

How to use the guide

I hope that the photo-guide will prove useful as a supplement to other guides that are organized in other ways— whether by flower colour, by life form (tree, shrub, herb), or by botanical group (Families), etc.

In that guide, **local** plant species are ordered according to the sequence in which they typically begin their main flowering **in the Kamloops region**— thus, it is a *by-the-season* guide, and It may be used as follows:

1. by simply scrolling through its pages (each page displays a single species, showing leaves, flowers and fruits);
2. by text-searching for a plant's name, whether ******vernacular or scientific, whether of species, or of family;
3. by working through the informal key (*pp. 2-8 of this document*) to the various types of **flower structure**, thereby tentatively ID-ing plants down to a few possible **families**, then check these family IDs against the character chart (*pp. 10-15 of this document*), and finally searching through family members in the main guide, using the text-search function, as in **2**.

******the problem with vernacular, or 'common' names is that many plants have several different ones! That's one of the reasons I prefer scientific names, since they are unique, and the same everywhere.

Types of flower structure

Very important in plant identification is the **structure of their flowers**.

The form of a plant's stems and leaves can also be of further help in diagnosis.

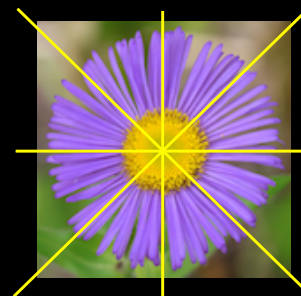
Comparing your unidentified plant with the characteristics of nine groups of flower and/or inflorescence structure shown in the next pages should permit a focus down onto a few families to which that plant might belong. Checking then with other characteristics of these families (*pp. 10-15, below*) may narrow your search.

Once such potential family groups are identified, a text search for them among the photo-guide's pages will take you, in turn, to each member of that family, for comparison with your plant specimens. Vernacular names of local plants in the families named in this simple key are given in the list that immediately follows the key.

Some families (shown with *****) include species that differ significantly in flower structure; such families will therefore appear more than once in this simple key. In other words, not all species of some families belong in a single flower-structure group.

a basic characteristic of flowers is their **symmetry**: either **RADIAL**, when there are **many** ways to cut the flower into equal halves (**actinomorphic**), or **BILATERAL**, when there is only a **single** way to do that (**zygomorphic**)

RADIAL
many
planes
for equal
halves



actinomorphic

BILATERAL
a single
plane
for equal
halves



zygomorphic

Petals and stamens usually three in number, or multiples thereof. Leaves usually oval or linear, with **parallel** veins (like those of grasses): if so, the plant is in one of seven families in the

1 Monocotyledon group
(a.k.a. 'monocots').

In the families *Alismataceae*, *Amaryllidaceae*, *Asparagaceae*, *Iridaceae*, *Liliaceae*, and *Melanthiaceae*, flowers show a **simple, open structure** and are **radially symmetrical**.

But species in the **monocot** family *Orchidaceae* often have flowers with a **complex structure** that are **bilaterally**, rather than radially, symmetrical; orchids still have leaves that are usually long and relatively narrow, with parallel veins, as in other other monocots.



parallel **monocot**
leaf-veins



dicot leaf-veins form a
branching network



Alismataceae
Sagittaria



Amaryllidaceae
Allium



Asparagaceae
Maianthemum



Iridaceae
Sisyrinchium



Liliaceae
Clintonia



Melanthiaceae
Toxicoscordion



Orchidaceae
Calypso



Orchidaceae
Corallorhiza



Orchidaceae
Cypripedium

The remainder of the plants in this guide are collectively known as **Dicotyledon** plants, or 'dicots'. **The flowers of dicots usually have 4 or 5 petals**, or multiples thereof, and their leaves, while varying widely in shape, all have veins that are **branched**, forming a network, rather than **parallel**, as in monocots. Individual flowers can be single, or organized in diverse arrays, or **inflorescences**, which can be characteristic of their family.

2 Flowers usually tiny and inconspicuous, often green or greenish: **Amaranthaceae**, **Elaeagnaceae***, **Euphorbiaceae**, ***Plantaginaceae**, ***Polygonaceae**, **Urticaceae**.



Amaranthaceae
Chenopodium

**photo:
Frank Vincentz,
Wikimedia



Urticaceae
Urtica **



Amaranthaceae
Kochia



Elaeagnaceae
Shepherdia

All remaining plants typically have distinctive, coloured, often showy flowers

3 Flowers, often highly modified, arranged in a compact or dense head of many tiny florets, an inflorescence that appears to be a single flower:
Asteraceae.



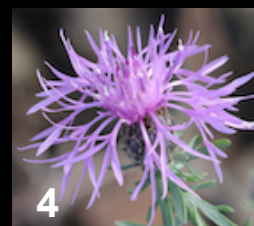
1



2



3



4



5



6

1. *Agoseris*; 2. *Carduus*; 3. *Helenium*;
4. *Centaurea*; 5. *Balsamorhiza*; 6. *Erigeron*



4 Flowers obviously or slightly bilaterally, but NOT radially, symmetrical: Fabaceae, Lamiaceae, Orobanchaceae, Papaveraceae (*Corydalis* only), Phrymaceae, *Plantaginaceae, *Ranunculaceae (*Delphinium* only), Verbenaceae, Violaceae



Fabaceae
Astragalus



Lamiaceae
Ajuga



Orobanchaceae
Euphrasia



Papaveraceae
Corydalis



Phrymaceae
Mimulus



Plantaginaceae
Collinsia



Ranunculaceae
Delphinium



Verbenaceae
Verbena



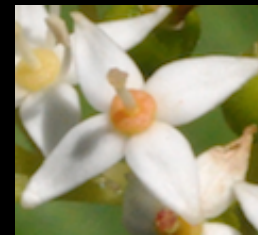
Violaceae
Viola

All remaining plants have **RADIALLY** symmetrical flowers, differing in the **number** of petals and stamens, and in whether the petals are **separate** or to some degree **fused**

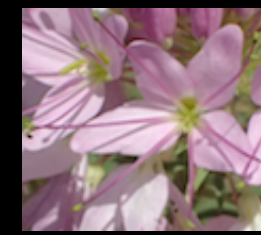
5 Flowers with **four separate petals** and **eight or fewer stamens**: Brassicaceae, Cleomaceae, Cornaceae, Onagraceae (+ some spp. of Papaveraceae)



Brassicaceae
Schoenocrambe



Cornaceae
Cornus



Cleomaceae
Peritoma



Onagraceae
Chamaenerion

6 Flowers with five or more separate petals and ten or fewer stamens; inflorescence IS an umbel:** Apiaceae, *Apocynaceae (Asclepias only), Araliaceae, *Polygonaceae.



