cakes.
   Flower drooping; sepals and petals light rose-color, lip usually longer, brownish-pink mottled with purple, the edge margined at the apex. A low herb, in wet or boggy woods, with showy flowers, a scaly-sheathed stem and a single broad thin leaf. Lady's Slipper.

Cypridium parviflora Salisb.
   Stem 20-60 cm. high, leaves several, many nerves, 5-12 cm. long, elliptic to lanceolate; flowers 1-3, yellow, more or less marked with purple, sepals linear, twisted and brownish or purple-brown. A handsome plant. Yellow Lady's Slipper.
Family - SANTALACEAE

Herbs or shrubs, with angled or striate branches; entire leaves, alternate, without stipule, sessile. Flowers perfect, usually purplish or greenish white. Perianth 3-5 cleft, and adherent to the 1-celled ovary. Petals wanting. Stamens as many as the perianth lobes and opposite them. Ovary 2-4 celled, becoming a 1-seeded nut-like fruit.

Leaves glaucous. Frequent in dry sandy places.
Stems 1-2 dm. high. Leaves oblong to nearly linear cymes several-flowered.

**Commandra pallida** A.D.C.

Family - POLYCOMIACEAE

Herbs with alternate or sometimes opposite leaves. Leaves entire, and stipules in the form of sheaths above the swollen joints of the stem, or none. Flowers rather small, mostly perfect, with more or less persistent calyx consisting of 3-6 segments, the inner ones often petal-like. Petals wanting. Stamens 4-9. Ovary 1-celled, bearing 2 or 3 styles.

Flowers subtended by involucres
Flowers bright sulphur-yellow
Flowers pale yellow or whitish
Bracts large and leaf-like
Bracts not leaf-like
Flowers not subtended by involucres
Sepals 6, stigmas 3, tufted.
Plants 1-3 dm. high
Sepals 4-6, usually 5; stigmas capitate
Flowers yellowish or whitish

**Eriogonum** Greene.

*Eriogonum Piperi* Greene.
A showy plant usually growing in clumps. Stems 2-4 dm. high from a mat of closely crowded basal leaves. Involucres of large leaf-like bracts.
Sulphur Plant.

*Eriogonum subalpinum* Greene.
Shrubby at the base, quite matted. Peduncles 3-4 dm. high, leaves mostly pubescent above, rarely also below. Flowers pale yellow tinged with red when drying. Involucres leaf-like. Umbrella Plant.

*Eriogonum ovalifolium* Matt.
Low plants, densely tomentose, with a short closely branched caudex. No petals, 5 sepalas, stamens 9; leaves silvery and without stipules. Silver Plant.

**Rumex Acetosella** L.

Flowers dioecious. Reddish, no petals, 5 sepalas. Leaves narrowed with ear-like lobes at the base of the blade. Plants 1-3 dm. high. Sorrel.

**Polycomum bistortoides** Iurch

Flowers white or yellowish in terminal spikes, with scariosus bracts. No petals. Filaments filiform. Perennial. Bistort.
Family - **PORTULACACEAE**

**Juicy herbs, with simple and entire leaves and regular and perfect flowers. Petals 2-5 or more. Stamens numerous.**

<table>
<thead>
<tr>
<th>Plants with fleshy leaves</th>
<th>Lewisia</th>
<th>Lewisia rediviva Pursh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seals large, 5-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plants without fleshy leaves</th>
<th>Claytonia</th>
<th>Claytonia asarifolia Bong.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves cordate</td>
<td></td>
<td>Low glabrous perennial herbs with a pair of opposite stem leaves and usually 1 or more basal leaves. Flowers white or pink in loose terminal simple racemes. Sepals 2, style 3-cleft. Found in damp shady places. Spring Beauty.</td>
</tr>
<tr>
<td>Stem leaves 2, not united</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaves linear</td>
<td>Montia</td>
<td>Montia linearis (Dougl.) Greene</td>
</tr>
<tr>
<td>Annuals</td>
<td></td>
<td>Stems simple or branching 5-12 cm. high. All leaves linear, 2-3 cm. long. Petals white, unequal, scarcely longer than the 2 sepals. Stamens 3. Found in wet habitat.</td>
</tr>
</tbody>
</table>

**Family - CARYOPHYLLACEAE**

Stems often swollen at the nodes; leaves opposite, entire; flowers regular, perfect; sepal 4-5, separate or united into a calyx-tube; petals of the same number as sepals or none; stamens not more than twice as many as the sepals; styles 2-5, ovary 1 celled, rarely 3-5 celled; ovules several to many, basal or attached to a central column.

<table>
<thead>
<tr>
<th>Sepals united; petals long-clawed</th>
<th>Lewisia</th>
<th>Lewisia alba Silene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styles 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants tall; leaves linear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styles 3, rarely 2, 4 or 5</td>
<td>S. Marzianii</td>
<td></td>
</tr>
<tr>
<td>Flowers in a paniculate leafy cyme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sepals free to the base or nearly so</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petals densely exaricate or bifid</td>
<td>Cepausteri</td>
<td>C. arvensis</td>
</tr>
<tr>
<td>Styles mostly 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Petals entire or barely exaricate</th>
<th>Athamaria</th>
<th>Athamaria conosta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styles 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeds not appendaged</td>
<td>Lewisia</td>
<td>Lewisia lateriflora</td>
</tr>
<tr>
<td>Leaves linear, rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed with light colored appendage at the hilum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low slender plants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lycnis alba Will.

Plants stout, branched, viscid; leaves ovate to lance-oblong; petals white; calyx somewhat inflated. Large, rather showy plants, some flowers staminate, some pistillate. Called White Campion.

Silene menziesii Hook.

Flowers white or pink, petals deeply notched. Plants glandular-puberulent; stems dichotomously branched, leafy 1-3 dm. high. Peduncles lateral or in the forks of branches, 1 flowered, equaling the leaves. Catch fly.

Cerastium arvense L.

Perennial, downy with reflexed hairs, leaves linear, clasping; cyme few-flowered; pedicels erect or nodding; petals nearly twice longer than the sepals. Flowers white. Mouse ear Chickweed.

Arenaria congesta Nutt.

Glabrous or obscurely glandular. Stems slender, simple; 1-3 dm. high, more or less tufted. Leaves grass-like. Flowers white; bracts under flower paper-like. Sandwort.

Koehringia lactoriflora (L.) Fernald.

Low slender plants. Petals white, peduncles usually 2-flowered, soon becoming lateral. Stems erect, sparingly branched.

Family - RANUNCULACEAE

Pistils many (more than 10), 1 ovuled; fruit an achene

<table>
<thead>
<tr>
<th>Plant climbing</th>
<th>Plant not climbing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaflets 3</td>
<td>With a whorl of leaves below the flower</td>
</tr>
<tr>
<td></td>
<td>Flowers not blue</td>
</tr>
<tr>
<td></td>
<td>Heads globose</td>
</tr>
<tr>
<td></td>
<td>Flowers blue</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

Pistils 1-10; 2-many seeds, fruit not an achene

| Flowers large irregular, blue | Leaves basal and cauline |
| Flowers small regular, white  | Leaflets thin            |

Cleome

A. colombiana

A. hirsutissima

D. bicolor

A. arenaria

Trials

T. occidentale

Ranunculaceae

R. adersii

D. bicolor

A. arenaria
**Clematis Columbiana** (Nutt.) T. & G.

Leaves opposite; sepals 4, rarely 3, or more than 4, petal-like; petals none or minute; stamens numerous; pistils numerous, 1 ovuled; styles feathery or naked in fruit. Half-woody climbers; flowers large, blue; leaves ternate, petiolate. Outer stamens with filaments more or less dilated and petal-like, the anthers wanting; achenes with long plumose tails. In moist woods. Virgin's Bower.

**Thalictrum occidentale** Gray.

Erect perennial herbs; leaves 2-3 ternately compound, still leaves alternate; flowers perfect or not perfect, generally small, greenish-white in corymb, panicles or racemes; sepals 4 or 5, petal-like or greenish, dull colored. Petals none; stamens numerous; pistils 4-15. Meadow Rue.

**Anemone globosa** Nutt.

Erect perennial herbs. Basal leaves divided, those of the stem forming a whorl below the flowers. Sepals 4-5. Petals wanting. Stamens numerous, shorter than the sepals. Pistils numerous, becoming compressed achenes, which are not long-tailed. Achenes densely woolly, flowers white. Fruiting bodies globose, Wind Flower.

**Pulsatilla hirsutissima** (Pursh.) Brit.

Characters the same as Anemone except that the styles are always persistent and become greatly elongated in fruit. Flowers bluish or whitish. Pasque flower.

**Ranunculus** Buttercup

Perennial herbs with leaves entire or partly dissected. Flowers solitary or several, yellow. Sepals usually 5. Petals 3-15, with a nectar cup at the base inside.

Low plants common

Tall marsh plants

**Delphinium bicolor** Nutt.

Herbs with palmately-lobed leaves and racemose flowers which are blue or purple. Sepals 5, petal-like. Petals 2 or 4, irregular. The upper sepal spurred. Pistils few. Roots thickened; plants low (1-5 dm. high) Stems pubescent to the base; basal leaves few. Larkspur.

