# KEY BY LEAF DESCRIPTION FOLLOWED BY FLOWER DESCRIPTION <br> PLANT ID KEY (TO FAMILY AND SOMETIMES SPECIES) FOR ARCHES NATIONAL PARK 

Key © Alicia Lafever

## EVERGREEN TREES

1. Leaves opposite or in whorls, evergreen scale-like leaves Cupressaceae (Cypress)
2. Leaves spirally arranged, needles in groups of 2 - Pinaceae (Pine)

## EVERGREEN SHRUBS

1. Leaves are reduced to small triangular teeth at joints, green jointed stems, shrublike - Ephedraceae (Jointfir)

## DECIDUOUS TREES

1. Leaves opposite
A. Leaves simple
i. Flowers with no petals, 4 yellow to whitish lobed sepals Oleaceae (Olive)
ii. Flowers with 5 united white petals and 5 united sepals Bignoniaceae (Catalpa)
B. Leaves compound
i. No petals, 4-5 greenish, yellow sepals Aceraceae (Maple) - Boxelder (Acer negundo)
2. Leaves alternate
A. Leaves scale-like, 5 fragrant white to lavender petals, 5 sepals, flowers borne in elongated clusters - Tamaricaceae (Tamarisk)
B. Leaves simple
i. Flowers with 0 petals -
a. Flowers with no petals, shrublike, 2 to 8 greenish, yellow sepals - Fagaceae (Beech) - (also listed under shrubs)
b. Flowers with no petals, borne in axillary clusters, yellow or yellow-green sepals (generally 4) - Elaeagnaceae (Oleaster)
c. Flowers with 0 petals; 4-8 green sepals; flowers borne in clusters - Ulmaceae (Elm)
ii. Flowers with no petals, 0-4 sepals, stamens 1 to many; borne in catkins
a. Male (staminate) flowers and female (pistillate) flowers on separate trees. Borne in catkins. No sepals, greenish, yellow - Salicaeae (Willow)
b. Male (staminate) flowers and female (pistillate) flowers on the same tree. Borne in catkins. Staminate flowers have $0-4$ sepals, pistillate flowers have no sepals. Greenish, yellow - Betulaceae (Birch)
c. Male (staminate) flowers and female (pistillate) flowers on the same tree. Borne in catkins. No petals, 4 sepals, 4 stamens, 1 pistil - Moraceae (Mulberry) - Morus alba
d. Male (staminate) flowers and female (pistillate) flowers on different trees. Borne in catkins. No petals, 4 sepals, 4 stamens, 1 pistil - Moraceae (Mulberry) - Morus rubra
B. Leaves compound, 5 white or pale pink petals, 5 sepals -