Apiaceae
Angelica



Apocynaceae
Asclepias



Araliaceae
Aralia



Polygonaceae
Eriogonum

7 Flowers with five or more separate petals and ten or fewer stamens; inflorescence NOT an umbel:** Anacardiaceae, Caryophyllaceae, Celastraceae, Crassulaceae, *Ericaceae, Geraniaceae, Linaceae, Malvaceae, Montiaceae, Rhamnaceae, Saxifragaceae.



Anacardiaceae
Toxicodendron



Caryophyllaceae
Silene



Celastraceae
Parnassia



Crassulaceae
Sedum



Ericaceae
Moneses



Geraniaceae
Erodium



Linaceae
Linum



Malvaceae
Malva

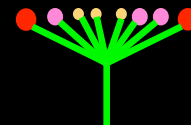


Montiaceae
Claytonia



Saxifragaceae
Lithophragma

** an umbel is an inflorescence where all the flower-bearing stems arise from a common point on the main stem.



8 Flowers with five or more separate petals and MORE than ten stamens: Berberidaceae, Cactaceae, Hypericaceae, Loasaceae, *Ranunculaceae, Rosaceae.



Berberidaceae
Mahonia



Cactaceae
Opuntia



Hypericaceae
Hypericum



Loasaceae
Mentzelia



Ranunculaceae
Ranunculus



Rosaceae
Fragaria

9a Flowers with 4 or 5 FUSED petals, at least near their base, sometimes forming a bell or tube: Adoxaceae, *Apocynaceae, Boraginaceae, Campanulaceae, Caprifoliaceae, Convolvulaceae, Elaeagnaceae* (*Elaeagnus* only), *Ericaceae, Gentianaceae, Grossulariaceae, Hydrophyllaceae, Polemoniaceae, *Polygonaceae, Primulaceae, Rubiaceae, Santalaceae, Scrophulariaceae, Solanaceae (see 9b next page).



Adoxaceae
Viburnum



Apocynaceae
Apocynum



Boraginaceae
Myosotis



Campanulaceae
Campanula



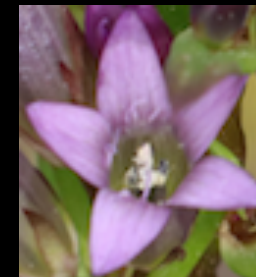
Caprifoliaceae
Lonicera



Convolvulaceae
Convolvulus



Ericaceae
Phyllodoce



Gentianaceae
Gentianella



Grossulariaceae
Ribes

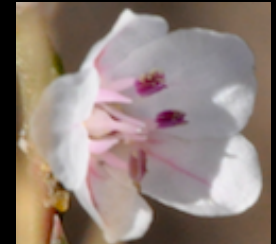
**9b Flowers with 4 or 5 petals
FUSED, at least near their base,
sometimes forming a bell or
tube:** Hydrophyllaceae,
Polemoniaceae, *Polygonaceae,
Primulaceae, Rubiaceae, Santalaceae,
Scrophulariaceae, Solanaceae.



Hydrophyllaceae
Phacelia



Polemoniaceae
Polemonium



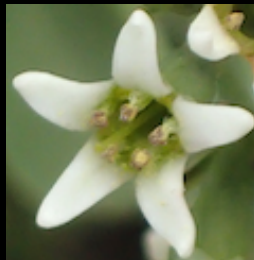
Polygonaceae
Polygonum



Primulaceae
Lysimachia



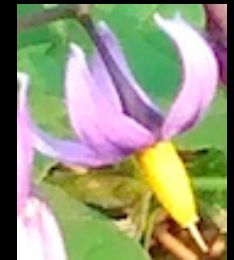
Rubiaceae
Galium



Santalaceae
Comandra



Scrophulariaceae
Verbascum



Solanaceae
Solanum

Common names of plants in the families

Adoxaceae elderberry, cranberry
Alismataceae water-plantains, wapato
Amaranthaceae amaranth, goosefoot, lamb's quarters, summer cypress, tumbleweed, hogweed
Amaryllidaceae onion
Anacardiaceae sumac, poison ivy
Apiaceae parsley, hemlock, angelica, cow parsnip
Apocynaceae dogbane, milkweed
Araliaceae wild sarsaparilla
Asparagaceae False Solomon's seal, grape hyacinth
Asteraceae daisy, fleabane, sunflower, sagebrush, yarrow, rabbitbrush, thistle, knapweed,
Berberidaceae Oregon grape
Boraginaceae houndstongue, forget-me-not, stickseed, lemonweed, stone-seed

Brassicaceae mustard, alyssum, sunress, rockcross, whitlow-grass
Cactaceae prickly-pear cactus
Campanulaceae bellflower, harebell
Caprifoliaceae honeysuckle, twinflower, snowberry, valerian
Caryophyllaceae campion, chickweed, sandwort, baby's breath
Celastraceae grass of Parnassus
Cleomaceae spider-plant, bee-plant
Convolvulaceae bindweed
Cornaceae dogwood, bunchberry
Crassulaceae stonecrop
Elaeagnaceae Russian olive, soopalallie
Ericaceae kinnikinnick, heather, wintergreen, rhododendron
Euphorbiaceae spurge
Fabaceae milk-vetch, trefoil, lupine, alfalfa, locoweed, vetch,