**Actaea arnuta** Nutt.

Perennial herbs, leaves twice or thrice ternately compound. Flowers white, numerous in a raceme. Sepals small 4-6, petal-like. Petals small 4-10. Stigma sessile, 2 lobed. Pistil 1, becoming a red or white berry (poisonous). Leaflets thin, sharply toothed. Moist woods. Baneberry.
Family - BERBERIDACEAE

Shrubs with alternate simple or compound leaves and no stipules. The flower parts are distinct and free, and are opposite to each other instead of alternate.

Shrub with yellow wood

**Berberis aquifolium** Pursh.

Yellow wood, compound and often spiny leaves, and yellow racemose flowers. Sepals 6, yellow, with 3 or 6 closely appressed bracts. Petals 6 imbricated in 2 series, each with 2 basal glands. Stamens 6. Pinnate leaves, shiny on the upper parts. Oregon Grape.

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Family - PALAVERACEAE

Flowers perfect, regular or irregular. Sepals early deciduous, 2 or rarely 3-4. Petals imbricated, 4 or more, these also early deciduous. Stamens distinct, hypogynous, with filiform filaments. Ovary usually 1-celled, with many ovules, becoming a dehiscent 1-celled capsule.

Flowers irregular, one of the sepals spurred

**Corydalis**

**Corydalis aurea** Wild.

Flowers yellow in compact racemes, plants much branched at the base, 15-30 cm. high. Leaves dissected, leaflets small, stems spreading. Sepals 2, small, corolla irregular; petals 4, one of the outer pair spurred at the base. Stamens 5, in 2 sets.
Family - CRUCIFERAE

Flowers usually in the form of a Maltese cross; petals 4, rarely wanting; sepals 4, deciduous. Stamens 6: 4 opposite the petals and longer than the remaining 2 which are opposite sepals. Plants with sap tasting like mustard or turnip. Leaves alternate; stipules none. Pistil one, usually 2-celled by a wall from a parietal placenta to the other. Fruit a pod.

Pods short

Pods inflated
Pods notched at the top
Pods equally constricted whole length
Pods notched at the top
Glabrous above, pubescent below

Pods flattened
Cells 1-2 seeded
Upper stem leaves linear
Upper stem leaves broader, pinnate
Cells 2-several seeded
Pods deeply notched and winged
Pods scarcely notched or winged

Pods long

Flowers purple, or white
Flowers purple
Stem leaves more or less pubescent
Stem leaves glabrous
Flowers white, sometimes tinged with purple
Pods definitely reflexed
Flowers glabrous
Plants pubescent

Pods erect

Flowers yellow
Leaves narrow and entire
Petals 15-25 mm. long
Petals 10 mm. or less
Leaves pinnately compound or dissected
Leaves pinnately dissected into narrow lobes
Pubescence of simple hairs or wanting
Pubescence of forked hairs
Green; seeds in 1 row
Canescent; seeds in 2 rows
Leaves dissected into broad lobes
Pod beaked with stigma
Pods not beaked with stigma

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Physaria Didymocarpa (Hook.) Gray.
Plants densely stellate–senescent, 10–20 cm. high. Flowers with showy pale yellow petals. Basal leaves ovate to broadly spatulate, stem leaves more narrow. Pod deeply and equally notched above and below, the slender style, 5–6 mm. long, persistent on the pod. Pods much inflated. Pods deeply notched.

Ceratina mincrocarpa Andrz.
Flowers pale yellow. Pods beaked with the persistent style. Pods inflated and not notched. Stems erect 20–30 cm. high, hirsute below, glabrous above. Leaves sagittate at the base, half clasping.

Lepidium densiflorum Schrad.
Annual, 20–50 cm. high, branched above, finely hairy; basal leaves lobed the upper stem leaves narrow, toothed. Petals minute or wanting, pods flat, rounded, 3 mm. long notched at the top. Pods very numerous and densely arranged.

Lepidium perfoliatum L.
Annual or biennial; stems suberect, 3–4 dm. high; lower leaves bipinnatifid, upper leaves entire, cordate or reniform, clasping, glabrous. Petals yellow, about 1 mm. long. The stem does, or appears to perforate, the upper leaves.

Thlaspi arvense L.
Annuals with white flowers. Plants erect, glabrous, 15–40 cm. high. Lower leaves oblanceolate, petiolate, the upper stem leaves without petioles, sagittate and clasping. Pods deeply notched 8–13 mm.

Thlaspi alpestri Folsom.
Perennials with showy white flowers. Plants glabrous, stems usually branched from the base, 10–20 cm. high. Basal leaves ovate or elliptic, petiolate, entire or toothed; stem leaves oblong, entire, sessile and somewhat eared and clasping. Pods not notched, style persistent. Very much like cultivated candytuft.

Arabia oblanceolata Rydb.
Flowers reddish-purple, plants about 3 dm. high; stem leaves sessile, lower ones eared; basal leaves with stems and about 5 or more cm. long. Several stems from the base; flowers loosely clustered. Pods about 5 cm. long.

Arabia Drummondii Gray.
Flowers reddish-purple or whitish; plants 3–8 dm. high. Stems glabrous or sparingly pubescent below. Pods 5–8 cm. long. Stem leaves eared, sessile, basal leaves short petioled.

Arabia retroflecta Graham.
Flowers drooping and nearly all on one side of the stem. Stem 20–40 cm. high, with branched hairs; stem leaves clasping. Petals white or pinkish. Base of stem leaves eared.

Arabia LecDouglili Rydb.
Flowers drooping in one-sided racemes, white or lavender. Much like the above except that the stem leaves are simple and not eared; the stem and leaves more pubescent.
Arabia Mutallii  Robinson
With showy white flowers in loose clusters. Perennial, with several
stems arising from the base. With more or less stiff hairs on lower parts
of plant. Stem leaves sessile but not cleft, basal leaves with short
petioles.

Erysimum asperum  (Nutt.) DC.
Plants with conspicuous yellow flowers which sometimes turn to orange
or reddish brown. Greenish canescent, stems usually single and simple about
2-5 dm. high. Leaves linear or lanceolate, usually entire and crowded at
the base. Flowers showy and quite cross-shaped. Wall Flower.

Erysimum inconspicuum  (Wats.) Macf.
Very similar to the above but with much smaller flowers.

Sisymbrium altissimum  L.
Tall plant 60-100 cm. high erect with pale yellow flowers. Plant sparsely
hirsute with simple hairs or glabrous. Basal leaves petiolated, pinnately in-
to linear or lanceolate lobes. Leaves of the upper stem reduced, lobes linear.
Tumble Mustard

Sisymbrium incisum  Engelm.
Flowers bright yellow, petals usually curved, ascending on slender pedicels
of about the same length. Stems slender, erect, sparingly branched, usually
minutely stellate-pubescent. Leaves pinnatifid.

Sisymbrium canescens  Nutt.
Similar to the above but conoscent and seeds in two rows.

Brassica arvensis  (L.) B.S.P. iroc.
Stout annual with stiff scattered hairs, showy pale yellow flowers.
Lower leaves pinnately parted into a large upper segment and smaller lower
segments, dentate. Uppermost leaves sessile, nonclasping.

Barbarea americana  Rydb.
Green glabrous plant with showy bright yellow flowers. Stem somewhat
angled; lirately pinnatifid leaves. Erect 2-4 dm. high. Basal leaves
broadly elliptic, wavy, simple, or with 1 or 2 pairs of small lobes on the
petiole; lower stem leaves similar but clasping at base; upper leaves strongly
waved or toothed.
Family - SAXIFRAGACEAE

Perennial herbs; leaves usually alternate, often all born at the base of the stem. Sepals 5, petals 5 or none, small; stamens as many as or twice as many as the sepals.

Ovary 2-celled
Stems leafless
Stems more or less leafy

Ovary 1-celled
Petals pinnatifid or cleft
Petals 3 parted into thread-like divisions
Flowers all on one side
Petals 3-7 parted, not thread-like
Calyx bell-shaped, plant obscurely pubescent
Calyx cone-shaped, plant rough hirsute
Petals none (sepals petal-like)
Flowers yellow or yellowish

Saxifraga rhomboidea Crezere
Flowers small, white, in densely clustered groups on simple stout stems 1-3 dm high; leaves basal in a tuft; oval or ovate, 3-6 cm. long, entire, crenate-dentate, glabrous.

Saxifraga bronchialis L.
Plants 5-15 cm. high, forming dense mats; leaves lanceolate, 5-12 cm. long, spino-tipped, hairy on the margins, crowded and overlapping; petals about 5 cm. long, white with red dots. In dry places the leaves are often purplish; they are disagreeably prickly.

Kitella steuropetala Piper
Stems 30-50 cm. high bearing flowers on one side. Leaves all basal, indistinctly 5 lobed, slightly crenate and kidney shaped. Raceme one sided 5-12 cm. long, 10-25 flowered; flowers white, nearly sessile, petals 3 parted.

Tellima tenella (Nutt.) Walp.
Flowers white or pink in a terminal raceme; stem simple or branched; leaves few, round-cordate, toothed or palmately divided, chiefly alternate. Pubescent, minutely glandular; pedicels spreading.

Tellima parviflora Hook.
Flowers white or pink in terminal raceme. Much like the above but somewhat larger. Rough pubescent. Leaves palmately lobed. Few leaves on stem.