Fabaceae (Pea) - Robinia pseudoacacia

## SHRUBS

1. Leaves opposite
A. Leaves simple
i. Flowers with 0 petals -
a. Yellow flowers with no petals, 4 yellow sepals - Rosaceae (Rose)- Coleogyne ramosissima (others in shrubs -alternate, simple, 0 petals; shrubs - alternate, simple, 5 petals; and shrubs - alternate, compound, 5 petals)
b. Plants parasitic on branches of trees and shrubs; without chlorophyll; fragile-jointed with swollen jointed nodes; leathery (often scale-like) leaves; flowers with 0 petals; 2-5 sepals; staminate and pistillate flowers - Viscaceae (Mistletoe)
ii. Flowers with 4 distinct petals, 4 sepals -
a. 4 distinct small white petals in terminal cymes, 4 very small sepals. Not commonly seen. - Cornaceae (Dogwood): Cornus sericea var. sericea
b. Flowers with 4 white clawed petals, 4 sepals - Saxifragaceae (Saxifrage) - Fendlera rupicola (others in shrubs-alternate, simple)
iii. Flowers with 5 united petals, 5 small sepals -
a. Leaves oval, flowers pink, tubular and flare open at the mouth; flowers solitary or in pairs - Caprifoliaceae (Honeysuckle)
b. Leaves narrow, flowers purple - Lamiaceae (Mint) Poliomintha incana
2. Leaves alternate
A. Leaves simple
i. Flowers appear to be a single flower, but are composed of several flowers; flowers can be yellow, white, purple, pink or greenishsome Asteraceae (Sunflower)
ii. Flowers with no petals
a. leaves bluish, small, 2-5 green, yellow, or brown sepals Chenopodiaceae (Goosefoot) (others in subshrubs and herbs)
b. 3 to 6 petaloid whitish sepals - Polygonaceae (Buckwheat)- Eriogonum bicolor, Eriogonum microthecum, Eriogonum leptocladon (others in subshrubs and herbs alternate, simple and herbs - basal, simple)
c. 4 yellowish, brownish sepals - Rosaceae (Rose) Cercocarpus (others in shrubs -alternate, simple, 5 petals; shrubs - alternate, compound, 5 petals; and shrubs -opposite, simple, 0 petals)
d. 2 to 8 greenish, yellow sepals - Fagaceae (Beech) - also listed under trees
iii. Flowers with 4-5 petals, 4-5 sepals -
a. 4 or 5 whitish green petals, distinct, or absent; 4 or 5 united sepals; flowers grow in clusters in the angle between the leaf and the stem; shrub 3-8 feet tall - Rhamnaceae (Buckthorn) Rhamnus betulifolia
b. Flowers with 5 (4) white petals often smaller than the sepals, 5 sepals, mostly petaloid - Saxifragaceae (Saxifrage) - Ribes inerme (others in shrubs - opposite, simple)
c. 5 petals, 5 sepals, flowers white, cream, yellow, or pink Rosaceae (Rose) - Amelanchier, Holodiscus, Petrophytum, Physocarpos, Purshia (others in shrubs -alternate, simple, 0 petals; shrubs - alternate, compound, 5 petals; and shrubs opposite, simple, 0 petals)
d. 5 yellow petals, 5 sepals - Anacardiaceae (Cashew) - some Rhus aromatica
B. Leaves compound
i. Flowers with 0 petals, 5 sepals; yellow - Fabaceae (Pea) Parryella filifolia
ii. Flowers with 5 yellow petals, 5 sepals - Anacardiaceae (Cashew) - Rhus glabra, some Rhus aromatica, and Toxicodendron rydbergii - rarely simple
iii. Flowers with 5 pink (rarely white) petals, sepals 5 - Rosaceae (Rose) - Rosa woodsii (others in shrubs -alternate, simple, 0 petals; shrubs - alternate, simple, 5 petals; and shrubs -opposite, simple, 0 petals)
iv. Flowers with 6 yellow petals, usually 6 sepals - Berberidaceae
(Barberry)

## SUBSHRUB

1. Leaves whorled
A. Leaves simple
i. 4 lobed funnelform greenish-yellow petals, 4-8 lobed sepals, minute
or lacking - Rubiaceae (Madder) - Galium multiflorum (others in herbs -whorled, simple, 4 petals)
2. Leaves basal
A. Leaves simple
i. 0 petals, 3 to 6 petaloid whitish sepals, woolly leaves Polygonaceae (Buckwheat)- Eriogonum ovalifolium (others in shrubs and herbs-alternate, simple and herbs-basal, simple)
3. Leaves opposite
A. Leaves simple
i. Flowers with 5 petals, 5 sepals
a. 5 white to cream tubular petals, 5 sepals - some