Common names of plants in the families, continued

Gentianaceae gentian
Geraniaceae geranium, cranesbill
Grossulariaceae currant, gooseberry
Hydrophyllaceae phacelia
Hypericaceae St. Johnswort
Iridaceae iris, blue-eyed grass
Lamiaceae mint, catnip, oregano, self-heal
Liliaceae lilies, fairy bells, twisted-stalk
Linaceae flax
Loasaceae blazing star
Malvaceae mallow, hollyhock
Melanthiaceae death camas, false hellebore
Montiaceae spring beauty, bitterroot, fameflower,
Onagraceae fireweed, evening primrose, willowherb
Orchidaceae orchids, coralroot
Orobanchaceae paintbrush, eyebright, owl-clover, yellow rattle, lousewort, broomrape
Papaveraceae poppy, corydalis
Phrymaceae monkey-flower
Plantaginaceae plantain, blue-eyed mary, penstemon, veronica, toadflax
Polemoniaceae phlox, polemonium, collomia, phlox, jacob's ladder
Polygonaceae buckwheat, dock, smartweed, knotweed
Primulaceae shooting star, fringed loosestrife
Ranunculaceae buttercup, anemone, larkspur, clematis, meadow-rue, columbine
Rhamnaceae snowbush
Rosaceae rose, saskatoon, hawthorn, strawberry, cinquefoil, cherry, raspberry, rowan
Rubiaceae bedstraw, cleavers, goose-grass
Santalaceae comandra, false toadflax
Saxifragaceae saxifrage, woodland star, alumroot
Scrophulariaceae mullein
Solanaceae bittersweet, woody nightshade
Urticaceae nettle
Verbenaceae verbena
Violaceae violet

Characteristics of plant families

Use this chart as a check on your tentative family ID derived from the key. The characters specified here are those relevant only to species in the guide; they might not apply to other species found elsewhere. Monocot families are named in blue

FAMILY	CHARACTERISTICS
<u>Adoxaceae</u>	<u>Sambucus</u> , <u>Viburnum</u> . Shrubs or small trees; leaves opposite, 3-palmate (<u>Viburnum</u>) or compound pinnate (<u>Sambucus</u>); white-cream flowers in flat, rounded or conical clusters; 4-5 fused petals; fruits red or purple berries.
<u>Alismataceae</u>	<u>Alisma</u> , <u>Sagittaria</u> . Aquatic emergents; leaves basal, large & oval (<u>Alisma</u>), or arrow-shaped (<u>Sagittaria</u>); flowers with 3 separate petals, usually white, in open panicles; fruits are dry achenes.
<u>Amaranthaceae</u>	<u>Amaranthus</u> , <u>Atriplex</u> , <u>Chenopodium</u> , <u>Kochia</u> , <u>Salsola</u> . Herbs; leaves simple, opposite or alternate; flowers tiny, green, inconspicuous (corolla absent) in tight spike or panicle; fruits dry capsules or achenes.
<u>Amaryllidaceae</u>	<u>Allium</u> . No above-ground stem; all leaves basal, from a bulb, linear; pink flowers on long pedicels, arranged in an umbel; fruits are dry capsules.
<u>Anacardiaceae</u>	<u>Rhus</u> , <u>Toxicodendron</u> Small to medium shrubs; Leaves alternate, compound pinnate (<u>Rhus</u>) or with 3 leaflets, the central one with long pedicel (<u>Toxicodendron</u>); flowers small, greenish to yellowish, in dense panicles; fruits berry-like, red-hairy (<u>Rhus</u>) or smooth, white (<u>Toxicodendron</u>).
<u>Apiaceae</u>	<u>Angelica</u> , <u>Conium</u> , <u>Heracleum</u> , <u>Lomatium</u> , <u>Osmorhiza</u> , <u>Sium</u> Herbs; leaves mostly basal, usually highly divided, often fern-like; flowers mainly white or yellow, in compound umbels; fruits flattened, elliptical, often ribbed &/or winged.
<u>Apocynaceae</u>	<u>Apocynum</u> , <u>Asclepias</u> Small shrubs and herbs; stem leaves simple, opposite, oval to elliptical, entire; flowers in compound, flattened clusters, white to pink (<u>Apocynum</u>) or pinkish purple (<u>Asclepias</u>); fruit a pod, containing numerous seeds, each with long tufts of cottony hairs
<u>Araliaceae</u>	<u>Aralia</u> Herbs; leaves from woody base, compound of 3 parts, with 3-5 leaflets each; greenish-white flowers in globular clusters; becoming dark purple berries.
<u>Asparagaceae</u>	<u>Asparagus</u> , <u>Maianthemum</u> , <u>Muscari</u> Leaves alternate & spiral, simple oval & entire or hair-like (<u>Asparagus</u>); fruits berries, red to purple.

