Spring Flora
Lecture List 4

Sunflower Family: Asteraceae

Asteraceae (Compositae)

- Sunflower Family – 1535 genera / 23,000 spp.
- Second largest plant family (after orchids)
- 10% of flowering plants
- Cosmopolitan – esp. in open, dry habitats
- Leaves simple, but often deeply lobed, dissected
- Inflorescence in head (capitulum), subtended by involucre of bracts (phyllaries)

Floral Features

- Sepals modified into persistent pappus
  - Scales
  - Awns
  - Bristles
  - simple hairlike
  - plumose
- Petals connate, 2 types
  - radial (disk or filiform)
  - bilateral (ligulate of various types)
Floral Features

- Stamens connate and adnate to corolla
- Staminal tube releases pollen to inside
- Elongating style pushes pollen out of tube = Plunger Pollination
- Stigma lobes open after pollen removed = protandrous – enforces outcrossing
- 2 carpellate gynoecium (2 stigma lobes), but only one basal ovule
- Fruit an achene, often with attached pappus

Sunflower head

Inflorescence Types

3 Main types of heads, combos of 2 flower types
1. Discoid Head – perfect disk flowers only
2. Radiate Head – Female peripheral ray (ligulate) flowers and interior perfect disk flowers
3. Ligulate Head – composed completely of perfect, ligulate flowers
Aster –
Sterile ray
And perfect
Disk florets;
Radiate Head

Taraxacum and Cichorium - Ligulate

Cirsium and Cynaria - Discoid
Identification of Asteraceae

• Key Features to check:
  – Number, type, and arrangement of phyllaries
  – Types of flowers and arrangement in inflors.
  – Petal type in disk and ray flowers
  – Type of pappus
  – Type of style and stigma (branching, etc.)

Common or Western Yarrow, Milfoil (N)

*Achillea millefolium* L. (*A. lanulosa* Nutt.)

**Habit:** Perennial herb, arising singly or as a loose cluster, knee high; stems have dense wooly hairs; flowers April to July, and reproduces from seeds and rhizomes.

**Habitat:** NATIVE; Occurs in prairies, sagebrush plains, pastures, roadsides, and disturbed sites.

**Uses:** styptic (stops bleeding), taken internally or externally. *Stops itch* of bites and stings. Aromatic – insect repellent. *Soothing teas* for colds and stomach aches

Common Yarrow, Milfoil (N)

*Achillea millefolium* L.

**Leaves:** Alternate, simple, fern-like (finely divided)

**Flowers:** Flowers radiate, 5 white to pink ray flowers, with ~30 yellow disc flowers. They are borne in flat-topped inflorescences.

**Fruit:** a flattened, hairless achene
Low Pussy-toes (N)

*Antennaria dimorpha* (Nutt.) T. & G

A low-growing, perennial, herb
Forms mats or carpets
flower heads are solitary on leafy stems
Separate male and female plants
Leaves densely white-hairy
Flower buds are fuzzy, resemble a cats paw
Often produce seed asexually
Grows with sagebrush – dry foothills to montane

Western Mugwort, Louisiana Sage, Prairie Sage, Silver Sage, (N)

*Artemisia ludoviciana* Nutt.

Habit: Aromatic, Knee high, erect, perennial herb (non-woody), covered in white-wooly hairs, from creeping rhizomes
Habitat: Native; dry, open sites

Western Mugwort, Louisiana Sage, Silver Sage

Leaves: Alternate:
Several forms on same plant: lance-shaped on upper parts, basal leaves usually lobed with pointed tips; leaves are densely hairy
Flower: small discoid heads of small, inconspicuous flowers, heads numerous with dense white hairs.
Fruit: a pappus free achene
Western Mugwort, Louisiana Sage, Silver Sage

**Uses:** Widely used medicinally and ceremonially; Sage bundles burned as incense; Brewed as tea for cold and fever and as poultices to treat skin ailments; aromatic – used as a deodorant; used as snuff for nosebleeds and headaches. Closely related to tarragon (A. dracunculus) – a culinary herb.