Houchchera ovalifolia Nutt.
Flowers in yellow or greenish racemes on a long stem. Petals wanting. Densely and minutely glandular—pubescent; leaves all basal, broadly oval, slightly cordate, somewhat 5 lobed, crenate-dentate; 10-30 cm. high, flowers dense. Alumroot.
Family - CRASSULACEAE

Petals 5 or rarely 4, erect; petals might not be at first be discovered because they are so much smaller than the sepals. Shrubs with alternate, palmately-lobed leaves. Calyx-tube adnate to the globose ovary.

Currants and Gooseberries

Stems usually armed with prickles
Flowers greenish or purplish
Stems not armed
Flowers white tinged with violet
Flowers not armed
Ovary or berry glandular-bristly
Ovary or berry smooth
Flowers erect or ascending
Flowers drooping
Flowers greenish-white
Flowers yellow, tinged with red

Ribes lacustre (Pers.) Poir.

Ribes saximontanum R. Pol.

Spiny Current. Shrub 3 to 1.5 m. high, very spiny and prickly; leaves glabrous, with obtuse lobes, often shining, flowers greenish or purplish.

Ribes saximontanum R. Pol.

The spreading stems 3-8 dm. long, more or less bristly; spines triple, stout, 8-12 mm. long. Leaves suborbicular, finely pubescent or glabrate, 5-8 cm. broad, deeply 3-lobed; flowers 1-3 about 1 cm. long, white tinged with violet; calyx-tube cylindrical, villous within; style villous, divided half way to the base.

Ribes viscosissimum Pursh.

Sticky Current. Shrub a meter or less high; leaves rounded, kidney-shaped, shallowly lobed; flowers few, greenish, about 1 cm. long. Ovary or fruit covered with short gland-tipped hairs. The leaves are sticky and sometimes unpleasant to handle.

Ribes Hudsonianum Richards.

Stems erect; leaves rounded-cordate in outline, smooth above, resinous-dotted beneath, 3-5 lobed. Racemes erect, 5-10 cm. long, many-flowered, bracts much shorter than the pedicels. Calyx campanulate, deeply 5-lobed, petals oblong, minute.

Ribes aureum Dougl.

Flowers pink or greenish-white; racemes short; Shrub 1-2 m. high, quite rigid and much branched. Petioles more or less glandular-pubescent; leaves reniform-orbicular, cordate at the base. Calyx dilated at the base; petals minute, stamens short.

Ribes aureum Pursh.

A smooth shrub with golden-yellow flowers. Older leaves glabrate and shining, often broader than long, thick, 3-lobed or sometimes 5-lobed. Racemes leathery-bracted, few flowered. Calyx-tube cylindrical, glabrous, 3 or 4 times as long as the spreading lobes. The Missouri or Golden Current.
Family - ROSACEAE

Shrubs or tree-like

Flowers white
- Flowers single or 2 or 3
- Leaves 5-lobed
- Flowers in larger clusters
- Flowers in racemes
- Leaves simple
- Flowers in compound corymb
- Flowers white
- Flowers in simple corymb
- Plants with thorns
  - Thorns 1-3 cm. long
- Plants without thorns
  - Old bark shreddy

Flowers pink or red

Herbs

Corolla white, leaflets 3, plants with runners
- Corolla yellow or cream, leaflets 3-5 or more, no runners
- Styles jointed
- Styles not jointed
  - Calyx rose colored
  - Calyx green
  - Styles inserted near base of ovary
  - Styles terminal

Fraseria persiciflora (Lett.) Gourlie
- Shrubs sometimes 2 m. high. Leaves palately and nearly equally 5-lobed, cordate at the base, unequally serrate, 10-25 cm. broad, glabrous or somewhat tomentose, the veins beneath and the petioles usually with gland-tipped hairs. Flowers white, 3-5 cm. broad, calyx densely tomentose. Petals 5, white. Salmon Berry or Thimble Berry.

Amelanchier canadensis B. B. "u" t
- Shrubs with alternate, simple, toothed leaves and white flowers in racemes. Calyx-tube adnate to the ovary, its 5 lobes persistent and reflexed. Petals 5, inserted with the numerous stamens on the throat of the calyx. Styles 2-5. Cells of the ovary as many as the styles. Young leaves slightly woolly underneath.

Spirea lucida Dougl. 4-6 dm. high. Leaves small below, larger above, simple, serrate around the summit, pale and glaucescent beneath. Inflorescence in a compound corymb, the flowers white. Loadowsweet.

Crataegus douglasii Lindl. 4-6 dm. high. Leaves small below, larger above, simple, serrate around the summit, pale and glaucescent beneath. Inflorescence in a compound corymb, the flowers white. Loadowsweet.


**Opulaster malvaceus** (Greene) Kuntze.

Shrubs with simple toothed or lobed alternate leaves, membranous deciduous stipules and rather large showy flowers in corymbs. Calyx 5-cleft, persistent, petals 5, rounded, sessile; stamens numerous on the rim of the cup-shaped receptacle. Carpels 1-5 distinct, often stipitate. Carpels somewhat inflated. Leaves glabrous. Pedicels very bracteate; bark shreds off. Ninebark.

**ROSA**

Shrubby, more or less prickly plants, with pinnate leaves and large flowers. Stipules adnate to the petiole. Calyx without bractlets. Stamens numerous on the thick margin of the disk which nearly closes the throats of the calyx. Carpels many, hairy; fruit fleshy.

Calyx tube and fruit prickly.  
Calyx tube not prickly.  
Frickles of the stem usually straight.  
Sepals persistent after flowering.  
Sepals deciduous after flowering.  
Frickles of the stem usually curved.  
R. MacDougalii Holz.

**Ceur strictum** Soland.

Sepals reflexed, upper part of the style deciduous, perennial herbs, leaves pinnate with stipules, basal leaves clustered, stem leaves smaller. Calyx 5-lobed with alternate bractlets; petals 5, usually longer than the calyx lobes. Stamens many on the throat of the calyx. Styles terminal, jointed, the upper part deciduous; achenes 2-5, pubescent, receptacle downy. Avens.

**Sieversia ciliata** (Pursh.) G. Don

Low perennial herbs with simple stems, mostly basal leaves which are pinnate. Purplish sepals which are longer than the yellow petals. Flowers in cymes. Sepals, bractlets, and petals 5. Style not jointed, very long and strongly plumose in fruit. Plant hairy. Old Man's Beard.

**Potentilla flabelliformis** Lohm.

Herbs with alternate stipulate, digitately or pinnately compound leaves and yellow or whitish flowers, in cymes or solitary. Calyx persistent, with 5 sepals and 5 alternating bractlets; petals 5. Stamens 10-20 with small anthers. Carpels usually numerous, mostly in three series, inserted on a dry, usually hairy receptacle. Styles terminal, deciduous. Cinquefoil.

**FRAGARIA** Strawberry


Flowers above the leaves  
Flowers not as tall as the leaves  
F. bracteata Keller.  
F. flabelliformis Lohm.
**Drymocallis pseudorupetria** Rydb.

Perennial, usually glandular-viscid herbs with pinnate leaves. Cyms of flowers yellow or yellowish white. Sepals 5, with 5 alternating bractlets. Style inserted near the base of the ovary. 2–4 dm. high.

**Family - DRUPACEAE**

Trees or shrubs, with alternate, petioled, serrate leaves and small early deciduous stipules. Flowers perfect and regular. Calyx 5-lobed, free from the ovary, deciduous. Petals 5, inserted on the calyx as are also the numerous stamens. Stigma small, capitata; ovule 1 oelled. Leaves folded lengthwise in the bud.

Flowers in racemes, white. Chokecherry. **Prunus melanocarpa** (A. Nels.) Rydb.
Family - LUPINACEAE

Flowers irregular, perfect. Calyx 4-5 toothed or cleft; lobes equal or unequal, sometimes 2-lipped. Petals more or less united or separate, usually with the upper or old petal larger than the others and usually turned backward or spreading; the two lateral petals oblique and outside the two lower; the last pair commonly more or less coherent by their edges, forming a keel which usually encloses the pistils and stamens. Stamens 10, united into one cluster or two clusters. Pistil 1, 1-celled. Fruit a legume. Plants with sweet-pea like blossoms and pea-pods.

Anthers of two forms (round and oblong)

- Plants glabrous or nearly so
- Plants more or less pubescent
- Calyx conspicuously inflated or swollen on one side
- Calyx not conspicuously swollen
- Anthers all alike
- Leaflets 3

Flowers in heads
- Flowers pink or red
- Flowers white or pinkish
- Flowers in slender racemes
- Flowers yellow
- Flowers white

Leaflets 5 or more along leaf stalk
Leaves with tendril at the end
- 15-40 flowered
- 5-10 flowered
- Leaflets nearly glabrous, oval to oblong
- Leaflets minutely pubescent, narrower

Leaves without tendril at the end
- Leaflets glabrous, or minutely appressed-pubescent beneath
- Leaflets not glabrous
- Plant white-wooley
- Plant not white wooly

1-3 dm. high, flowers tipped with purple
3-5 dm. high, flowers yellow

LUPINUS

Flowers showy, in terminal spikes or racemes. Calyx 2-lipped. Stamens united and enclosed in the keel. Leaflets 5-13 palmately arranged at the end of the leaf stem. Flowers in various blues.

