

NR 222



NATIVE TREE, SHRUB, & HERBACEOUS PLANT IDENTIFICATION

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Note to Students

NOTE TO STUDENTS: THIS DOCUMENT IS INCOMPLETE WITH OMISSIONS, ERRORS, AND OTHER ITEMS OF INCOMPETANCY. AS YOU MAKE USE OF IT NOTE THESE TRANSGRESSIONS SO THAT THEY MAY BE CORRECTED AND YOU WILL RECEIVE A CLEAN COPY BY THE END OF TIME OR THE SEMESTER, WHICHEVER COMES FIRST!!

THANKING YOU FOR ANY ASSISTANCE THAT YOU MAY GIVE, RON ALVES.

Introduction

This manual was initially created by Harold Whaley an MJC Agriculture and Natural Resources instruction from 1964 – 1992. The manual was designed as a resource for a native tree and shrub identification course, Natural Resources 222 that was one of the required courses for all forestry and natural resource majors at the college. The course and the supporting manual were aimed almost exclusively for forestry and related majors. In addition to NR 222 being taught by professor Whaley, it has also been taught by Homer Bowen (MJC 19xx -), Marlies Boyd (MJC 199X – present), Richard Nimphius (MJC 1980 – 2006) and currently Ron Alves (MJC 1974 – 2004).

Each instructor put their own particular emphasis and style on the course but it was always oriented toward forestry students until 2006. The lack of forestry majors as a result of the Agriculture Department not having a full time forestry instructor to recruit students and articulate with industry has resulted in a transformation of the NR 222 course. The clientele not only includes forestry major, but also landscape designers, environmental horticulture majors, nursery people, environmental science majors, and people interested in transforming their home and business landscapes to a more natural venue.

The basic fundamentals of botany and plant taxonomy are still an integral part of the course. However, the scope of field information has changed. The field trips, which are essential to knowing California native plants now range from the Great Basin side of the Sierra Nevada to Point Lobos in Santa Cruz County on the Pacific Ocean; a transect of plant life across central California. In addition at least one arboretum will be visited. Plant taxonomy is a dynamic discipline of study. Many of the plants have undergone classification and name changes. Every effort has been made to update these changes to their most current status. This manual, which features approximately 275 different plants, will serve as a reference for the plant life observed in the field.

The manual is organized by the plants listed alphabetically by scientific name. Granted common names would be a more user friendly means of organizing the manual, but many plants have numerous common names and learning to identify plants by their scientific name is a course requirement. Each plant's description is limited to one page with 15 categories about each plant being featured. The information in reference to each plant was gleaned from a variety of sources listed in a bibliography at the end of the manual.

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Glossary of Terms Used in This Document

ACHENES: A dry single-seeded fruit that does not open to release its seed. Dandelions and sunflowers have achenes.

ARBORESCENT:

AURICLES:

AXIL: The angle or the area between the stem and the leaf; the space where the petiole of a leaf of the leaf itself attaches to the stem.

BRACT: A leaf-like or scale-like structure associated with a flower or a cone

CATKINS: A spike of unisexual flowers with inconspicuous perianth, conspicuous bracts, and usually pendant (hanging or drooping). These flowers are typical of salix and juglans.

CAULINE: Leaves that are borne on a stem, like the blade attached to the petiole which, in turn, is attached to the main stem.

CYMES: A flower cluster in which each flower stem ends in a single flower and other flower stems form below and to the side

DIOECIOUS: Male and female flowers on separate plants.

DRUPE: Fleshy or pulpy fruit covering a hardened stone that contains a seed. Prunus is an example of these kinds of fruits.

EXFOLIATES:

FASCICLES:

GLABROUS: Smooth and lacking hairs or bristles

GLACOUS: Covered with a whitish, grayish or bluish waxy or powdery film that sometimes can be easily rubbed off.

HERBACOUS: A non-woody plant that has softer stems, branches, and twigs; it like an herb.

INVOLUCRES: A ring of modified leaves beneath a flower or flower cluster, e.g. in a dandelion or daisy flower

LENTICELS: A common on the surface of twigs and fruits.