Big Sage, Big Sagebrush (N)

*Artemisia tridentata* Nutt.

**Habit:** Perennial, aromatic, evergreen, shrub with a rounded crown, 3 to 10 feet tall. Highly branched above short trunk. Flowers August to September. Reproduces from seed.

**Habitat:** Native; occurs in valleys, basins, and mountain slopes, at elevations between 2,500 and 10,000 feet.

**Uses:** Leaves produce aromatic oils – camphor; seeds are edible; leaves said to aid digestion. Poor forage for ungulates and livestock (benefits from overgrazing). Does not survive fire.

Big Sage, Big Sagebrush

**Leaves:** Alternate, simple; gray-green color, covered with dense, silver hairs. Spatula-shaped (narrower at base); tip is usually bluntly 3-lobed. Two crops per year (spring and fall). Fall leaves smaller, thicker, cold tolerant.

**Flowers:** Heads of 5-8 small inconspicuous yellow-brown discoid flowers; in dense linear clusters, forming in the fall.

**Fruit/Seed:** A resinous, brown, flattened achene with no pappus.
Threetip Sage, Cut-leaf Sage (N)
*Artemisa tripartita* Rydb.

**Habit:** Wintergreen shrub, about 2 ft tall; smaller and not as woody as Big Sage

**Habitat:** Native, in similar habitats with Big Sage, often in moister or more favorable sites and slightly higher elevations.

More fire-tolerant than Big Sage - sprouts freely after fire.

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Threetip Sage, Cut-leaf Sage (N)

**Leaves:** narrowly 3-lobed (fingered); wedge-shaped; with the leaf tips long and linear

**Flowers:** Yellow, in discoid heads; narrower inflorescence than Big Sage

**Fruits/seeds:** achenes lacking pappus

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Hooker’s Balsamroot (N)
*Balsamorrhiza hookeri* Nutt.

Low growing perennial from a large, deep root

Root aromatic (balsam)

Leaves deeply pinnately divided w/ stiff, straight hairs and glands

Small, radiate flower heads from naked stalks

Grows on dry, rocky sites in the plains and foothills

Important food source for many native peoples

All parts edible – especially young leaves, stems and steamed roots
Arrowleaf Balsamroot (N)
*Balsamorhiza sagittata* (Pursh) Nutt.

- Large, perennial, herb
- Several soft-hairy stems branching from base
- Large, aromatic taproot
- Large leaves arrowhead shaped
- Several large flowers from naked stalks
- Edible roots, stems, leaves, flowers and seeds
- Dry, rocky sites

Arrowleaf Balsamroot (N)
*Balsamorhiza sagittata* (Pursh) Nutt.

Common, Rubber, or Gray Rabbitbrush (N)
*Ericameria nauseosus* (Pall. ex Pursh) G.L. Neesom & Baird

**Habit:** perennial, deciduous shrub (<1 m), stems rubbery, densely covered in grey, felt-like hairs; many branched, with a flat-topped growth form

**Habitat:** Native; favors sunny, open sites throughout a wide variety of habitats; particularly common on disturbed sites.

Rubber rabbitbrush is cold hardy, and tolerant of both moisture and salt stress; it exhibits a number of adaptations for surviving in an arid environment. One of these is that leaves and stems are covered with a felt-like layer of hairs that insulate the plant and reduce transpiration.
Gray Rabbitbrush (N)
_Ericameria nauseosus_ (Pall. ex Pursh) G.L. Neesom & Baird

- **Leaves**
  - Alternate, linear to spatula shaped blades with entire margins. The leaves are 1 to 3 nerved.
  - Grass like and not twisted.
- **Stems**
  - Twigs are erect, flexible (rubbery), yellowish-green, and covered with a dense felt-like covering.
  - Trunk is gray-brown with small cracks. The bark is fibrous and somewhat shreddy.