Lupinus Burkei - Wats.

Green and glabrous or nearly so. Stems erect, 60-100 cm. high; leaflets 6-11, glabrous above, sparsely appressed-pubescent beneath; petioles of the lower leaves very long, racemes dense, 10-50 cm. long, the pedicels short, 2-4 mm. long. Tall plants found in moist meadows.
Lupinus pseudopersicifolius Rydb.

Calyx compressed-pubescent, very gibbous at the base. Corolla blue, about 1 cm. long. Stems single or several, erect, 3-6 dm. high. Petioles slender, the lower about twice as long as the leaflets. The raceme loosely flowered, 7-14 cm. long. Leaflets, as they become older lose pubescence and become glabrate.

Lupinus sericeus Fursh.

Stems stout villous, 40-70 cm. high. Leaves canescent and somewhat villous but not silvery. Flowers 10-12 mm. long, bluish-purple in rather loose racemes.

Melilotus

Herbs; leaves 3-foliate; flowers in racemes; calyx bell-shaped with short equal teeth; stamens in two groups, anthers alike, ovary sessile or stipitate.

Melilotus officinalis (L.) Lam.

Erect, 1-3 m. high, branching. Flowers yellow in slender racemes that originate in the axils, 5-10 cm. long, often one-sided. Yellow Sweet Clover, Naturalized from Europe.

Melilotus albus Desv.

Very much the same as the above but with white flowers. White Sweet Clover. Naturalized from Europe.

Vicia

Climbing or trailing herbaceous vines; leaves pinnate, tendril bearing, with half-sagittate stipules (sometimes entire). Flowers in axillary racemes; stamens of two forms; style filiform, hairy at the tip only.

Vicia americana Kuhl.

Perennial, stout or slender, 70-160 cm. high, nearly glabrous; leaflets 4-6 pairs, glabrous above, minutely pubescent beneath, about 2 cm. long; stipules deeply toothed. Flowers purple-violet, 15-20 mm. long, peduncles usually shorter than the leaves. Leaves ovate or elliptic.

Vicia coccia L.

Furiously blossoms, 15-40 flowered one sided crowded racemes.

Vicia trifida Ditr.

Furiously flowers, 3-10 blossoms side by side; in racemes. Plants low, 1-3 dm. high. Leaflets narrow and finely covered with pubescence.

Astragalus

Perennial herbs with odd-pinnate leaves. Flowers in spikes or racemes. Calyx 5-toothed. Corolla usually long and narrow. Standard narrow, equaling or exceeding the wings of the blunt keel. Stamens in two clusters, anthers all alike.

Astragalus racemellus Rydb.

Plants glabrous or with very fine pubescence or bloom, especially on the under sides of the leaflets. Leaflets thin, 0-17, oblong or oval, 15-35 mm. long, peduncles surpassing the leaves. Flowers yellowish-white tinged with purple. Calyx black hairy.
Astragalus inensus Dougl.

Plants densely white-villose through-out; stems prostrate or decumbent, 10-30 cm. long. Peduncles shorter than the leaves, racemes rather densely few flowered, the flowers short pedicelled. Corolla violet, rarely yellowish. Leaflets 20-25, ovate, acuminate, 1 cm. long.

Astragalus campastria (Nutt.) Gray.

Low plants, 1-2 dm. high, flowers yellowish tinged with purple. More or less pubescent, tufted, bronched from the base. Peduncles few-flowered and rising above the leaves.

Astragalus Drummondii Dougl.

Flowers rather large, white or yellowish in long crowded racemes. Plants taller, 3-5 dm. high, loosely wooly-pubescent. Plants in clumps, stems sub-erect. Leaflets 17-30, 1-3 cm. long. Racemes longer than the leaves. Grows in gravelly spots.

Trifolium pratense L.

The common red clover. Stems ascending, somewhat hairy. Leaflets oval to obvate, often notched at the tip. Rose-purple flowers in dense ovate heads

Trifolium repens L.

The common white clover. Plants smooth, perennial, the stems creeping and spreading. Leaves heart-shaped or merely notched. Petioles and especially the peduncles very long. Heads small and loose.

Family = GERANIACEAE

Herbs with alternate or opposite lobed or dissected leaves and complete regular flowers. Sepals persistent. Petals deciduous. Stamens same number as petals or 2-3 times as many; filaments distinct. Pistil of 5 united carpels, the styles united into a column.

Stamens 10; leaves palmate
Perennials
Stamens 5; leaves pinnate
Carpal tails becomingly spiral twisted

Geranium viscosissimum Fish and May.

Perennial; glandular pubescent, leaves and flowers large and purple. Inner of petals more or less long villous. Plants single or somewhat tufted. Pubescence viscid-glandular. Wild Geranium.

Geranium cicutarium L’Hér.

Petals bright rose color; annuals with pinnate leaves. Carpels with long tails which are boarded on one side and which become spirally twisted. Stork-bill.
Family - CELASTRACEAE

Shrubs with simple leaves, no stipules, and small, dull colored, perfect, regular flowers. Sepals and petals imbricated. Stamens as many as the petals, alternate with them and inserted on the margin of a broad disc which lines the calyx-tube.

Low evergreen shrubs

Pachystima

Pachystima pyriformis  Raf.

Low evergreen shrubs, with smooth, opposite, short petioled, serrulate leaves. Flowers small, reddish-green, solitary or in a few flowered cymes. Calyx with a short tube and 4 rounded lobes. Petals 4. Ovary free, 2 celled; style very short. Commonly called Mountain Lover.

Family - HULMACEAE

Flowers in panicles

Leaves leathery, shining

Ceanothus

Ceanothus volutinus  Dougl.

A smooth shrub, 7-14 dm. high, growing in dense clumps. The upper sides of leaves look as though varnished; balsamic fragrant, lighter beneath, strongly 3-ribbed. Flowers white, in compound panicles. Mountain Balm.
Family - VIOLACEAE

Flowers more or less irregular with alternate stipulate leaves. Sepals 5. Petals 5, imbricated in the bud. Stamens 5, the filaments short and broad and bearing their anthers on their inner face. Style somewhat club-shaped and abruptly bent at the top.

Sepals with car-like appendage at the base, lower petal spurred  VICIA

Flowers yellow
Leaves broad, heart or kidney shaped
Leaves longer than wide

Flowers not yellow
Stems leafy, flowers axillary
Stipules entire, mostly scarious
Stipules toothed or frimbriate
Stemless plants with stolons

VIOA bifiore L.
Petals yellow with dark purple-brown lines. Stems 2 or more, weak, ascending, about 2 leaved. 1 or 2 flowered at the summit. Leaves nearly glabrous, round, kidney shaped. Stipules green and entire. Flowers small.

VIOA Puttallii Pursh.
Petals yellow, 8-12 mm. long, glabrous or slightly bearded; stigmas bearded. Stems several, short; leaves oblong to nearly linear, 3-6 cm. long, tapering to the petiole.

VIOA canadensis L.
Petals pale violet to nearly white, purple veined, with yellowish base. Plants nearly glabrous, 1-3 dm. high; leaves thin cordate or broader. Peduncles shorter than the leaves, slender, axillary.

VIOA edunca Smith.
Flowers violet or purple; spur as long as the sepals. Glabrous or nearly so, 1-3 dm. high, leaves ovate to more or less cordate at base. Peduncles usually surpassing the leaves.

VIOA peluustris L.
Flowers lilac to white, streaked with darker veins. Glabrous and stemless from the slender creeping rootstocks. Stolons present. Leaves ovate to kidney shaped, crenate. Flowers generally surpassing the leaves.
Family - CUCURBITEAE

Calyx adnate to the ovary; the calyx tube often lengthened into a long tube. Petals 4 or 5, commonly 4; free, alternate with the 4 sepals on the rim of the receptacle. Stamens 6.

- Corolla pink or salmon
  - Plants pubescent
- Corolla red or purple
  - Petals 3-lobed
  - Petals not 3-lobed

Gauna coccinea Nutt.
Stems several, branched, puberulent and more or less hirsute, 1-5 dm. high; leaves numerous, sessile, obovate or lanceolate. Petals pink or white to scarlet. Flowers perfect in terminal racemes, panicles or spikes.

Clarkia pulchella Pursh.
Annual, brittle herbs. Leaves alternate, narrow. Flowers showy.
Petals purple with long slender claws and 3-cleft. Sepals 4, reflexed.
Petals 4.

Epilobium Angustifolium L.
A plant, 0.5-1.5 meters high, with a showy raceme of purple flowers.
Leaves glabrous or nearly so, sometimes bright green on the upper surface, paler beneath. Fireweed.
Family - **UMBELLIFERAE**

Herbs commonly with hollow stems. Leaves mainly alternate; the petiole expanded or sheathing the base. Flowers small, in umbels, umbels compound. Calyx-tube adnate to the 2-celled. Petals 5, inserted on the margin of the calyx. Stamens 5, on the ovary. Ovary inferior; ovules 1 in each cavity.