MONOECIOUS: Male and female flowers on the same plant.

NODE: A swollen site on a stem where leaves and/or branches arise. Nodes remain after leaves have fallen.

PANICLE: A flower head that is comprised of numerous lateral pedicels (twigs) that branch out from a main stem. Generally this flower arrangement is somewhat pendant.

PAPPUS: A covering of scales, bristles, and feathery hairs that surrounds the fruit (seeds) of plants such as dandelions and thistles and helps to disperse the fruits.

PEDICEL: The stalk of an individual flower or fruit.

PENDANT: Drooping or hanging, such as a flower or fruit.

PERIANTH: A combination of the sepals and corolla of a flower; these are the bracts outside of the petals and the petals themselves.

PETIOLE: A stalk that connects the leaf to the stem

PHYLLARIES: One of the bracts forming the involucre or the head or inflorescence of composite plant.

PISTIL: The female reproductive parts of a flower: an ovary, style, and pollen receiving stigma.

PISTILLATE: Having fertile female flowers, pistils, but infertile or missing stamen.

POME: A fleshy, non-opening fruit like a pear or an apple. It does NOT contain a hardened structure surrounding the seed. Numerous seeds are embedded in the central portion of the flesh.

PUBERULENT: Covered with minute hairs or very fine down; finely pubescent.

PUBESCENT:

RACEME: A kind of flower that is unbranched.

SAMARA:

SEROTINOUS:

SESSILE: Attached directly to the stem, as in a leaf or fruit that contains no petiole, pedicel, or other kind of stalk.

SORI: The reproductive structure on ferns; a distinct cluster of spores usually on the underside of fronds.

STAMEN: The male reproductive parts of a flower: a filament and a pollen bearing anther.

STAMINATE: Having fertile male flowers, stamen, but infertile or missing pistils.

STIPULE: A leaf or scale like appendage at the axil, junction between the petiole and the stem. Generally are paired.

STOMATA: A microscopic pore on a leaf or stem through which gases such as carbon dioxide, oxygen, and water vapor pass.

STROBOLI:

TOMENLOSE: Covered with densely matted woolly hairs

TUBERCLES: Small wart-like projections.

UMBREL: A flower that is the result of many pedicels (stalks) radiating from the same point.

Leaf Shapes and Arrangements

See explanation below pictures



Sword-shaped
(*ensiformis*)
Long, thin,
pointed



Lance-shaped
(*lanceolata*)
Long, wider
in the middle



Ovate
(*ovata*)
Oval, with a
tapering point



Elliptic
(*elliptica*)
Oval, with a
short point



Round
(*rotundifolia*)
Circular



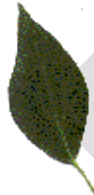
Cordate
(*cordata*)
Heart-shaped



Oblanceolate
(*oblancoolata*)
Top wider than
bottom



Spathulate
(*spathulata*)
Spoon-
shaped



Rhomboid
(*rhomboidalis*)
Diamond-
shaped



Lobed
(*lobata*)
With several
points



Spear-shaped
(*hastata*)
Pointed,
with barbs



Pinnatisect
(*pinnatifida*)
Cut, but not to
the midrib



Pinnate
(*pinnata*)
2 rows of
leaflets



Bipinnate
(*bipinnata*)
Each leaflet
also pinnate



Tripinnate
(*tripinnata*)
Each leaflet
divided into 3



Trifoliate
(*trifoliata*)
Divided into
3 leaflets



Palmate
(*palmata*)
Divided into
many lobes



Digitate
(*digitata*)
Divided into
5 lobes



Opposite
(*oppositifolia*)
Leaves opposite
one another



Alternate
(*alternifolia*)
Arranged
alternately



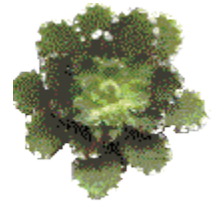
Perfoliate
(*perfoliata*)
Stem through
the leaves



Peltate
(*peltata*)
Rounded,
stem underneath



Whorled
In circles
round the stem



Rosette
Leaves in
close rings

Plants have leaves in many different shapes - the thicker the book you refer to, the more leaf shapes they seem to find, but here are some of the basic ones. Sometimes the Latin name will indicate the leaf shape, so I've put the Latin specific epithet in as well. This will help you identify a plant (if it has that epithet in its name, that's what the leaf will look), and, on the other hand, if it has that shape leaf, it's possible its Latin name will contain that descriptive adjective.