Gray Rabbit-brush (N)
_Ericameria nauseosus_ (Pall. ex Pursh) G.L. Neesom & Baird

- **Uses**: American Indians made chewing gum from pulverized wood and bark.
- It was also used as tea, cough syrup, yellow dye, and for chest pains.
- Small commercial source for rubber extraction, and was studied extensively during World War II as a substitute for commercial rubber.

Green or Douglas Rabbitbrush (N)
_Chrysothamnus viscidiflorus_ (Hook.) Nutt.

**Habit**: Woody perennial shrub; stems not hairy

**Habitat**: Native;
Grows in dry, open sites in the plains, foothills and montane zones; often grows with sagebrush and grey rabbit-brush.
Green Rabbit-brush (N)

*Chrysothamnus viscidiflorus* (Hook.) Nutt.

**Leaves:** Alternate, linear, and with at least one twist
**Stems:** Brittle, hairless or only slightly hairy, with brown bark
**Flowers:** Heads strictly discoid, small, yellow heads of 5 disc florets, in dense clusters at branch tips
**Fruits/seeds:** Hairy, linear achenes, pappus of white hairs

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Canada Thistle, Creeping Thistle (I)

*Cirsium arvense* (L.) Scop.

Introduced, perennial, herb
Noxious weed, from a thick rhizome; very hard to eradicate
Leaves alternate, sessile, divided into spiny-tipped irregular lobes
Many small purple flowers
Several rows of overlapping phyllaries in urn-shaped involucre
Plant of disturbed areas

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Elk Thistle, Meadow Thistle (N)

*Cirsium scariosum* Nutt.

Native, perennial, herb
2-4 ft tall
Stems and foliage pale green, with thin cobwebby hairs
Many big discoid heads down among the leaves
Lavender to white flowers
Leaves deeply indented w/ narrow spine-tipped lobes
Moist, meadow habitats
(I) Bull Thistle, Spear Thistle, Common Thistle  
*Cirsium vulgare* (Savi) Tenore

- Weedy, introduced, biennial herb
- Up to 5 ft tall or more from a taproot
- Many spreading branches
- Leaves spiny above, hairy below, deeply divided, spine-tipped
- Leaf continues as "wings" along stem
- Large purple heads (discoid)
- Involucral bracts narrow, spine-tipped
- Pastures, prairies, disturbed sites, waste ground, roadsides, railroads.

(N) Long-leaved Hawksbeard, Tapertip Hawksbeard  
*Crepis acuminata* Nutt.

- Native, perennial, herb
- Stems and leaves with milky sap
- Leaves mostly basal, with long, tapered point; clasping
- Small ligulate flower heads w/ single row of phyllaries
- Grows with sagebrush

(N) Daisy, Fleabane, Erigeron  
*Erigeron* spp.

- Native, annual and perennial herbs
- Daisies bloom in the spring; Asters bloom in the fall
- Leaves highly variable, mostly basal
- Ray flowers are white/blue/purple; disk flowers are yellow
- Many narrow ray fls
- One row of phyllaries; green (>1 row in asters)
- Typically in moist, open or wooded sites
Butterweed, Ragwort, Groundsel

Many species of annual, biennial, and perennial herbs
Many small, yellow heads, with few or no ray flowers, many disc flowers
Single row of phyllaries with shorter row of dark-tipped bracts at base
Leaves mostly basal, pinnately lobed/toothed
Can be toxic to livestock

Butterweed, Ragwort, Groundsel

Most species develop characteristic fluffy grey or white parachute-like seed heads (pappus)
These resembled an old man's beard
The botanical name Senecio, derived from the Latin for old man 'Senex'.
Their common name, Groundsel, came from ‘Grundeswyle’, Latin for ‘earth glutton’. It reflects upon the ability of its wind-blown seed to germinate freely, enabling them to act as pioneering colonisers

Old-man-in-the-spring, Common Groundsel

Introduced, biennial to annual weed
6 to 18 inches tall
Leaves are green and shiny, alternate, irregularly toothed
Disk flowers only (no ray flowers)
Bracts have black dots on tips
Old-man-in-the-spring, Common Groundsel
*Senecio vulgaris* L.