**Leaves at least 6 inches across**  
**Flowers white**  
HERACLUM
H. lanatum

**Leaves small**  
**All leaves in a whorl near top of stem**  
**Leaves glaucous**  
**Leaves not in a whorl near top of stem**  
**Flowers white**  
**Flowers yellow**  
**Leaves ternately compound**  
**Leaves pinnately compound**  
**Plants 4-10 dm. high**  
**Foliage puberulent**  
CASCHELIA
C. macrocarpa

**Herculum lanatum**  
Kitch.

Tall stout perennials with large, ternately compound leaves. Large umbels of white flowers. Fruit somewhat flattened and fuzzy. Plants 3-5 feet tall, hairy or woolly in the upper parts. Petioles much dilated. Plants in wet soil. Called Cow Parsnip or Sacred Rhubarb.

**Aulopsis glaucum**  
(Nutt.) Coulter & Rose.

Plant 2-4 dm. high. Usually found in quite dry situations. Flowers small, white. The most conspicuous feature of the plant is the lack of basal leaves and the whorl of pinnately compound leaves at the top of the main stem. Stem covered at the base by a scariosus sheath.

**Cocswellia macrocarpa**  
(Nutt.) Jones.

Stemless or almost stemless, 1-3 dm. high, more or less fuzzy, much branched at the base. Leaves pinnately compound; segments pinnately incised. Involute of conspicuous, leaf-like linear bracts often united. Flowers white.

**Cocswellia triterata**  
(Pursh.) M.E. Jones.

Leaflets 5-10 cm. long linear, entire. Stems 30-30 cm. high, minutely puberulent, leaves 2 or 3 times divided, pale green, flowers yellow, fruit glabrous.

**Cocswellia montana**  
Jones.

Flowers yellow; pedicels 2-4 cm. long; involucres of distinct more or less purplish bractlets. Plants 5-20 cm. high; stemless or very short stamens. Stems smooth; without hairs. Leaves usually twice pinnate, the leaflets short-oblong, obtuse, much crowded.

**Leptotrichia multifida**  
Nutt.

Leaves finely dissected; umbels mostly without involucres. Flowers yellow or purple. A tall plant, glabrous, usually large pinnately compound leaves. Wild Dill.
Family - CORNACEAE

Trees or shrubs with simple, entire, mainly opposite leaves, no stipules, and flowers in cymes. Petals and stamens 4 upon the ovary. Calyx adherent to the 1-2 celled ovary.

Shrubs with red-purple stems
Low herb

Cornus stolonifera Kichx.

Shrub 1-3 m. high, branches bright red-purple, smooth. Flowers white, in open and flat spreading cymes. Leaves ovate, rounded at the base, abruptly short-pointed, roughish with straight hairs on both sides, whitish underneath, Western Dogwood.

Cornus canadensis L.

A low herb; stem simple, 1-2 dm. high. Leaves scarcely peltioloed, the upper crowded into a whorl of 6 or 4. Flowers greenish, in a close cluster which is surrounded by a large and showy 4-leaved, corolla-like, white or sometimes pinkish involucre. Bunchberry.

Family - VACCINIACEAE

Shrubs or shrubby plants. Leaves without stipules. Corolla united, 4 or 5 lobes. Stamens as many as or twice as many as the lobes, fastened below the ovary. Style single. Ovary 5-many celled.

A creeping or prostrate shrub

Flowers white or pink in clusters

An erect shrub

Leaves glabrous; about 1 m. high

Arctostaphylos uva-ursi (L.) Cronq.

Prostrate glabrous shrub; leaves ovate, very thick, nearly sessile, evergreen, entire; flowers white or pink, in small clusters; known as Kinnikinnick or Bearberry.

Vaccinium membranaceum Dougl.

Much branched shrub, usually about 60 cm. high; leaves thin, nearly sessile, finely toothed; flowers slender stalked; corolla 5-6 cm. long, white or pale pink, urn-shaped or bell-shaped, with 5 or 4 lobes, stamens 10 or 8, the anthers usually with two awns on the back. Tall Shortleberry or Huckleberry.

Family - PAPILLOMACEAE

Herbs; leaves simple, mostly entire; flowers regular, perfect, corolla of united petals, 4 or 8, usually cleft; stamens as many as and opposite the corolla lobes, inserted on the tube or base of the corolla. Ovary 1-celled with a free central placenta.

All leaves basal

Leaves finely pubescent

Dodecatheon Curtisii Cronq.

Perennials; leaves in basal rosettes; entire or nearly so; flowers solitary or in 2 or 3, nodding. Corolla lobes purple with yellow base, reflexed. Stamens united by their anthers and standing above the reflexed corolla. Called Shooting Star.
Family - FLORENTIACEAE

Hairs; sepals 5, nearly united; stamens 5, attached to the corolla tube; ovary 3-celled, usually with a 3 lobed stigma.

Leaves simple and entire

Perennial
Leaves narrow, sessile, corolla, salverform
Corolla white or bluish
ITLOX
P. Dourlasii
Leaves lanceolate, petioled, corolla funnel-form
COLLORTIA
C. debilis

Annual
Leaves linear
Leaves pinnate or lobed
Flowers tubular
With striking scarlet or pink flowers
GILIA
C. aggregata
Plants with white flowers
G. congesta
Flowers rotate or saucer shaped
PULCHERRIMUM
Plants tufted; flowers blue; white anthers;
P. pulcherrimum
Plants about 1 foot tall
Flowers blue, anthers yellow
P. occidentale

Phlox Dourlasii Hook.

Low matted perennials; leaves narrow, entire; flowers white or bluish, with a slender tube, mostly solitary and sessile at the ends of branches. Common in dry sandy soil. Phlox.

Colloria debilis (Wats.) Greene.

Corolla violet, about 15 mm. funnelform, the lobes oblong, stamens exerted. Plants 5-15 cm. high, decumbent, viscid-pubescent. Leaves crowded, petioled, puberulent. Upper leaves crowded but like the lower except in being sessile. A showy plant sometimes growing in spread out clumps in sandy and sunny situations.

Colloria linnaris E. H. Hook.

Corolla from lilac-purple to nearly white, very slender, tubular-funnelform, the tube minutely pubescent. Stems simple or branching, especially so as the plant ages. Plants 1-3 dm. high, flowers usually crowded in heads.

Gilia aggregata (Kursh.) G. Don.

Corolla showy, scarlet. Biennial, loosely pubescent, 30-60 cm. high, single or sparingly branched. Leaves pinnately parted; calyx glandular; stamens unequally inserted. Skyrocket.

Gilia congesta Hook.

Stems erect or spreading, 1-3 dm. high, from a tufted base, bearing single or few head-like cymes of flowers. Corollas white, salverform, lobes of the corolla nearly as long as the tube. Leaves with from 2-3 divisions or some of them entire, wooly or pubescent.
**Polononium pulcherrimum** Hook.

Flowers blue in loose cyms, anthers white. Plants tufted, minutely puberulent and viscid- glandular; stems rather slender, sparingly branched, 1-3 dm. high; leaflets 9-21, pinnate.

**Polononium occidentale** Greene.

Flowers blue with yellow anthers. Plants 8-10 dm. tall, not tufted; leaves pinnate, a little silvery on under side.

**Family - HYDROXYLLACEAE**

Stamens near the base of the corolla, alternate with its lobes. Styles 2, distinct or more or less completely united even to the stigmas. Ovary one celled.

| Leaves 1-2 inches broad, divided | HYDROXYLLA: |
| Flowers blue | H. capitatum |
| Leaves less than 1 inch broad | **PHACELIA*** |
| Leaves entire | **P. heterophylla** |
| Leaves pinnate | **P. Franklinii** |
| Leaves pinnately cleft | **P. linearis** |

**Hydrophyllum capitatum** Dougl.

Flowers crowded into ball-like head, below some of the upper leaves. Leaves and stems covered with minute white hairs. 1-2 dm. high. 1-several leaved. Leaves pinnately 5-7 parted or divided at the base. Corolla blue, only little longer than the calyx. Filament about twice as long as corolla. Style as long as stamens. Styles 2 lobed. Waterleaf.

**Phacelia heterophylla** Pursh.

3-5 dm. high. Pubescence of two kinds; a fine concenence and of more or less hirsute-hispid hairs. Leaves simple, or some of them with divergent lobes near the base; inflorescence hispid, spikes dense, corolla bluish, longer than the calyx lobes. Filaments much exserted, sparingly bearded. Scorpion Weed.

**Phacelia Franklinii** (R.Br.) Gray

Erect, 2-4 dm. high soft hirsute or pubescent. Lower leaves petioled and pinnately or somewhat bipinnately divided, the upper without petioles and less divided. Spikes crowded, more elongated in age; corolla pale blue or almost white. Ovules 40 or more. Seeds oval, minutely pitted in vertical lines.

**Phacelia linearis** (Pursh.) Holz.

Stems 1-3 dm. high, with soft or rough hairs. Leaves mostly without petioles, usually deeply cleft; corolla bright blue or sometimes white. Spikes or spike-like racemes with flowers usually on one side.
Family - DORCOPHYLLACEAE

Annual or perennial herbs, the smooth or hairy, often bristle-like plant; leaves entire; flowers regular; calyx of 5 partly united sepals; corolla 5-lobed; stamens 5, attached to the corolla-tube; ovary usually deeply 4-lobed.