Often a single plant will have leaves of several different shapes, so any description has to be taken as an indication of what you can expect to find on a particular plant, rather than a description of what they will look like. I have one book that uses phrases like 'ovate-lanceolate to obovately-cordate', but I prefer to keep it simple, and accept that most of the time the leaves will be fairly variable but roughly correspond to a basic shape.

Many plant exhibit galls. These bumps and warts, which can be on leaves, stems, woody portions of the plant, and roots, are abnormal growths caused by five different causative agents

- 1 Gall insects lay their eggs on plant parts, especially the leaves, and the plants respond by growing cells around the eggs/larvae. These cell eventually form large knots, some the size of ping pong balls, that do not look any other part of the plant. This is largely true on oak tree leaves
- 2

DRAFT

***Abies concolor* - White Fir**

Abies means rising one or tall tree and *concolor* means of the same color

Plant Family: Pinaceae – The Pine Family

Geographical Distribution: This fir grows throughout most of California Mountains, central Oregon, Idaho, Colorado, and northern Baja; between 3,000 – 11,150 feet elevation (900 – 3,400 meters). **Plant**

Communities: Grows in mixed evergreen forest, yellow pine forest, to lower red fir forest, and lodge pole pine forest.

Habitat: Because of its wide distribution, white fir is subjected to very different climates, soils, and other environmental factors.

Size: A medium to large tree between 130 – 200 feet tall (40 – 60 meters) with trunks from 3 – 5 foot diameter (0.9 – 1.5 meters); largest tree in Yosemite National Park is 217 feet tall (65.75 meters) and a 7 foot 4 inch diameter (2.2 meters); can live up 300+ years of age; tree shape is cylindrical or spire-like.

Bark/Trunk/Twigs: Gray or drab brown & deeply fissured; pale tan color under old bark; young trees smooth light gray with numerous resin blisters; branches in whorls around trunk. Twigs are dark orange at first and then turn gray-green and finally gray. **Foliage:** Evergreen needles 1.5 - 2.75 inches long (3.75 – 7 cm) in flat or Vee-shaped sprays; tips round; twisted at base; evidence of stomatal bloom; needles are flat and can be easily rolled. Foliage has a grayish frosted (glaucous) color above and two glaucous white stomatal bands below.

Flowers: N/A, a gymnosperm

Fruit: Seed cone is barrel shaped and turns from green to brown to purple; 3 - 5 inches (7.5 – 12.5 cm) long and are borne in an upright fashion in the tree's the upper most crown. The male cones are less than ½ inch long (1.25 cm) and are densely grouped on the underside on 1 year old twigs about mid crown and range from yellow to red color.

Site Ecology: Shade tolerant and somewhat fire resistant; white firs have actually increased in numbers due to fire suppression. Will grow under dry to medium moisture conditions, but needs well-drained soil.

Natural Significance: Mule deer browse white fir foliage. Chickarees, Clark's nutcracker, chipmunks, mice, and squirrels feed on the cone seeds. The hollowed out trunks of old trees are often occupied by a variety of mammals, including the black bear. In fact, there are 33 species of mammals, 123 species of birds, and 17 species of reptiles commonly present in California white fir forests,

Ethnobotanical Use: Southwestern Indians used an infusion of white fir foliage in a bath for rheumatism. A poultice of sap was applied to sores, cuts, and boils. White fir resin was used to fill teeth. An extract was also used to brew tea.