<u>Asteraceae</u>	<p><u><i>Achillea, Acroptilon, Agoseris, Anaphalis, Antennaria, Anthemis, Arctium, Arnica, Artemisia, Balsamorhiza, Carduus, Centaurea, Cichorium, Cirsium, Conyza, Crepis, Ericameria, Eriogonon, Eurybia, Euthamia, Filago, Gaillardia, Grindelia, Helenium, Helianthella, Heterotheca, Hieracium, Lactuca, Leucanemum, Matricaria, Microseris, Mulgedium, Mycelis, Packera, Petasites, Pseudognaphalium, Senecio, Solidago, Sonchus, Stephanomeria, Symphyotrichum, Tanacetum, Tetradymia, Tragopogon</i></u></p> <p>Diverse plants, ranging from low annual herbs to large perennial woody shrubs. The characteristic feature of most members is an inflorescence formed of a densely-packed head of tiny, highly modified flowers (florets), all surrounded by protective bracts. Many species have a head with a central zone, or disc, usually yellow, comprising many 'disc florets' that lack obvious petals, surrounded by a border of white or coloured 'ray florets', where the 'ray' is formed by a single strap-shaped petal structure, or ligule. Rays may be lacking, leaving only the central 'disc' portion. In some spp., the head comprises only ray florets. Leaves are very variable in form, often forming a basal rosette, and are often notably hairy. Many contain sticky milky juice (latex) in leaves & stem.</p>
<u>Berberidaceae</u>	<p><u><i>Mahonia</i></u></p> <p>Evergreen shrubs; glossy, holly-like, compound pinnate leaves; inflorescence a raceme, flowers bright yellow; fruits are dark blue to black berries.</p>
<u>Boraginaceae</u>	<p><u><i>Asperugo, Cynoglossum, Echium, Lappula, Lithospermum, Mertensia, Myosotis</i></u></p> <p>Annual and perennial herbs; leaves usually narrowly elliptical to linear, often markedly hairy & rough, otherwise broadly elliptical (<u><i>Cynoglossum, Mertensia</i></u>); inflorescences often obviously coiled; petals fused at base, forming a tube; fruits are <u>nutlets</u>, some with barbs or prickles (<u><i>Lappula</i></u>).</p>
<u>Brassicaceae</u>	<p><u><i>Alyssum, Berteroa, Boechea, Camelina, Capsella, Cardamine, Cardaria, Chorispora, Descurainia, Draba, Erysimum, Lepidium, Rorippa, Schoenocrambe, Sisymbrium, Thlaspi</i></u></p> <p>Annual or perennial herbs; leaves often in a (sometimes short-lived) prostrate basal rosette; stem leaves alternate, simple, linear, but sometimes lobed or deeply notched; usually numerous flowers in a terminal raceme; flowers w/4 separate petals, often yellow, or white, pink/purple (<u><i>Boechea</i></u>); fruits are <u>nutlets</u> in a pod.</p>
<u>Cactaceae</u>	<p><u><i>Opuntia</i></u></p> <p>Perennial plants, mostly prostrate, stems succulent & jointed, w/spines emerging from areoles; deciduous cylindrical fleshy leaves on new growth; flowers w/many yellow-orange petals, many stamens, and central style; fruit a dry spiny berry.</p>
<u>Campanulaceae</u>	<p><u><i>Campanula</i></u></p> <p>Perennial herbs; basal leaves oval to heart-shapes on long stalks, stem leaves alternate, usually linear/<u>lanceolate</u>; numerous bell-shaped blue flowers in terminal clusters, often nodding; fruit a nodding cylindrical capsule.</p>
<u>Caprifoliaceae</u>	<p><u><i>Linnaea, Lonicera, Symphoricarpus, Valeriana</i></u></p> <p>Perennial woody shrubs (<u><i>Lonicera, Symphoricarpus</i></u>), vines (<u><i>Lonicera</i></u>), creeping evergreen (<u><i>Linnaea</i></u>), or herbs from rhizome (<u><i>Valeriana</i></u>); leaves in opposite pairs, oval to narrowly elliptical to <u>lanceolate</u> (<u><i>Linnaea, Lonicera, Symphoricarpus</i></u>) or compound pinnate (<u><i>Valeriana</i></u>); flowers tubular, in axillary pairs or compact terminal clusters (<u><i>Lonicera, Symphoricarpus, Valeriana</i></u>) or a nodding pair on slender, Y-shaped terminal stalks (<u><i>Linnaea</i></u>); fruits are berry-like drupes (<u><i>Lonicera, Symphoricarpus</i></u>) or dry <u>achenes</u> (<u><i>Linnaea, Valeriana</i></u>).</p>

<u>Caryophyllaceae</u>	<u><i>Arenaria</i></u> , <u><i>Cerastium</i></u> , <u><i>Eremogone</i></u> , <u><i>Gypsophila</i></u> , <u><i>Holosteum</i></u> , <u><i>Moehringia</i></u> , <u><i>Silene</i></u> , <u><i>Stellaria</i></u> Annual or perennial herbs; basal leaves absent in most smaller species; stem leaves paired, opposite, broadly lanceolate to linear and grass-like; flowers in open clusters, petals five, white, often deeply cleft into nearly separate lobes; fruits dry capsules.
<u>Celastraceae</u>	<u><i>Parnassia</i></u> Perennial herbs; basal leaves kidney-shaped; stem leaves few, tiny; flowering stem with single terminal flower; petals fringed at base; fruit a capsule.
<u>Cleomaceae</u>	<u><i>Peritoma</i></u> Perennial herbs; basal leaves lacking; stem leaves alternate, w/3 linear leaflets; purplish-pink flowers in a terminal elongating raceme; fruit is a drooping pod-like capsule.
<u>Convolvulaceae</u>	<u><i>Convolvulus</i></u> Perennial herbs; stems trailing and climbing; leaves alternate, arrowhead shaped; 1 or 2 trumpet-shaped white to pink flowers carried in leaf axils; fruit a capsule.
<u>Cornaceae</u>	<u><i>Cornus</i></u> <u><i>C. sericea</i></u> : Red-barked shrub; leaves opposite, oval & pointed; inflorescence a compound flat-topped cluster; fruit a fleshy white drupe. <u><i>C. canadensis</i></u> : low trailing perennial herb; leaves opposite, oval & pointed; inflorescence a single flat-topped cluster; fruit a fleshy red drupe.
<u>Crassulaceae</u>	<u><i>Sedum</i></u> Perennial herb from creeping rhizome, forming mats; leaves alternate, linear or ovoid, succulent; inflorescence a terminal cluster of bright yellow 5-petaled flowers; fruits are follicles.
<u>Elaeagnaceae</u>	<u><i>Shepherdia</i></u> : Deciduous shrub; leaves opposite, elliptical, dark green above, brown-fuzzy below; tiny male and female flowers, petals lacking, in axillary clusters on separate plants; fruits bright red berries. <u><i>Elaeagnus</i></u> : small deciduous trees; leaves silvery, alternate, linear; flowers yellow 4-lobed funnel in axillary clusters; fruits are silvery olive-like berries.
<u>Ericaceae</u>	<u><i>Arctostaphylos</i></u> , <u><i>Cassiope</i></u> , <u><i>Chimaphila</i></u> , <u><i>Moneses</i></u> , <u><i>Orthilia</i></u> , <u><i>Phyllodoce</i></u> , <u><i>Pyrola</i></u> , <u><i>Rhododendron</i></u> , <u><i>Vaccinium</i></u> Erect or prostrate woody shrubs and herbs, often evergreen; leaves alternate, opposite or whorled; <u><i>Pyrola</i></u> & <u><i>Moneses</i></u> have only basal leaves; inflorescences are terminal or axillary racemes, or single (<u><i>Moneses</i></u>); flowers usually bell- or cup-shaped; fruit a berry or capsule.
<u>Euphorbiaceae</u>	<u><i>Euphorbia</i></u> Perennial herb from rhizome; stems much branched above, with alternate linear leaves; inflorescence a multi-stalked cluster of strange, green flowers, w/dangling stalked ovary; fruit a capsule.
<u>Fabaceae</u>	<u><i>Astragalus</i></u> , <u><i>Genista</i></u> , <u><i>Lathyrus</i></u> , <u><i>Lotus</i></u> , <u><i>Lupinus</i></u> , <u><i>Medicago</i></u> , <u><i>Melilotus</i></u> , <u><i>Onobrychus</i></u> , <u><i>Oxytropis</i></u> , <u><i>Securigera</i></u> , <u><i>Trifolium</i></u> , <u><i>Vicia</i></u> Small perennial shrubs, vines and herbs; leaves usually alternate, with obvious stipules, usually compound pinnate, sometimes trifoliate (<u><i>Trifolium</i></u>), sometimes modified as tendrils in vines; inflorescence a spike, raceme, head or panicle; flowers zygomorphic w/strongly differentiated petals; fruit a legume.