Polemoniaceae (Phlox) - Leptodactylon watsonii (others in
herbs, opposite, simple: Phlox; and herbs, alternate, simple: Gilia)
4. Leaves alternate
A. Leaves simple
i. Yellow flowers appear to be a single flower, but are composed of several flowers - Asteraceae (Sunflower) - some Gutierrezia (others in shrubs), some Haplopappus (others in herbs), some Perityle (others in herbs), some Xlyorhiza (others in herbs)
ii. Flowers with no petals
a. leaves bluish, small, 2-5 green, yellow, or brown sepals Chenopodiaceae (Goosefoot) (others in shrubs and herbs)
b. 0 petals, 3 to 6 petaloid whitish sepals - Polygonaceae (Buckwheat)- Eriogonum jonesii (others in shrubs, subshrubs, basal, simple) and herbs-alternate, simple and herbs-basal, simple)
iii. Flowers with 3 distinct petals, (the upper 2 pink or pink purple petals usually free, the lower one forming a yellow keel and often fringed, the petals are usually joined to the stamens; 5 distinct sepals, the 2 inner ones larger and often petaloid (the 3 outer sepals are usually green and the other inner ones are petal-like), flowers in racemes, several-flowered; milky stems; thorny -
Polygalaceae (Milkwort) - Polygala subspinosa
iv. Flowers with 5 petals, 5 sepals -
a. 5 petals, 5 sepals, Flowers small, typically pink, tubular united petals, leaves appear clustered - some Boraginaceae
(Borage): Tiquilia - (others in herbs)

## CACTUS

1. No leaves; spines, numerous petals, sepals and stamens; showy; red, pink, purple, or yellow - Cactaceae (Cactus)

## SPOROPHYTES (Spore-bearing)

1. Stems typically hollow, jointed, ribbed longitudinally; leaves whorled, small, scalelike, microphyllous - Equisetaceae (Horsetail)
2. Plants with scaly or hairy, creeping rhizomes; leaves coiled in the bud forming fiddleheads, leaves simple or compound, often hairy or scaly Polypodiaceae (Fern)

## PARASITIC HERBS LACKING CHLOROPHYLL

1. Fleshy purplish, brownish, or yellowish white stems, leaves alternate, reduced and scalelike, 5 lobed united tubular purplish, reddish, or yellowish petals with an upper and lower lip, 5 lobed united sepals Orobanchaceae (Broomrape)

## GRASSES AND GRASS-LIKE HERBS (SOME OF THE MONOCOTS)

1. Leaves alternate, simple, 2-ranked, stems round, often with hollow internodes, swollen nodes; flowers individually small and inconspicuous; no petals, no sepals, typically 3 stamens (rarely 2 or 6 ); each flower has 2 bracts forming a spikelet - Poaceae (Grass)
2. Leaves simple, linear, sometimes reduced to bladeless sheaths, stems can have edges (Scirpus has rounded stems); petals and sepals lacking or reduced to bristles; the spike of reduced flowers forms a spikelet; grows in wet or moist soil - Cyperaceae (Sedge)
3. Stems not jointed; leaves sheathing, alternate or all basal; flowers with 3 petals, 3 sepals, membranous, greenish or brownish; stamens 6 (rarely 3), 1 pistil - Juncaceae (Rush)
4. leaves mainly basal, linear, sheathing at the base; flowers terminal spike, 3 greenish petals, 3 greenish or purplish sepals, the sepals and petals not well differentiated; perianth of $3+3$ tepals; stamens commonly 6,1 pistil; Triglochin maritima - perianth greenish-yellow - Juncaginaceae (Arrowgrass)
5. leaves alternate, long, linear, flat, sheathing; flowers densely crowed in terminal spikelike inflorescences; perianth lacking (0 petals, 0 sepals), 2-5 stamens; unisexual, pistillate and staminate spikes look like a hot-dog-on-a-stick; fruits: achene or nutlet; semiaquatic or aquatic -Typhaceae (Cattail)

## HERBS

1. Leaves whorled
A. Leaves simple
i. 4 lobed white to green petals marked with green dots, flowers solitary or in cymes, 4 lobed sepals, leaves in whorls of 4 some Gentianaceae (Gentian) - Swertia albomarginata; (Centaurium in herbs, opposite, simple, 4 or 5 petals, 4 or 5 sepals)
ii. 4 lobed funnelform greenish-white or cream petals, 4-8 lobed sepals, minute or lacking - Rubiaceae (Madder) - Galium triflorum (others in subshrubs -whorled, simple, 4 petals)
iii. 5 to numerous (1/8" wide) pale greenish/white tubular partly united petals borne in clusters, 5 parted sepals, 5 stamens, reddish stems