Commercial Use: White Fir is popular as a Christmas tree and Christmas spray decoration. Because the wood is straight grained, non-resinous, fine grained, straight and strong; it is sought after as construction lumber. The tree is also a popular landscape tree, especially in northeastern U.S. The Rocky Mountain form of *Abies concolor* has cultivars that are used in landscaping mostly east of the Rockies.

Propagation: White fir can be easily propagated by seed or via rooted cuttings.

Remarks: Needs more moisture and better soil than Ponderosa Pine. Old trees often infected with rots and insects. Controversy regarding white fir classification stems from the diverse habitat that the species occupies.



***Abies magnifica* var. *magnifica* – Red Fir (“Silver Tip”)**
Abies means rising one or tall tree and *magnifica* means magnificent

Plant Family: Pinaceae – The Pine Family

Geographical Distribution: Found primarily in Kings Canyon and Sequoia National Parks and from Mt. Lassen north to Crater Lake, Oregon; between 5,300 - 9,200 feet (1,620 - 2,740 meters); lower elevations in the Cascade and Klamath mountains and higher elevations in the southern Sierra Nevada.

Plant Communities: Red fir forests, mixed conifer forests, and lodge pole pine forests are the common communities of red fir.

Habitat: Found in mixed conifer and sub alpine forests, red fir favors cool, moist conditions where soils are deep, young, and lacks organic content.

Size: A large tree that matures between 150 - 200 ft. tall (45.5 – 60 meters) with trunk diameter of 4 - 5 ft. (1.2 – 1.5 meters). There are a few giants over 230 feet tall (70 meters) with 10 foot diameter trunks (3 meter). Life spans up to 300 - 350+ years.

Bark/Trunk/Twigs: Young trees are grey with resin blisters; old trees are reddish internally (that’s how it got its name) and reddish brown externally showing furrows. Branches are initially horizontal, but become more droopy and ragged with age.

Foliage: Short, stiff, and thick needles 0.75 - 1.5 inches long (2 - 4 cm) that tend to parallel branches so that they look like hockey sticks; they cluster on upper sides of branches; needles ridged on upper surface and tips blunt. First year needles are silvery, hence the name silver tip; aged needles are blue green.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Monoecious; male cones are small, slightly larger than ½ inch (1.6 cm) long, deep purple-red and clustered on underside of 1 year old twigs. Female cones are 6 – 9 inches long (15 – 23 cm) and 2 – 3 inches wide (5 – 8 cm) and an oblong cylinder in shape. They are erect and on the upper-most branches. Cones are brown when mature. Pollen is shed in May – June. Seeds are produced every 4th year in great abundance. Seeds are wind dispersed in September and October.

Site Ecology: Moderately shade tolerant, but subject to rots, insects, and lightning damaged crowns on tall, old trees. Red Firs tend to grow on young soils with little or no horizon development. Red fir has a high frost tolerance but a low drought tolerance. Red fir is the climax species in all zones that it occurs.

Natural Significance: Because pure red fir stands are dense, about 111 species of birds and 52 species of mammals make these forests their habitat from periodically to permanently. Few reptiles habituate red fir forests due to their high elevation. Birds and squirrels use the damaged snag tops of lightning struck trees for nesting sites.

Ethnobotanical Use: Nothing noted, probably due to the location at higher elevations.

Commercial Use: Wood is used for coarse lumber, framing, plywood and veneer. It is also used for printing paper. Of course it’s the popular silver tip Christmas tree. Red fir along with white fir produces 25% of California’s timber.

Propagation: Red Fir is most often propagated by seeds, but can also be reproduced through soft wood cuttings. Seed stratification at 30 degrees for 3 months improves seed germination.

Remarks: Tough to distinguish between Red Fir (*A. magnifica* var. *magnifica*), Shasta Red Fir (*A. magnifica* var. *shastensis*), and Noble Fir (*A. procera*). Red Fir and Noble Fir readily hybridize. In fact, some botanists think that Shasta Red Fir is the hybrid between Red Fir and Noble Fir. Shasta red fir tends to be found in the northern portion of the red fir zone.