- Corolla blue and tubular
  - Corolla-tube more than twice as long as the calyx
  - Corolla-greanish-yellow
  - Corolla-tube not longer than the calyx
  - Corolla white
    - Plants low, flowers in a narrow raceme
    - Flowers white with yellow throat
    - Plants taller, flowers in a panicle
    - Plants with stiff hairs

**Mertensia ciliata** (Torr.) Don.
The corolla tubular to funnelform. Plants smooth or with minutely fine soft hairs; alternate leaves; flowers crowded in panicle. The corolla tube 5 lobed; stamens inserted on the corolla tube; anthers within the flower. Ovary divided. Corolla tube more than twice the length of the calyx lobes.

**Lithophragma pilosum** Nutt.
Perennial, 25-30 cm. high, the stems forming dense clusters; hairy; leaves alternate, linear or lanceolate; 3-10 cm. long; flowers in leafy spikes. Corolla yellow, corolla tube not exceeding the calyx. Yellow luscoen.

**Crococarya flavovulata** A. Nels.
Perennial 15-30 cm. high, very hairy, stout, grayish. Leaves alternate, the basal somewhat stipulate; inflorescence long, narrow, leafy. Corolla with a yellow crown. Popcorn flower.

**Lappula cinerea** Piper.
Plants perennial, 10-30 cm. high, hairy; leaves linear or oblanceolate. Flowers white or yellowish. A graceful plant. Baguer-ticks
Family - LAMIATAE

Annual or perennial herbs, often with a strong odor. Stems 4-angled; leaves opposite, toothed; corolla usually very irregular and two lipped; stamens 2 or 4.

Calyx teeth 5, unequal
Stems stout, erect

Drocosiphon parviflorum Nutt.
Coarse, stout herbs 3-7 dm. high. Small blue flowers, the corolla scarcely exceeding the calyx. Flowers in bracteate terminal clusters. Calyx tubular, 15 nervèd. Corolla two-lipped, the upper erect. Flowers inconspicuous. Dragon Head.

Family - SCROPHULARIACEAE

Flowers regular and perfect. Calyx 5-lobed. Corolla sympetalous, more or less 5-lobed. Stamens 5, inserted on the tube and alternate with the lobes. Style and stigma single; the ovary mostly 2-celled and many-ovuled on a central placenta.

Corolla rotate
Climbing shrub
Corolla funniform
Petals purple-voined

Solanum dulcamara L.
Stem climbing or twining, 4-15 dm. long, leaf blades ovate, 3-10 cm. long, acute or acuminate. Calyx fleshy, its lobes triangular. Corolla blue or white. Bittersweet.

Hypoestes niger L.
Biennial. Stem viscid-villosus, 3-10 dm. high. Leaves oblong to ovate, minutely toothed or lobed, the upper clasping, viscid-villosous. Calyx campanulate, strongly veined. Corolla campanulate, lurid-yellowish, purple-voined, 2 cm. long. Grows in waste places.
Family - SCROPTULARIACEAE

Flowers irregular; calyx of 5 or 4 more or less united sepals; corolla usually 2-lipped; stamens usually 4 or 2, a 5th sterile one without an anther often present, attached to the tube of the corolla.

Leaves alternate
Bracts at the base of the flowers tinged red, pink or yellow, more conspicuous than the flowers and usually as long. Indian Paint Brush.
Bracts whitish or yellowish
Bracts scarlet or crimson
Bracts green, less conspicuous and usually much shorter than the flowers
Corolla none
Plant smooth or sparsely pubescent
Plant quite densely pubescent
Corolla yellow-orange

Leaves opposite
Leaves entire or toothed, calyx 5 lobed. Stamens 5 with 1 either sterile or rudimentary.
Annuals, plants 2-3 inches high, delicate
Corolla 5-7 mm. long, tube longer than the limb
Perennials, plants taller and sturdy
Corolla almost cylindrical, 1 cm. long or less
Corolla blue
Corolla yellow
Corolla funnel shaped (mouth wider than the throat). 1.5 mm. long or longer.
Inflorescence densely villous
Inflorescence not villous
Leaves shiny green smooth, ovate, toothed
Leaves grayish, oblong-ovate, entire

Castilleja pallasiana (Gray) Greene
Stems 1-2 dm. high, usually several from a woody perennial base. Leaves 3-parted into linear lobes, or the lower entire. Bracts similar to the leaves, the upper parts whitish or yellowish, lobed. Calyx deeply 2-cleft. Yellow Indian Paint Brush.

Castilleja hispida, Bentham
Stems 3-5 dm. high, hirsute-villous and puberulent. Very similar to the above except that the upper bracts are red. Red Indian Paint Brush.
Synthyris rubra A. Nels.
Fernielial herb with unbranched stems and mainly basal leaves. Flowers in a spike or raceme, no corolla. Plant reddish in appearance, smooth or sparingly pubescent. Kittentails

Synthyris wyomingensis (A. Nels.) Keller.
Stems puberulent or softly pubescent. 1-3 cm. high. Radical leaves petioled, broadly ovate to oblong, crenate-dentate, rounded or subcordate at the base. Stem leaves sessile. Corolla wanting; stamens conspicuous.

Linaria vulgaris Kill.
Fernielial, erect, 2-5 dm. high. Leaves alternate, very numerous, pale, linear or nearly so. Flowers in a terminal raceme, yellow, 2-3 cm. long.

Collinsia tenella (Pursh) Piper.
Small plant 7-15 cm. high. Leaves oblong to lanceolate, 1-2 cm. long, the lower opposite and petioled, the upper sessile; the floral often whorled. Flowers pedicelled, solitary or 2-5 in the upper parts, corolla 5-7 mm. long, blue or blue and white. Baby's Blue Eyes

Pentstemon procerus Doug.
Glabrous throughout; stems slender, 1-4 dm. high, leaves lanceolate, the lower ones petioled. The largest leaves at the middle of the stem, all usually entire. Flowers in 2-5 clusters; corollas 10-12 mm. long, bright blue or violet.

Pentstemon confertus Doug.
Corolla yellow or nearly white and otherwise very similar to the above.

Pentstemon erianthera Pursh.
Corolla bright blue, sometimes white. Plants puberulent below, glandular, villous and viscid above. Stem leafy 1-3 dm. high. Flowers almost sessile.

Pentstemon ovatus Dougl.
Stem 5-10 dm. high, more or less viscid above; basal leaves petioled; blades ovate 4-8 cm. long, dentate. Inflorescence a loose thyrsus; calyx somewhat viscid, 2-4 mm. long. Corolla nearly 2 cm. long, lower lip bearded in the throat; sterile stamen densely yellow woolly.

Pentstemon viridis Lenkoll.
Stems 1-3 dm. high, glabrous up to the inflorescence; leaves glabrous, glaucous, the lower petioled, blades 2-4 cm. long; the upper sterile, lanceolate or oblong. Corolla deep blue, 15 mm. long, funnelform; the lower lip slightly bearded. Sterile stamen yellow-bearded. The Pentstemon go by the common name of Beardtongue.
Family - FLATAGINACEAE

Stamens 4; flowers perfect. Leaves 5-9 nerved.

Plantago nitrochila A. Nels.
Smooth and sometimes pubescent. Leaves strongly ribbed, broad, abruptly narrowed into channelled petiole. Spike dense, sepals round-ovate; corolla glabrous; style exerted from unopened corolla. Lod ovoid, opened by a circular cut near the base. Common around waste ground.

Family - PLANTAGINACEAE

Herbs with opposite leaves connected with interposed stipules, or whorled and without stipules. Calyx adnate to the 3-4 celled ovary. Stamens as many as the lobes of the corolla and inserted on its tube. Ovary 1-10 celled; style simple or lobed.
Leaves whorled, without stipules
Leaves 3 nerved

Galium boreale L.
Erect, 3-5 dm. high, mostly smooth and glabrous, very leafy. Leaves in fours, 3 nerved, linear to broadly lanceolate. Flowers very numerous and collected in a terminal and full panicle. The uppermost leaves reduced to pairs of small oblong or oval bracts. Called Baby's Breath or Redstraw.

Family - CAPRIFOLIACEAE

Shrubs with opposite leaves; petals united, the corolla 5 lobed and in some 2 lipped; stamens 5 or sometimes 4, inserted on the corolla and alternate with its lobes.
Leaves palmately compound, flowers rotate
Leaves simple, corolla tubular

Sambucus melanocarpa A. Gray.
Shrub, 1-2 meters high, often forming large clumps, glabrous or nearly so; leaflets ovate to lanceolate, toothed; flowers sweet-scented, in dense cymes r-5 cm. broad; corolla creamy white, flat. Elderberry.

Lonicera utahensis S. Wats.
Shrub 1-2 meters high, glabrous. Flowers 2 together; corolla pale yellow, funnel-shaped, often 2 lipped. Leaves entire, broadly oval or rounded. Called Red Twinberry.

Lonicera pleurocarpa Rydb.
Leaves glabrous above, pubescent at least on the veins, the upper pair into one leaf with flower-stem coming thru its center. Flowers quite bunched, corolla yellow, changing to reddish; pubescent or puberulent without, pubescent within, 2-5 cm. long or less, 2 lipped. Style and stamens exerted.
Family - *CAMPANULACEAE*

Petal united. Stamens as many or fewer than the calyx lobes, on the ovary, anthers not united. Stamens alternate. Ovary inferior.

*Flowers bell-shaped*

*CAMPANULA*

*CAMPANULA rotundifolia* L.