## - Apocynaceae (Dogbane) - Apocynum cannabinum

2. Leaves basal
A. Leaves simple, parallel veined, monocot
i. Flowers with 3 to numerous petals, 3 sepals
a. 3 large white petals, 3 white or green sepals; petals in multiples on stalk with flowers orinented in a downward direction Agavaceae (Agave)
b. Flowers with 3 to 8 small to medium white, pink, or purple petals oriented in an upward or outward direction, 3 sepals (commonly petaloid), small to medium white or pink flowers - Liliaceae (Lily)
B. Leaves simple, primarily basal in a rosette
i. Flowers appear to be a single flower, but are composed of several flowers; flowers can be yellow, white, purple, pink or greenish - some Asteraceae (Sunflower)
ii. Flowers with 0 petals, 3 to 6 petaloid whitish sepals - Polygonaceae
(Buckwheat)- Eriogonum gordonii, Eriogonum inflatum, Eriogonum
wetherillii (others in shrubs, subshrubs, and herbs-alternate, simple)
iii. Flowers with 2 to 5 petals, 4 or 5 sepals
a. Flowers with 2 to 5 yellow petals, 5 green sepals, leaves basal and alternate - Ranunculaceae - Buttercup - Ranunculus testiculatus
b. Flowers with 4 united tiny white petals, 4 united tubular sepals Plantaginaceae (Plantain)
c. Flowers with 5 united yellow lobed petals (upper pair shorter than the lower 3), 4 or 5 sepals, at least partially united, leaves basal and alternate - Scrophulariaceae (Figwort) - Verbascum thapsum - (others in herbs (alternate, simple and opposite, simple)
d. Flowers with 5 lobed lavender to pink tubular petals with the corolla tube rimmed in yellow; 5 tubular lobed sepals-
Primulaceae (Primrose)
e. Flowers with 4 white small to medium petals (not papery), 4 sepals, leaves basal and alternate - Brassicaceae (Mustard) - Draba cuneifolia
iv. Flowers with 5 or more yellow petals, 5 sepals, leaves basal and alternate - Ranunculaceae - Buttercup - Ranunculus cymbalaria
C. Leaves compound
i. Flowers with 4 petals, 2 sepals
a. Yellow flowers with 4 petals, the 2 outer ones spreading at the apex, the 2 inner ones united- Fumariaceae (Bleedingheart)
ii. Flowers with 5 petals, 0-5 sepals, leaves basal
a. Pinkish, purple, leaves basal and opposite - Geraniaceae (Geranium) (also listed in herbs- leaves opposite, compound)
b. flowers with 5 petals; 5 sepals or lacking; petals can be yellow, white, or purple; petals and sepals are distinct; individual flowers are small and grouped in compound umbels; leaves basal (can have a few leaves alternate) and compound - Apiaceae (Carrot)
c. White or cream (less commonly pink or blue tinged) petals with spurs colored like the sepals, leaves basal and alternate Ranunculaceae - Buttercup - Aquilega micrantha
3. Leaves opposite
A. Leaves simple
i. Yellow flowers appear to be a single flower, but are composed of several flowers - Asteraceae (Sunflower) - Flaveria, Thelesperma
ii. Flowers with no petals
a. Flowers with 4-5 white, pink, or purple united tubular petaloid sepals