***Abies magnifica* var. *Shastensis* – Shasta Red Fir**

Abies means rising one or tall tree; *magnifica* means magnificent, and *shastensis* means from the Mt. Shasta area.

Plant Family: Pinaceae – The Pine Family

Geographical Distribution: Found primarily in Kings Canyon and Sequoia National Parks and from Mt. Lassen north to Crater Lake, Oregon; between 4,600 - 9,200 feet (1,400 - 2,800 meters); lower elevations in the Cascade and Klamath mountains and higher elevations in the southern Sierra Nevada

Plant Communities: Grows in upper mixed coniferous forests, subalpine forests, and red fir forests.

Habitat: Red fir favors cool, moist conditions where soils are deep, young, and lacks organic content.

Size: A large tree that matures between 150 - 200 feet tall (45.5 – 60 meters) with trunk diameter of 4 - 5 feet (1.2 – 1.5 meters). There are a few giants over 230 feet tall (70 meters) with 10 foot diameter trunks (3 meters). Life spans up to 300 - 350+ years.

Bark/Trunk/Twigs: Young trees grey with resin blisters; old trees are reddish brown internally and brown to purplish black externally showing furrows.

Foliage: Short needles 0.75 - 1.5 inches long (2 - 4 cm) that tend to parallel branches so that they look like hockey sticks; they cluster on upper sides of branches; needles ridged on upper surface and tips round.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Monoecious; male cones are small, slightly larger than ½ inch (1.6 cm) long, deep purple-red and clustered on underside of 1 year old twigs. Female cones are 6 – 9 inches long (15 – 23 cm) and 2 – 3 inches wide (5 – 8 cm) and an oblong cylinder in shape. They are erect and on the upper-most branches. Cones are brown when mature. Pollen is shed in May – June. Seeds are produced every 3rd year in great abundance. Seeds are wind dispersed in September and October. Shasta red fir has long pointed bracts that occur between cone scales that physically distinguished it from *A. m.* var. *magnifica*.

Site Ecology: Moderately shade tolerant, but subject to rots, insects, and lightning damaged crowns on tall, old trees.

Natural Significance: Because pure red fir stands are dense, many birds and mammals make these forest their primary habitat. Birds and squirrels use the damaged snag tops of lightning struck trees for nesting sites.

Ethnobotanical Use: No accounts available

Commercial Use: Red Fir is used lumber, plywood, and Christmas tree (it's the "silver tip").

Propagation: Stratify seed for 60 days at 40^o F before planting.

Remarks: Tough to distinguish between Red Fir, Shasta Red Fir, and Noble Fir. Red Fir and Noble Fir readily hybridize in its northern habitat but not in the Sierra Nevada. Shasta red fir tends to be found in the northern portion of the red fir zone. The largest tree is in the Rogue River National Forest in Oregon and is 228 feet tall (70 meters) by 6 feet 6 inches in diameter (2 meters).

Abronia latifolia – Yellow Sand Verbena

Abronia is Greek meaning graceful or delicate & *latifolia* with flowers on the side

Plant Family: Asteraceae – Nyctaginaceae – Four O’Clock Family

Geographical Distribution: Grows along the Pacific coast from southern California to British Columbia under 330 feet (100 meters) in elevation.

Plant Community: Grows in coastal strand and coastal sage scrub

Habitat: Grows on sand dunes. Its deep roots enable sand verbena to grow in these tough conditions.

Size: This plant is a creeper. Its stems may reach 3 feet long (90 cm), but it only reaches to about 6 – 8 inches high (15 – 20 cm), including its flowering stalks.

Bark/Trunk/Twigs: Herbaceous plant with trailing stems and green fleshy leaves. Plants form a dense mat on top of sand dunes.

Foliage: Leaves are ½ - 2 ½ inches long (1.3 – 6.3 cm), opposite, fleshy, thick and ranging from ovate to reniform in shape. They are a rich green color.