<u>Gentianaceae</u>	<u>Gentianella</u> Annual herbs w/single or branched stems; stem leaves opposite, lanceolate; inflorescence a dense terminal or axillary cluster; flowers a purple 5-lobed tube, w/hairs in the throat; fruits a cylindrical capsule.
<u>Geraniaceae</u>	<u>Erodium</u> , <u>Geranium</u> Annual or perennial herbs; leaves deeply incised, either pinnate or palmate; inflorescence a terminal and/or axillary cluster; flowers w/five separate pale pink to pinkish-purple petals; fruits w/characteristic long 'beak' — 'stork's bill'.
<u>Grossulariaceae</u>	<u>Ribes</u> Small to medium deciduous shrubs; leaves alternate, palmately 3- to 5- lobed to fan-shaped; flowers tubular or cup-shaped, white or pink to reddish; fruit are red berries.
<u>Hydrophyllaceae</u>	<u>Phacelia</u> Hairy herbs. <u>P. hastata</u> : perennial; basal & stem leaves silvery-hairy, lanceolate, alternate; inflorescence a tight, one-sided coil; flowers white to pale purple, w/prominent stamens; fruit a capsule. <u>P. linearis</u> : annual; basal leaves few & reduced, stem leaves linear, alternate, sometimes w/lobes near base; inflorescence a terminal cluster; corolla purplish-blue; fruit a capsule.
<u>Hypericaceae</u> (<u>Clusiaceae</u>)	<u>Hypericum</u> Perennial herb, erect stems much branched above; leaves lanceolate w/blunt tips; inflorescence many-flowered; corollas bright yellow; many long stamens; fruit a capsule.
<u>Iridaceae</u>	<u>Iris</u> , <u>Sisyrinchium</u> Perennial herbs; leaves blade-like, mostly basal, from underground rhizomes; inflorescence of 1-2 (3-4) showy purple flowers; fruit a capsule.
<u>Lamiaceae</u>	<u>Ajuga</u> , <u>Galeopsis</u> , <u>Lamium</u> , <u>Mentha</u> , <u>Monarda</u> , <u>Nepeta</u> , <u>Origanum</u> , <u>Physostegia</u> , <u>Prunella</u> Perennial herbs, often aromatic with square-section stems; leaves usually opposite, sometimes whorled, mostly simple, entire, or with marginal teeth or other sculpturing; inflorescences are terminal and/or axillary spikes, racemes or panicles; flowers zygomorphic, usually bi-labiate; fruit a capsule.
<u>Liliaceae</u>	<u>Calochortus</u> , <u>Clintonia</u> , <u>Erythronium</u> , <u>Fritillaria</u> , <u>Lilium</u> , <u>Prosartes</u> , <u>Streptopus</u> Perennial herbs from underground bulbs or rhizomes; leaves linear or oval, with acute tip, usually alternate; inflorescences terminal or axillary, usually single-flowered, or racemes in some spp.; fruit a capsule or berry.
<u>Linaceae</u>	<u>Linum</u> Perennial herb; several usually un-branched stems; stem leaves alternate, linear; blue flowers in open terminal cluster; fruit a dry spherical capsule.
<u>Loasaceae</u>	<u>Mentzelia</u> Herb w/branched angular stems; basal & alternate stem leaves linear, lobed; bright yellow flowers w/many prominent stamens in terminal and axillary clusters; fruit a capsule.
<u>Malvaceae</u>	<u>Malva</u> Herb w/ascending branched stems; basal leaves heart- to kidney-shaped; stem leaves alternate, 5-lobed and deeply dissected; white to pink flowers in axillary and sub-terminal clusters, stamen filaments fused, forming a tube surrounding the style; fruit a flat disc-shaped achene.
<u>Melanthiaceae</u>	<u>Toxicoscordion</u> , <u>Veratrum</u> Perennial herbs, from bulb or rhizome; leaves linear, mostly basal; creamy-white flowers in conical cluster (<u>Toxicoscordion</u>) or tall robust stem w/many large elliptical ribbed & pleated leaves, hairy beneath; many pale green star-shaped flowers in a branched terminal cluster (<u>Veratrum</u>).
<u>Montiaceae</u>	<u>Claytonia</u> , <u>Lewisia</u> , <u>Montia</u> , <u>Phemeranthus</u> Perennial herbs; leaves fleshy, opposite (<u>Claytonia</u>), or alternate (spiral), often forming a basal rosette, linear (<u>Montia</u> , <u>Lewisia</u>) or club-shaped (<u>Phemeranthus</u>); inflorescence solitary (<u>Lewisia</u>), a raceme (<u>Claytonia</u> , <u>Montia</u>) or a cluster (<u>Phemeranthus</u>); petals 5, or many (<u>Lewisia</u>); fruit a capsule.