- Nyctaginaceae (Four O'Clock)
b. female (pistillate) flowers and male (staminate) flowers, 0 petals; 0 sepals; green, brown, white, or yellow - Euphorbiaceae (Spurge) Euphorbia fendleri (other Euphorbiaceae in herbs, alternate, simple, no petals)
iii. Flowers with 4 or 5 united petals, 4 or 5 sepals
a. 4 or 5 united lobed white to pink or rose petals in cymes, flowers tubular expanding at end, 4 or 5 lobed sepals - some Gentianaceae (Gentian) - Centaurium; (Swertia albomargina in herbs, whorled, simple, 4 petals, 4 sepals)
iv. Flowers with 5 united petals, 5 sepals
a. Flowers yellow, white, green, or pink; petals and sepals are folded down; 5 erect, colored corona hoods on top Asclepiadaceae (Milkweed)
b. Flowers blue, purple, or white - Lamiaceae (Mint)-Hedeoma drummondii, Marrubium vulgare
c. Flowers with 5 united tubular white (or less often bluish or pink) petals; 5 lobed sepals, flowers in cymes - some Polemoniaceae (Phlox) - Phlox austromontana; (other members of this family in herbs, alternate, simple: Gilia; and subshrub, opposite, simple: Leptodactylon watsonii)
d. Flowers red, yellow, or blue, united petals, 5 sepals, at least partially united - Scrophulariaceae (Figwort) - Mimulus, Penstemon (others in herbs (basal, simple and alternate, simple)
e. Flowers pale blue to purple, borne in long dense spikes; 5 lobed united tubular petals, regular or slightly 2-lipped; 5 toothed sepals, usually tubular - Verbenaceae (Vervain) - Verbena bracteata
v. Flowers with 5 to numerous petals, 5 sepals
a. 5 to numerous small ( $1 / 8^{\prime \prime}$ wide) pale greenish/white tubular partly united petals borne in clusters, 5 parted sepals, 5 stamens, reddish stems - Apocynaceae (Dogbane) - Apocynum cannabinum
b. 5 white or pink petals, 5 sepals, 4-10 stamens - Caryophyllaceae (Pink)
B. Leaves compound
i. Yellow flowers appear to be a single flower, but are composed of several flowers - Asteraceae (Sunflower) - Bidens frondosa
ii. Flowers with no petals, 4-5 white petaloid sepals - Ranunculaceae (Buttercup) - Clematis ligusticifolia
iii. Flowers with 5 petals, 5 sepals
a. Flowers pink - Geraniaceae (Geranium) (also listed in herbs leaves basal, compound)
b. Flowers with 5 yellow petals; 5 sepals; plant lying flat on the ground, seeds with spines - Zygophyllaceae (Caltrop) - Tribulus terrestris