Flowers: Growing out of leaf axils of vine-like stems are long stalks with many yellow trumpet shaped flowers in hemispherical heads. Flower heads are 1 – 2 inches wide (2.5 – 5 cm) and each small trumpet shaped flower has five lobes. It typically flowers between May and August, but may continue to bloom into late fall if weather is mild.

Fruit: The single-seeded fruit has 3 – 5 wings

Site Ecology: Kind of unusual: grows best in very loose sand with little organic matter. Also likes the salt spray and apparently will not survive if under an irrigated fresh water regime. Yellow sand verbena is non-frost tolerant.

Natural Significance: Stabilization of sand dunes and food source for pollinating organisms

Ethnobotanical Use: Native Americans consumed the roots; a few people still eat them today.

Commercial Use: Used in beach restoration and the stabilization of critically erosive areas such as coastal dunes

Propagation: Yellow sand verbena is propagated by seeds

Remarks: There are two similar species: Beach Pancake (*A. maritima*) with wine red flowers and Beach Sand Verbena (*A. umbellata*) with deep pink to white flowers. *A. latifolia* hybridizes with both of these species.



Acer circinatum – Vine Maple

Acer: Latin name - sharp (leaves or used as lances) or Celtic "ac" (hard) / Latinized form of Malayan name - leaves resemble genus *Vitex*; *circinatum*: with crisped hairs.)

Plant Family: Aceraceae – The Maple Family

Geographical Distribution: Vine maple ranges from southern Alaska to the mountains of northern California; including the Cascades and northern Sierras; from sea level to about 5,000 feet (1,500 meters)

Plant Communities: Grows in north coastal forests, which includes north coastal coniferous forest, redwood forest, Douglas fir forest, and mixed evergreen forest.

Habitat: Coastal and Montane forests and woodlands along deeply shaded stream banks; this is primarily an understory species.

Size: Shrub or small tree that grows from 3 – 35 feet tall (1 – 10 meters). Vine maple is usually kind of straggly.

Trunk /Bark/Twigs: Multistemmed vine-like trunk, often reclining, spreading and, rooting at nodes. Twigs are slender, hairless and can either be brown, green or purple and are often speckled.

Foliage: Deciduous leaves that are opposite, simple and palmate with 5 to 9 lobes. Pale green in color, thin and 2 – 5 inches wide (5 – 12.5 cm), leaves have sharply serrated margins. Leaves are not as deeply lobed as big leaf maple or dwarf maple. Leaf is almost round in outline. The fall leaf color can be yellow to orange to scarlet.

Flowers: Flowers are in clusters of 2 -10 with greenish white petals and reddish-purple sepals. Flowering time is from April – May when the plant begins to leaf out.

Fruit: Reddish colored double winged samaras. The wings of the two seeds are widely divergent; forming almost a straight line rather than a vee like most paired wing seeded plants.

Site Ecology: Plant needs a moist habitat and shaded environment; a shaded stream bank is most ideal. Tolerates clay soil.

Natural Significance: Leaves can and will be eaten by deer, elk, cattle, and sheep.

Ethnobotanical Use: Not researched

Commercial Use: Vine maple is often planted as an ornamental. It can be trained to a shapely tree or left as a shrub.

Propagation: Vine maple is easily propagated from both seeds and cuttings.

Remarks: In the fall the leaves turn yellow, orange, or red and bring color to otherwise darken forest sites. David Douglas (1799-1834), a Scotsman, was commissioned by the London Horticultural Society to go to California to classify and collect. Vine Maple was one of the species he collected and introduced to English gardens



***Acer glabrum* – Dwarf Maple or Mountain Maple**

Acer: Latin name - sharp (leaves or used as lances) or Celtic "ac" (hard) / Latinized form of Malayan name - leaves resemble genus *Vitex*; *negundo*: from a Sanskrit name for a tree whose leaves resemble box elder. *Glabrum* means smooth or hairless.

Plant Family: Aceraceae – The Maple Family

Geographical Distribution: Found in Western North America from Mexico to Alaska at elevations from 3,000 to 9,000 feet (900 – 2,730 meters). In California, it grows mostly at elevations above 5,000 feet (1,515 meters).