Habit: Perennial, cool season herb; erect stems contain a bitter, milky-white juice, from a fleshy, deep taproot; flowers April to October

Habitat: It most commonly occurs in disturbed areas; Dandelion can reproduce vegetatively by sprouting from the caudex after disturbance

Uses: Eaten in salads, cooked vegetable, roots can be cooked or used in salads, and flower petals produce a highly esteemed, delicately flavored, pale yellow wine

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I Common Dandelion
*Taraxacum officinale* Weber

Habit: Perennial, cool season herb; erect stems contain a bitter, milky-white juice, from a fleshy, deep taproot; flowers April to October

Habitat: It most commonly occurs in disturbed areas; Dandelion can reproduce vegetatively by sprouting from the caudex after disturbance

Uses: Eaten in salads, cooked vegetable, roots can be cooked or used in salads, and flower petals produce a highly esteemed, delicately flavored, pale yellow wine

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(I) Common Dandelion
*Taraxacum officinale* Weber

Leaves: Basal, deeply lobed, 2 to 16 inches long, and forming a rosette. Surfaces of leaves can be lightly pubescent

Flowers: All ray flowers (ligulate); Yellow; at the tip of a leafless stem. It becomes a ball of white silky bristles at maturity

Fruits/Seeds: Seeds of dandelion are topped by a parachute of bristles that aid in dispersal
(N) Gray Horse-brush, Spineless Horse-brush
*Tetradymia canescens* DC.

Small, native shrub
Blooms in the spring
Resembles sagebrush:
woolly, grey linear leaves
(not tridentate)
Narrow, linear leaves
sometimes modified into
spines
Stems brittle, usually whitish
with short, dense, woolly
hairs
Discoid heads with 4-6
bracts
Flowers bright yellow, lobed
Dry slopes 4000'-10,000';
sagebrush scrub,pinyon-
juniper woodland, pine
forest
Non-palatable, highly
poisonous

(N) Northern Wyethia, Northern Mule’s-ears
*Wyethia amplexicaulis* Nutt.

Native, perennial herb
Erect stems w/ 1-
several, large flower
heads
Basal leaves, elongate,
smooth and shiny, stiff
and resinous
Venation is very
prominent
Flower heads large w/
8-21 wide yellow rays
Several overlapping
rows of involucral
bracts
Preferred deer browse

(N) White-rayed Wyethia, White-head
*Wyethia* White-head Mule’s-ears
*Wyethia helianthoides* Nutt.

Native, perennial herb
Leaves mostly
basal, elliptic,
entire
Flowers mostly
solitary w/ 13-21
large, white rays
Moist, open
meadows
Syringa, Mockorange
Scientific name: *Philadelphus lewisi* Pursh
Hydrangea Family (Hydrangeaceae)

Idaho State Flower:
Scientific name & two common names required whenever this plant appears on exam

Discovered on Lewis & Clark Expedition in Montana

Habit: Erect, deciduous, woody shrub; 3 1/2 - 10' tall, loose spreading branches

Habitat: hillsides/talus slopes from sagebrush desert to Ponderosa Pine and Douglas Fir forests, esp. N. Idaho

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Syringa, Mockorange

Leaves: opposite with 3 main veins from base, slightly roughened and fringed with short hairs

Flowers: fragrant (citrus), white, 4-petals, many stamens, forming clusters at branch tips, blooms May-June

Fruits: woody capsules

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Syringa, Mockorange

• Uses:
  – Leaves were crushed and mixed with pitch or bear grease to make salves used for treating sores and swellings. Teas made to treat sore chests
  – Stiff wood was used to make small items such as combs, knitting needles, basket rims, and cradle hoods
  – Several cultivars available for attractive, fragrant landscape additions