4. Leaves alternate
A. Leaves simple
i. Flowers appear to be a single flower, but are composed of several flowers; flowers can be yellow, white, purple, pink or greenish some Asteraceae (Sunflower)
ii. Flowers with no petals
a. 5 whitish green sepals which come to a point, lance-shaped leaves Santalaceae (Sandalwood)
b. 3 to 6 petaloid white, yellow, green, pink or red sepals, small. Some stems have swollen nodes, alternate/basal -Polygonaceae
(Buckwheat) - Eriogonum alatum (yellowish, green), Polygonum lapathifolium (green, white, or pink), Rumex hymenosepalus (pink), and Rumex venosus (red) (others in shrubs, subshrubs, and herbsbasal, simple)
c. leaves bluish, small, 2-5 green, yellow or brown sepals Chenopodiaceae (Goosefoot)
d. flowers in axillary clusters; 5 sepals; 3 conspicuous green or red to purple bracts -Amaranthaceae (Amaranth) - Amaranthus blitoides
e. female (pistillate) flowers and male (staminate) flowers, 0 petals; 0-8 sepals; green, brown, white, or yellow - Euphorbiaceae (Spurge) most Euphorbiaceae - (Euphorbia fendleri has opposite leaves)
iii. Flowers with 3 petals, 3 sepals
a. 3 brownish, purple, green or yellowish green petals (free or united, one petal differing from the other two in form, size, and coloration, often forming a lip or spur), 180 degree twist in the flower causing the upper petal to look like the lower one; 3 sepals; sepals either green and sepaloid or colored and petaloid; Leaves often sheathing, parallel veined; monocot - Orchidaceae (Orchid)
iv. Flowers with 4 petals, 4 sepals
a. White, yellow, or pink small to medium petals (not papery) Brassicaceae (Mustard)
b. Flowers with 4 white, yellow, or pink large papery clawed petals, 4
sepals, lower leaves can be opposite or basal - Onagraceae (Evening-Primrose)
v. Flowers with 4 or 5 united tubular red, green, or pink or purple petals; 4 or 5 sepals, at least partially united - Scrophulariaceae (Figwort) Castilleja, Cordylanthus wrightii, (others in herbs (basal, simple and opposite, simple)
vi. Flowers with 4-6 yellow petals (generally 5) open only in sunshine, soon close; 2 united sepals - Portulaceae (Purslane) - Portulaca oleracea
vii. Flowers with 5 united petals, 5 sepals
a. Flowers small yellow, pink, white, red, or purple. (Sometimes lower leaves opposite in Cryptantha) - most Boraginaceae (Borage): Crytantha, Cynoglossum, Heliotropium, Lappula, Lithospermum (Tiquilia in subshrubs)
b. Flowers purple, blue, or white, not papery; flowers grouped in Sshaped cymes, rarely solitary; the lower leaves sometimes opposite in Phacelia - Hydrophyllaceae (Waterleaf)
c. Flowers with 5 united tubular white to violet or yellowish funnelform petals (some are ill-scented and open in the evening); 5 lobed tubular sepals; large leaves- Solanaceae (Potato)
d. Flowers with 5 united funnelform white, blue, lavender, purple or rose petals, 5 separate sepals - Convolvulaceae (Morning Glory)
f. Flowers with 5 united petals, 5 lobed sepals, flowers are funnelform, scarlet, lavender, blue, white, yellow, or pink - some Polemoniaceae (Phlox) - Gilia (others in herbs, opposite, simple: Phlox; and subshrub, opposite, simple: Leptodactylon watsonii)
g. Flowers with 5 united tubular yellow petals; 4 or 5 sepals, at least partially united - Scrophulariaceae (Figwort) - Linaria dalmatica (leaves alternate, simple); Verbascum thapsum (leaves basal and alternate) (others in herbs -basal, simple and opposite, simple)
viii. Flowers with 5 distinct petals, 3 to 5 sepals
a. Flowers yellow or bluish-purple, flowers papery and short -lived, 5 distinct sepals - Linaceae (Flax)
b. Flowers with 5 orange or red petals, 3 to 5 sepals - Malvaceae (Mallow)
c. 5 bluish-white tube-shaped partly united petals borne in terminal clusters, 5 parted sepals, 5 stamens - Apocynaceae (Dogbane) Amsonia tomentosa
d. 5 distinct yellow petals, 4-5 sepals, petaloid stamens - Loasaceae (Stickleaf) - Mentzelia albicaulis (other species at Arches NP have 10 petals)
e. Flowers with 5 unequal petals, yellow, purple veined and commonly purple dorsally, the lowermost enlarged and spurred; 5 separate sepals, distinct or nearly so - Violaceae (Violet) - Viola purpurea var. venosa
ix. Yellow flowers with 5-10 distinct petals, 5 sepals, numerous petaloid stamens - Loasaceae (Stickleaf) -Mentzelia albicaulis: 5 yellow petals;

Mentzelia multiflora: 10 yellow petals; the inner 5 somewhat shorter and narrower; Mentzelia pterosperma: 10 petals; Mentzelia pumila: 10 petals;
B. Leaves compound
i. Flowers with 4 petals, 2 to 5 sepals
a. Flowers with 2 unlike sets of 2 purple or blue petals, 5 purple petaloid sepals - Ranunculaceae (Buttercup) - Delphinium (Larkspur)
b. Flowers with 4 yellow petals, 2 sepals - Fumariaceae (Fumitory)
c. Flowers with 4 yellow petals, 4 sepals - Capparaceae (Caper)
d. Flowers with 4 white, cream or yellow petals, 4 sepals - Brassicaceae (Mustard)- some Descurainia, and Nasturtium officinale
ii. Flowers with 5 petals, 5 sepals
a. 5 blue, purple, pink, white, yellow or inconspicuous petals distinct or lower 2 united, sepals united - Fabaceae (Pea) - except Parryella and Robinia