Plant Communities: This maple grows in yellow pine forest, red fir forests, and lodgepole forests.

Habitat: Occurs near river banks and as undergrowth in montane forests, especially along canyons and damp mountain slopes in coniferous forests; usually forming thickets.

Size: A shrub or small tree that typically reaches 5 – 15 feet or taller in height (1.5 - 4.5 meters) and 2 – 3 inches in diameter (5 – 7.5 cm).

Trunk /Bark/Twigs: Bark is smooth, thin and either gray or brown. Twigs can be either red or white and are slender and upright.

Foliage: Deciduous, palmately lobed, oppositely arranged, thin leaves are green on upper surfaces and gray on lower and have 3 major and 2 supplementary lobes. Mostly simple, with lobe sinuses equaling more than 1/3 of the length of the lobe, though an occasional leaf may be compound; varying widely across its range. Margins are sharply serrate, petioles long and reddish.

Flowers: Usually Monoecious; pinkish or greenish-yellow flowers, in flat-topped clusters numbering 2 to 10; blooms from May to July.

Fruit: Yellow or red double (two-winged) samaras, ½ - 1 ½ inches long (1.25 – 3.75 cm)

Site Ecology: Requires a regular source of water and an elevation of 4,500 feet (1,360 meters) and higher to thrive in California. Dwarf maple is shade tolerant and can persist in the under story of fir and spruce climax forests.

Natural Significance: Deer, elk, and sheep browse the foliage and squirrels and chipmunks favor the seeds.

Ethnobotanical Use: Not researched

Commercial Use: Nothing noted

Propagation: Not researched

Remarks: The largest specimen, at 67 feet in height (20.3 meters), lives in Island City, Washington; also called Rocky Mountain Maple. Often times there are red blotches on the leaves caused by galls produced by an eriophyid mite. *A.g. var. diffusum* has small leaves and white twigs and is found in desert mountains and the eastern Sierra Nevada. *A.g. greenei* has very small leaves and a samara with overlapping wings and is found only in the Southern Sierra Nevada.



Acer macrophyllum- Big Leaf Maple

Acer: Latin name - sharp (leaves or used as lances) or Celtic "ac" (hard) / Latinized form of Malayan name - leaves resemble genus *Vitex*; *macrophyllum*: means large leaves.

Plant Family: Aceraceae – The Maple Family

Geographical Distribution: Found in all regions of California excluding the Central Valley and deserts, and extending north into Alaska, at elevations from sea level to 5,000 feet (1,515 meters).

Plant Communities: Grows in the north coastal coniferous forest, redwood forest, Douglas fir forest, mixed evergreen forest, riparian woodland, and yellow pine forest.

Habitat: Commonly found on stream banks and moist canyon soils, but can occur in drier habitats.

Size: A large tree that typically grows from 30 - 100 feet (9 – 30 meters) in height and 1 – 4 feet in trunk diameter (0.9 – 1.2 meters).

Trunk/Bark/Twigs: Brown bark is furrowed into small, four-sided plates. Twigs are hairless and green when young. Species is often multi-trunked.

Foliage: Palmately-lobed, oppositely-arranged leaves are 6 - 10 inches long (15 – 25 cm) and wide, dark green above, paler and hairy beneath. Long, red petioles are up to 10 inches long (25 cm) and exude a milky sap. Deciduous leaves turn orange or yellow in autumn before falling off.

Flowers: Yellowish-green complete or staminate ¼ inch (6.25 mm) flowers on 6 inch long (15 cm) terminal, narrow, drooping clusters that open in early May.

Fruit: Single seeded 1 - 1 ½ inches (2.5 – 3.75 cm) samara with wings at divergent angles that are covered with stiff hairs and mature in May - July.