<u>Onagraceae</u>	<u>Chamaenerion</u> , <u>Epilobium</u> , <u>Oenothera</u> Perennial or biennial herbs; leaves usually alternate, but opposite in some spp., narrow lanceolate or elliptic; inflorescence a terminal raceme, panicle, or spike; flowers 4-petaled, white to purplish-pink, or yellow (<u>Oenothera</u>); fruit a capsule.
<u>Orchidaceae</u>	<u>Calypso</u> , <u>Corallorhiza</u> , <u>Cypripedium</u> , <u>Goodyera</u> , <u>Piperia</u> , <u>Platanthera</u> , <u>Spiranthes</u> The largest vascular plant family. Perennial herbs; leaves alternate, entire, w/parallel veins, sometimes only as basal rosette (<u>Goodyera</u>); inflorescence a single flower, raceme, or panicle; flowers bilaterally symmetrical, often of complex structure, variously coloured; fruit a capsule.
<u>Orobanchaceae</u>	<u>Castilleja</u> , <u>Euphrasia</u> , <u>Orobanche</u> , <u>Orthocarpus</u> , <u>Pedicularis</u> , <u>Rhinanthus</u> Parasitic herbs (though all but <u>Orobanche</u> photosynthesize); leaves alternate (<u>Castilleja</u> , <u>Orthocarpus</u> , <u>Pedicularis</u>), or opposite (<u>Euphrasia</u> , <u>Rhinanthus</u>), toothed, lobed or deeply incised; inflorescence is a spike or raceme; flowers zygomorphic, often bi-labiate; fruit a capsule.
<u>Papaveraceae</u>	<u>Corydalis</u> Spreading, branched herb; stem leaves alternate, 2-3x divided pinnate; flowers bright yellow, irregular, with obvious spur, in open axillary and terminal racemes; fruit a curved pod-like capsule.
<u>Phrymaceae</u>	<u>Mimulus</u> Erect or trailing herb; leaves opposite, oval; inflorescence a loose terminal raceme; flowers yellow, funnel-shaped, with reddish spots in throat; fruit an oval capsule.
<u>Plantaginaceae</u>	<u>Collinsia</u> , <u>Hippuris</u> , <u>Linaria</u> , <u>Penstemon</u> , <u>Plantago</u> , <u>Veronica</u> A diverse family of perennial herbs or small shrubs, both upland and wetland; leaves mostly opposite, or alternate (<u>Linaria</u>), basal (<u>Plantago</u>) or whorled (<u>Hippuris</u>); inflorescence a terminal or axillary cluster, raceme, or spike (<u>Plantago</u>); flowers zygomorphic, or petals absent (<u>Hippuris</u>); fruit a capsule or nutlet (<u>Hippuris</u>).
<u>Polemoniaceae</u>	<u>Collomia</u> , <u>Microgilia</u> , <u>Microsteris</u> , <u>Polemonium</u> Annual or perennial herbs; leaves alternate, pinnately compound (<u>Polemonium</u>) or linear, entire; flowers single or in clusters, or in a tight head; fruit a capsule.
<u>Polygonaceae</u>	<u>Eriogonum</u> , <u>Persicaria</u> , <u>Polygonum</u> , <u>Rumex</u> Annual or perennial herbs or sub-shrubs; <u>Persicarias</u> are aquatic or amphibious; leaves usually entire, mostly or entirely basal (<u>Eriogonum</u>) or alternate, linear, lanceolate or egg-shaped, along stems; inflorescence a terminal head, umbel, spike or raceme; fruit are achenes.
<u>Portulacaceae</u>	<u>Portulaca</u> Prostrate succulent herb; stem leaves alternate, spoon-shaped; yellow flowers in axillary and/or terminal clusters; fruit a capsule.
<u>Primulaceae</u>	<u>Dodecatheon</u> : Perennial herbs; leaves all basal, oval, tapering to base; branched inflorescence atop leafless flowering stem, carrying few to many deep pink flowers w/reflexed petals; fruit a cylindrical capsule. <u>Steironema</u> : Perennial erect herb; stem leaves opposite, broad lanceolate w/pointed tips; solitary yellow flowers in upper leaf axils; fruits are spherical capsules.
<u>Ranunculaceae</u>	<u>Actaea</u> , <u>Anemone</u> , <u>Aquilegia</u> , <u>Caltha</u> , <u>Clematis</u> , <u>Delphinium</u> , <u>Halerpestes</u> , <u>Pulsatilla</u> , <u>Ranunculus</u> , <u>Thalictrum</u> , <u>Trollius</u> Mostly perennial herbs; leaves either basal or alternate, simple or palmately or pinnately compound; inflorescences terminal or axillary, solitary or in racemes or panicles; flowers with simple (<u>Actaea</u> , <u>Anemone</u> , <u>Caltha</u> , <u>Clematis</u> , <u>Halerpestes</u> , <u>Pulsatilla</u> , <u>Ranunculus</u> , <u>Trollius</u>) or complex (<u>Aquilegia</u>) actinomorphic structure and (often markedly) variable numbers of parts, or zygomorphic, often complex structure (<u>Delphinium</u>); fruit an achene, sometimes with a persistent plume, follicle, or berry.