Perennial, 10-40 cm. high, very slender, nearly glabrous, basal leaves ovate or heart-shaped, 1-3 cm. long, toothed, slender-petioled; stem leaves linear; flowers few, drooping, corolla bell-shaped, bluish purple. Called Harebell.

Family - *VALENIADEAE*

Herbs with opposite leaves an no stipules, and usually small perfect or polygamous flowers in corymbed or capitate cymes. Calyx-tube adnate to the ovary. Corolla tubular or funnelform, mostly 5-lobed. Stamens 1-4, inserted on the corolla tube. Ovary inferior, 1-3-celled, one of the cells containing a single suspended ovule, the others empty.

*VALENIA ANNUA* L.

Annual, slender, 10-30 cm. high, very slender, nearly glabrous, basal leaves entire, the short petiole wing-margined. Stem leaves 2 or 3 pairs, pinnately divided. Cyme dense and contracted. Corolla white or rose colored, funnelform with very short tube. Found in moist wooded hillsides. Calyx inrolled and cannot be seen except when the flower is dissected. Wild Heliotrope or Valerian.
Family - COMPOSITAE

Herbs or rarely shrubs; leaves alternate or opposite, simple or compound; flowers in heads, clustered on a receptacle, the head surrounded by an involucre of bracts; the inner flowers of the head (disk) with small tubular 5 lobed corolla; the outer flowers often with a narrow strap-shaped corolla (ray); fruit an achene, usually bearing at the summit a pappus (modified calyx) consisting of hairs and scales or awns.

disc flower -- corolla --- ray or strap flower -- pappus -- involucre

A. Heads with ray flowers

All the flowers of the head strap-shaped
Leaves not all basal
Involutural bracts exceeding ray flowers
Flowers yellow
Involutural bracts not exceeding ray flowers
Leaves green, somewhat glaucous
Leaves tomentose
Leaves all basal
Terminal lobe of leaves large
Only the outer flowers strap-shaped
Pappus none
Flowers yellow
Leaves entire or somewhat toothed
Flowers white or cream-white
Scented perennial herbs
Pappus present
Pappus of hairs
Ray flowers yellow
Heads solitary or in coryms
Leaves opposite
Heart or arrowshaped leaves
No heart shaped leaves
Plants pubescent
Plants sparingly hirsute
Leaves alternate
Involute of equal bracts
Plants 1-3 dm. high
Plants 3-7 dm. high
Involute of unequal bracts
Plants soft hirsute
Ray flowers not yellow
Petals narrow and numerous
Leaves compound
Leaves simple
Pappus of scales
Involute united into a cup
Plants quite wooly
Involute not united to form a cup
Disc flowers often brown

AA. Heads without rays (next page)
AA. Heads without ray flowers

Flowers of the heads all alike and perfect

Plants sticky
With flesh colored flowers
Plants not sticky
Plants aromatic
Flowers inconspicuous
Plants not aromatic
Leaves fan-shaped in outline
Flowers not all perfect and alike
Plants usually with clusters of leaves at the base, often with runners
Plants without clusters of basal leaves or runners
Broader leaves indistinctly 3-nerved

Tragopogon pratensis L.
Perennial herbs with alternate or all radical leaves. Leaves long linear; stems with milky juice. Flowers lemon yellow, large; Common in open dry fields. Oyster plant, or Salsify.

Crepis flavea T. & G.
Perennials with tall, graceful stems; flowers yellow, few or numerous; achene with short or no beak; pappus of soft white bristles. Basal leaves long, narrow, sometimes dentate or pinnatifid. Stem leaves 1 or 2, Plants 2-3 dm. high.

Crepis occidentalis Nutt.
Stem stout, usually several from a strong perennial root, branching above, the whole plant 1-3 dm. high; herbage tomentose and often glandular above. Leaves thickish, toothed or deeply pinnatifid. Rays yellow; the pustule of the involucre with black hairs gland-tipped. Found in dry open ground.

Taraxacum officinale Weber.
Root thick and long, bitter. Leaves irregularly dentate to pinnatifid up to 3 dm. long. The common dandelion which has been brought from Europe.

Balsamorrhiza sagittata (Pursh) Nutt.
An abundant and showy plant on dry open hillside. Perennial, 30-60 cm. high, densely covered with fine matted hairs; root very thick and resinous; leaves arrow shaped or heart shaped, erect 10-30 cm. long, long stalked, entire or nearly so; flower stalk leafless bearing a few showy heads; involucre 2.5 cm. broad, yellow rays 2-3 cm. long. Balsamroot.

Achillea millefolium L.
Perennial; 15-60 cm. high, with a strong odor; silky-hairy. Leaves alternate, also in basal tufts, 3-10 cm. long, feathery-pinnate, divided 2 or 3 times into numerous fine lobes. Heads 4-5 mm. high, in flat-topped clusters, the bracts with brown borders; rays white, pappus none. Yarrow.
**Arnica Rhydberrii** Greene.

Generally 2-4 dm. high, sparingly hirsute, usually with 3 or 4 pairs of stem leaves, and 3 heads; basal leaves ovate-lanceolate with winged petioles. Stem leaves similar, sessile, with a broad clasping, sometimes slightly dilated base. Plants usually growing in clumps on dry mountain sides.

**Arnica-Fulgens** Pursh.

Pubescent, hirsute, or at the summit villous; stems 2-4 dm. high, not branched; with but one head to the stem. Leaves thickish, narrowly oblong to lanceolate, the uppermost linear, entire or denticulate, 3-nerved. Heads conspicuously radiate, solitary or few, long-petioled.

**Arnica cordifolia** Hook.

Stem low, generally 1-2 dm. high, more or less hirsute, the upper portion somewhat woolly and glandular. Leaves ovate to heart-shaped, the basal stemmed, stem leaves 1-2 pairs, very short petioled or sessile. Heads about 2 cm. high.

**Senecio camus** Hook.

Perennial, densely white-villous to the inflorescence; stems slender, usually tufted, 1-3 dm. high; basal leaves spatulate to oval, entire; heads several to numerous, yellow, 10-14 broad. Rays 6-12. Wooly Ragweed.

**Senecio planteosum** Rhydb.

Plants 2-7 dm. high, most of the leaves basal, plant somewhat densely woolly; lower leaves with a distinct wing, rather thick and often somewhat planteosous; upper stem leaves reduced, lanceolate, and sessile; cyme coromiform; heads about 1 cm. high; bracts with conspicuous black tips; rays about 8 mm. long.

**Chrysopsis villosa** Nutt.

Perennial herbs with alternate sessile leaves. Flowers yellow, compound or solitary at the ends of branches. Stems stoutish, usually freely branched, 2-5 dm. high. Plants pubescent and with some long villous hairs. Rays golden-yellow about 10-12 mm. long. Golden Aster.

**Gaulardia aristata** Pursh.

Perennial, 30-50 cm. high, hairy; leaves oblanceolate, entire or more commonly toothed or lobed; heads long-stalked, the involucre 2-3 cm. broad, the rays 3-5 cm. broad, 3-lobed yellow, often with purple at the base.

**Eriophorum canescens** (H. & A). T. & G.

Heads with a great many, fine blue or whitish rays. Plants with long spreading white hairs; stems several from the same root, 1-2 dm. high; slender, leafy, branching above, the branches terminating in solitary heads. Leaves narrowly linear, elongated, entire, attenuate at the base, the lowermost tapering into a slender petiole. Fleabane.

**Eriophorum compositus** Pursh.

Plants hirsute to glabrate and more or less viscid; stem short, densely leafy; leaves fan-shaped in outline the 3-5 ternately divided into narrow lobes. Rays white, sometimes purplish and sometimes absent.
Erityllum lanatum (Pursh.) Forbes.
A showy plant usually growing in clumps on dry hillside. Plants 2-4 dm. high, leaves pinnately lobed and quite woolly on the under side. Leaves alternate. Involucres of one series of bracts which are partly united to form a cup. Yellow Pearly Daisy.

Chenopodium douglasii M. & A.
Herbs with alternate mostly pinnately dissected leaves. Hoods solitaire or cymose and flesh colored flowers. Plants somewhat canescent or woolly and at least the heads somewhat sticky. Plants growing in dry poor soil. Morning Bride.

Matricaria matricarioides (Less) Porter.

ANTHARIA
Perennials, usually densely woolly, often with long or short runners. Leaves alternate, usually forming rosettes. Heads without ray flowers, in corymbs or racemes, the pistillate and staminate flowers in separate plants. Achenes with copious pappus of fine white bristles. Pussy-toes.
Leaves long, 30 mm. or longer
Leaves small, 5-25 mm. long
Tips of involucral bracts rose-colored
Heads small, 4-6 mm. long
Tips of the involucrum brown

Anaphalis subalpina (Gray.) Rydb.
Perennial; 20-30 cm. high; leaves alternate, linear to oblong, 3-6 cm. long, entire, white woolly, sometimes becoming green on the upper surface. Heads 6-7 mm. high in a close or dense cluster. Flowers yellowish; pappus of slender bristles. Heads with usually perfect and imperfect flowers. Pearly Everlasting.

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GLOSSARY

A. (a prefix, meaning without)
Acaulescent. Apparently stemless; the stem proper being very short or underground.

Achene. A small, hard, dry, 1-seeded fruit, indehiscent.

Accuminate. Narrowed to a point.