<u>Rhamnaceae</u>	<u>Ceanothus</u> Prostrate to erect evergreen shrub; leaves oval, alternate, shiny above; small creamy-white flowers in large axillary compound panicles; fruit a 3-lobed capsule.
<u>Rosaceae</u>	<u>Amelanchier, Crataegus, Fragaria, Geum, Luetkea, Potentilla, Prunus, Rosa, Rubus, Sibbaldia, Sorbus, Spiraea</u> Small trees, shrubs, and herbs, mostly perennial; leaves alternate, sometimes in basal rosette, elliptical (<u>Prunus, Spiraea</u>) or compound, either pinnately or palmately, sometimes deeply & finely divided; stems smooth or with prickles or thorns (<u>Crataegus, Rosa, Rubus</u>); inflorescence typically a terminal cluster; flowers simple, w/5 petals and many stamens; fruits diverse: fleshy drupes, berries, hips, or pomes, or dry achenes or capsules.
<u>Rubiaceae</u>	<u>Galium</u> Perennial herbs; <u>G. boreale</u> : stems erect & smooth; stem leaves in whorls of 4; numerous white flowers in axillary groups; fruits are paired nutlets, smooth or bristly. <u>G. aparine</u> : stems prostrate & scrambling, square-section, bristly; stem leaves, narrow, bristly, in whorls of 8; small groups of tiny white flowers on axillary branchlets; fruits are paired nutlets w/ hooked bristles.
<u>Santalaceae</u>	<u>Comandra, Geocaulon</u> Parasitic herbs; no basal leaves, stem leaves alternate; flowers in small clusters; fruit fleshy, berry-like.
<u>Saxifragaceae</u>	<u>Heuchera, Leptarrhena, Lithophragma, Micranthes, Mitella, Saxifraga, Tiarella</u> Perennial herbs; leaves mostly or entirely basal, often a compact rosette, simple or lobed (<u>Lithophragma</u>) or palmate (<u>Tiarella</u>); inflorescence a raceme; corollas diverse, often reduced, cleft or finely dissected; fruit a capsule or follicle.
<u>Scrophulariaceae</u>	<u>Verbascum</u> Large biennial herb w/ tall single stems, rarely branched; densely hairy basal leaves in large rosette, stem leaves alternate; inflorescence a dense spike, flowers yellow; fruit a dry capsule.
<u>Solanaceae</u>	<u>Solanum</u> Perennial shrubby vine; no basal leaves, alternate heart-shaped stem leaves, often lobed at base; flowers in clusters, reflexed purple petals; fruit a bright red berry.
<u>Urticaceae</u>	<u>Urtica</u> Tall perennial herb; no basal leaves, stem leaves alternate, lanceolate; axillary clusters of tiny apetalous green flowers; fruits are achenes.
<u>Verbenaceae</u>	<u>Verbena</u> Prostrate, spreading perennial herb; no basal leaves, bristly stem leaves opposite, toothed and pinnately cleft; terminal raceme of small purple to white flowers; fruit a small corrugated nut.
<u>Violaceae</u>	<u>Viola</u> Perennial herbs; all leaves heart-shaped on long stalks; single axillary, slightly to somewhat zygomorphic, purple, yellow or white flowers; fruit a 3-part capsule.

The following pages provide a guide to some of the common inflorescence forms

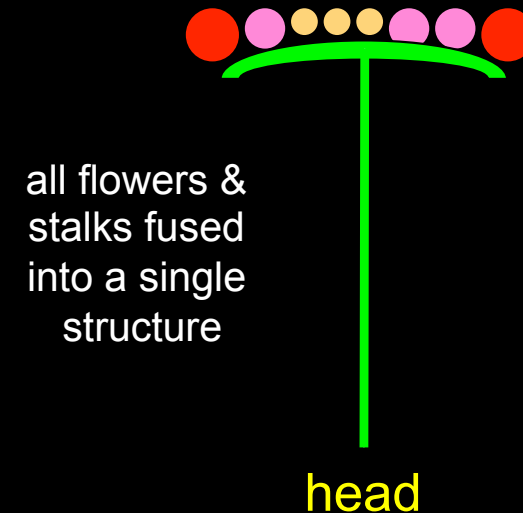
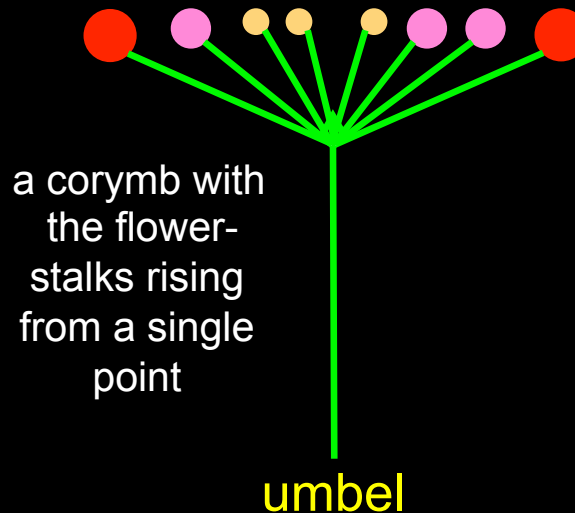
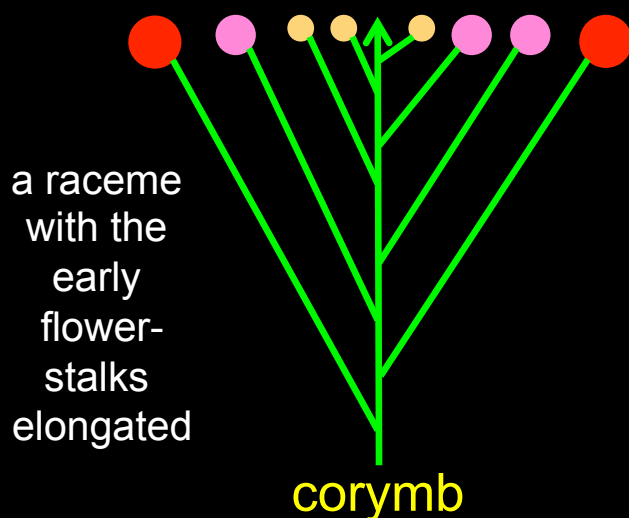
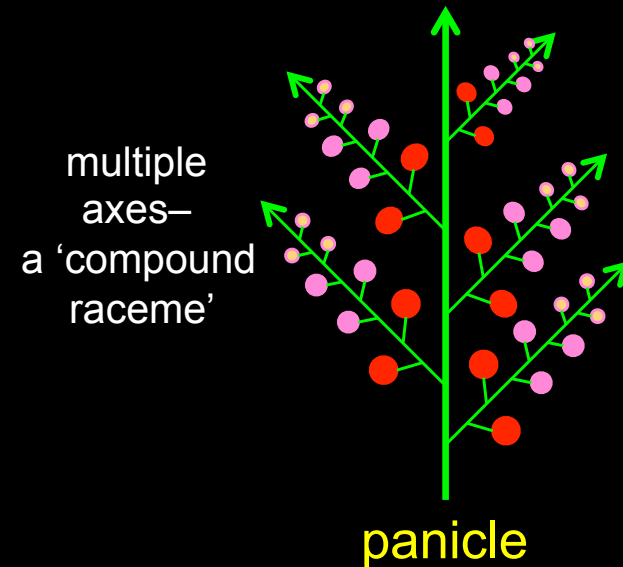
the form of inflorescences