Acute. Sharp-pointed.

Adnate. United in growth.

Adherent. Having parts united.

Alternate. (Leaves branches etc.) Occurring singly at the nodes.

Angiosperm. A great group of plants with ovules and seeds enclosed in an ovary.

Anther. The part of the stamen that contains the pollen.

Apetalous. A flower without petals.

Appressed. Lying close and flat.

Appendaged. An external organ or part.


Axil. The upper angle between the leaf and the stem.

Axillary. Occurring in an axil.

Barbed. Finished with rigid points or short bristles.

Beaked. Ending in a prolonged narrow tip.

Bearded. With long or stiff hairs of any sort.

Berry. A fruit pulpy or juicy throughout.

Bi. Two or twice, in compounds.

Biennial. Of two years duration.

Bifid. Two-clefted to about the middle.

Bisect. In general, the leaves of an inflorescence, more or less different from ordinary leaves; especially, the small leaf or scale in the axil of which a flower or its pedicel stands.

Bulb. A leaf-bud with fleshy scales, usually underground.

Calyx. The outer set of the floral envelopes.

Campanulate. Bell-shaped.

Canescent. Grayish-white; hoary, usually because the surface is covered with fine white hairs.

Capillary. Hair-like in form, as fine as hair.

Capitate. Shaped like a head; collected into a head.

Capsule. A pod; any dry dehiscent seed vessel.

Carpel. The unit of structure of the pistil, which may consist of a single carpel or of several carpels.

Catkin. A scaly deciduous spike of flowers.

Caudate. Tailed or tail-pointed.

Caudex. The persistent base of an otherwise annual herbaceous stem.

Caulodendron. Having an obvious stem.

Cauline. Of or belonging to the stem.

Chaff. The small membranous scales or bracts on the receptacle of the Composite; the glumes of grasses etc.

Ciliate. Margin of hairs.

Cinereous. The color of ashes.

Claw. The narrow or stalk-like base of some petals.

Compound. Made up of many parts.
Compressed. Flattened on two opposite sides.
Confluent. Blended into one or running together.
Cordate. Heart-shaped.
Cor. A solid bulb, like that of the Crocus.
Corolla. All the petals taken together.
Corymb. A flat or convex flower cluster, with branches arising at different levels. Central flowers blooming last.
Copious. Abundant.
Crenate. With rounded teeth.
Cyse. Like a corymb, but with the central flowers blooming first.
Cymose. Like a cyme.
Deciduous. Falling off.
Dehiscent. The natural opening of a closed vessel (pod or anther etc.)
Dentate. Toothed.
Diadelphous. United by filaments into two sets.
Diandrous. Having two anthers.
Dichotomous. Two forked.
Digitate. Finger-like. Where all the leaflets of a compound leaf are all borne on the apex of the petiole.
Dimorphous. Of two forms.
 Dioecious. With stamens and pistils in separate flowers on different plants.
Disk. The face of any flat body. The central region of a head of flowers as opposed to the ray or narrow flowers.
Dissected. Cut deeply into many lobes or divisions.
Drupe. A stone-fruit.
Eared. Ear-like appendages.
Emarginate. Notched at the summit.
Entire. The margin not at all toothed, notched or divided.
Epicarpous. Upon the ovary.
Exerted. Protruding out of, as the stamens out of the corolla.
Fertile. Fruit-bearing, or capable of producing fruit; also applied to the anthers when they bear pollen.
Filament. The stalk of the stamen; also any thread-shaped appendage.
Filiform. Thread-shaped.
Follicose. In the nature of a leaf.
Free. Not united with other parts.
Fruit. The seed-bearing structure.
Calyx. The hooded or helmet-shaped portion of a p.dianth, as the upper sepal of Aconitum, and the upper lip of some corollas.
Camopetalous. With united petals.
Camosepalous. With united sepals.
Cibous. More swollen on one side than the other.
Clabrate. Smooth, not having any hairs.
Cland. A secreteing surface or structure.
Clausus. Covered with a fine white powder that rubs off.
Gynosperm. The group of plants with seeds or ovules not inclosed.
Habitat. The situation in which a plant grows in the wild state.
Herb. A plant with no persistent woody stem above ground.
Herbaceous. With the texture of a common herb.

Hermaphrodite. Having both stamens and pistils.

Hirsute. Hairy with stiffish hairs.

Hispid. " " " "

Hypogynous. Inserted under the pistil.

Inbricate. Overlapping like the shingles of a house.

Imperfect flowers. Having only one sex organ.

Incised. Cut rather deeply.

Imbricate. Not splitting open.

Inflorescence. The arrangement of flowers on the stem; the cluster as a whole.

Internode. The part on the stem between the two nodes.

Involucel. A whorl or set of bracts around the flower, umbel or head.

Involucel. An involucel of the second order.

Inserted. Attached to or growing out of.

Irregular. The corresponding floral parts not all alike.

Interposed. Placed between.

Labiata. Two-lipped.

Laminate. Wooly, clothed with long and soft entangled hairs.

Lanceolate. Tapering to a point and often rounding at the bottom.

Legume. A simple pod that opens into two pieces as a pea or bean.

Lateral. Side.

Linob. The blade of a leaf, petal, etc.

Linear. Narrow and flat, the sides parallel.

Lip. The principal lobes of a two parted corolla or calyx.

Lobes. Any projection or division, especially a rounded one, on a leaf etc.

Lyrate. The end lobe of the leaf large.

Lembranous. Thin and more or less translucent.

Midrib. The middle or main rib or vein of a leaf.

Monodelphous. Stamens united by their filaments into one set.

Monocious. With stamens and pistils in separate flowers on the same plant.

Node. The joints on a stem.

Oblanceolate. Lance-shaped with the tapering point downwards.

Oblong. Two or three times as long as broad.

Obovate. The broad end upward.

Obtuse. Blunt or rounded at the end.

Opposite. Applied to leaves and branches when an opposing pair occurs.

at the node; to stamens when directly in front of the petals.

Ovate. Shaped like an egg with the broader side downward.

Ovule. The egg.

Palmate. Applied to a leaf, the parts of which spread out like a hand from a common point at the apex.

Panicle. An open inflorescence like a roo-me but more or less compound.

Parietal. Borne on the inner surface of an ovary.

Pappus. The modified calyx of the composites.

Pedicel. The stalk of each particular flower of a cluster.

Peduncle. The flower stalk.

Perennial. Lasting from year to year.

Perfect flower. Having both stamens and pistils.

Perfoliate. A leaf thru which the stem appears to pass.

Perianth. The floral envelopes especially when the calyx and corolla cannot be distinguished. Where one part of the perianth is missing, we agree that the missing parts are the petals.
Ferigynous. On a rim or cup surrounding the pistil or pistils.
Persistent. Remaining longer than common with such parts.
Petiole. The leaf-stalk.
Imitate. Many leaflets branching off from the midrib.
Pistil. The seed bearing organ.
Placenta. The surface of the ovary to which the eggs are attached.
Flunose. Feathery.
Polygamous. Having some perfect, some staminate, some pistillate flowers on the same or on different individuals.
Lubulent. Covered with fine short, almost unseen down.
Lubescent. Fine soft hairs.
Punctate. Dotted.
Fungent. Very hard and sharp pointed. Spicy or aromatic.
Raceme, racemose. A flower cluster with one-flowered pedicels along the stem.
Radical. Belonging to the root.
Ray. The marginal flower in a head.
Receptacle. The top of the peduncle that bears the flower.
Reflexed. Bent outwards or backwards.
Regular. When all the parts in each set of the flower are similar.
Rhizome. A rootstock.
Rootstocks. A rootlike stem.
Rudimentary. Imperfectly developed.
Runner. A slender and prostrate branch rooting at the end or joints.
Sacc. Any enclosed membrane or a deep purse-shaped cavity.
Sagittate. Arrow-shaped.
Scale. A reduced leaf-like body which is not green.
Scape. A naked peduncle rising from the ground.
Serrate. With margin cut into teeth pointing forwards.
Sessile. Without a stalk.
Scarious. Thin, not green.
Sheath. The lower part of the leaf that may wrap around the stem.
Simple. Of one piece.
Spike. Like a raceme but with flowers sessile.
Stamen. The pollen bearing organ.
Sterile. Imperfect or will not produce.
Stigma. The upper part of the pistil that receives the pollen.
Stipules. The appendages on each side of the base of certain leaves.
Striate. Marked with slender longitudinal grooves or channels.
Stolons. Runners.
Style. The elongation of the ovary that bears the stigma.
Stipe. The stalk-like support of the pistil.
Subtended. Below the parts.
Superior. When the ovary is above the attachment of the other parts.
Sympetalous. With united petals.
Taproot. A stout verticle root.
Tawney. Dull yellowish, tinged with brown.
Tenacril. A thread shaped structure used for climbing.
Terminal. At the end.
Ternate. In three's, as in leaf divisions.
Throat. The opening of a gamopetalous flower.
Thyrse. A compact and pyramidal panicle.
Tomentose. Clothed with matted and wooly hairs.
Umbel. The umbrella like form of inflorescence.
Valve. One of the pieces into which a pod splits.
Venation. The arrangement of the veins in a leaf.
Villous. Shaggy with long soft hairs.
Viscid. Sticky.
Whorled. Circular arrangement about some part.