- ❖ An inflorescence is that part of a plant that bears the flowers, be they single or multiple.
- ❖ Flowers are arranged on inflorescences in a variety of ways, depending on the manner in which the plant's body-parts— shoots, leaves & flowers— develop and grow.
- ❖ These various arrangements are usually characteristic of species, and often of most members of whole groups, such as Families, e.g. *umbels* in **Apiaceae**, *compound heads* in **Asteraceae**.
- ❖ Inflorescence form is therefore often of utility in plant identification.
 - ❖ There are two primary classes of inflorescence: “**determinate**” vs. “**indeterminate**”, depending on whether the main axis of the inflorescence ends in a **terminal flower** or a continuously-elongating **growing point**.
- ❖ Within these two groups, inflorescences vary depending largely on the extent and pattern of *branching* shown by the flowering stem

The next two pages diagram some of the main kinds of inflorescence ...

indeterminate inflorescences

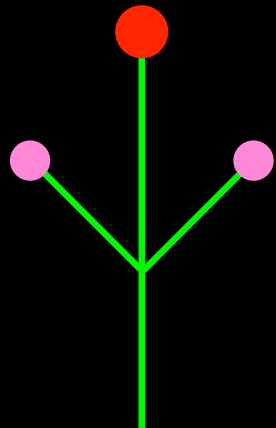
There is no terminal flower: all flowers are formed from lateral buds as the stem elongates. Here, flowers & stalks are shown arranged alternately, but they could also be opposite or spiral. Just as racemes can be compounded as panicles, there are compound corymbs & umbels too.



determinate inflorescences

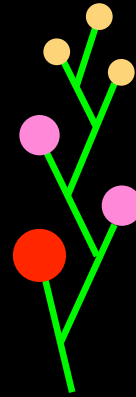
The flowering stalk ends in a terminal flower: younger flowers form on lateral shoots below. Lateral shoots may themselves have further sub-shoots of various sorts. Inflorescence types result from the degree & pattern of lateral branching and sub-branching.

two simple opposite lateral flower-shoots



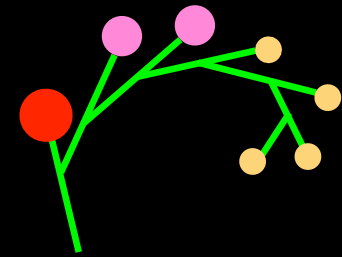
simple cyme

single lateral shoot + alternating sub-shoots



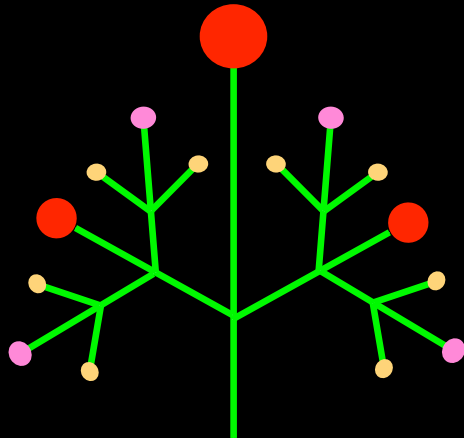
scorpioid cyme

single lateral shoot + sub-shoots on one side



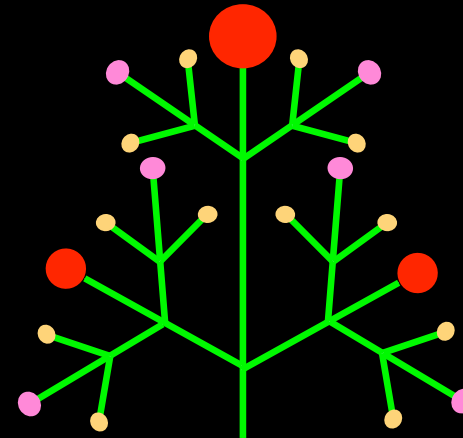
helicoid cyme

paired lateral shoots, with paired sub-shoots



compound cyme

multiple paired lateral shoots, with paired sub-shoots



elongated cyme