Site Ecology: Normally grow in moist, well-drained soils but can endure drought in its native range, tolerates serpentine and clay soils and surprisingly is also a very flood tolerant. Grows in full sun to partial shade

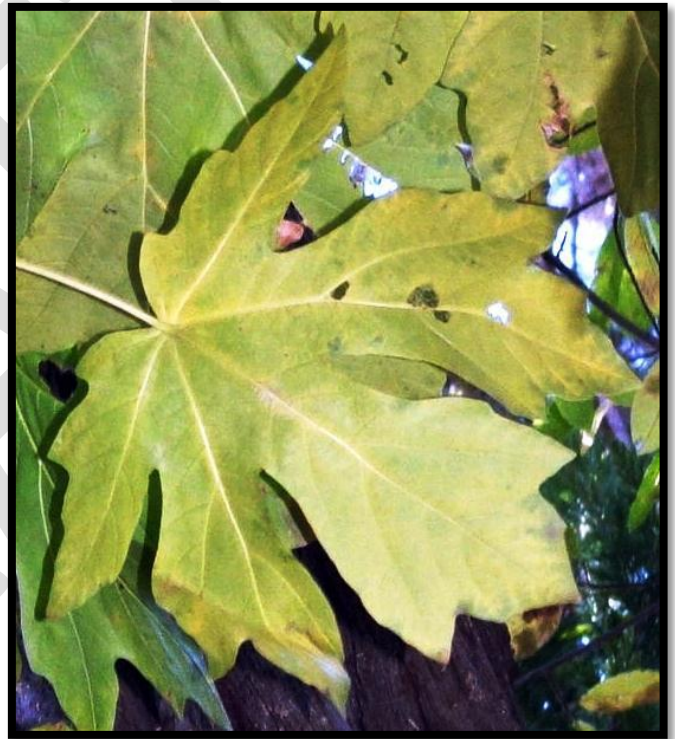
Natural Significance: The abundant annual seed crop is eaten by mice, squirrels, woodrats, chipmunks, chickarees and finches. Flowers are attractive to numerous insects.

Ethnobotanical Use: Native Americans used wood to make canoe paddles, the leaves were food wraps for storage, and inner bark was used to make rope and even crude clothing.

Commercial Use: Light brown wood used for furniture, veneer, paneling, musical instruments, and cabinets. Maple wood is also used to make axe and broom handles. Sap can be tapped for maple sugar. Big Leaf Maple is planted on sites for revegetation of disturbed riparian areas. It can be an interesting and color specimen tree in a landscape. Even though it does not normally occur in the Central Valley, a natural is growing in Knights Ferry and I have two that are surviving quite well in my landscape in Oakdale, CA.

Propagation: Stratify seed for 90 days at 41^o F. before planting.

Remarks: Leaf size and hairiness is highly variable throughout the range. Big Leaf Maple is the most commonly occurring western maple and has largest leaves of any North American maple. The dark splotches on the fall leaves are caused by speckled tar spot fungus (*Rhytisma punctatus*).



***Acer negundo* var. *californicum* – California Box Elder**

(Acer: Latin name - sharp (leaves or used as lances) or Celtic "ac" (hard) / Latinized form of Malayan name - leaves resemble genus *Vitex*; negundo: from a Sanskrit name for a tree whose leaves resemble box elder.)

Plant Family: Sapindaceae (previously Aceraceae) – The Soap Berry Family

Geographical Distribution: In California, the species is widespread outside of desert areas, and can be found at elevations from sea level to 6,000 feet (1,820 meters).

Plant Communities: Many plant communities including: most typically wetland-riparian but also yellow pine forest, foothill woodland, chaparral, and valley grassland

Habitat: Occurs in wet or moist environments such as along streams or in valleys, in forests or woodlands, usually at lower elevations. The species is adapted to riparian habitats, but can tolerate drought.

Size: Box elder is a small to medium tree that grows rapidly to 35 feet (10.5 meters) in 20 years, with a spread of 15 - 35 feet (4.5 – 10.5 meters); trees may reach 50 feet (15 meters).

Bark/Trunk/Twigs Bark is a pale gray-brown and has many narrow ridges and fissures becoming deeply furrowed at maturity. Mature twigs are coated with down.

Foliage: Deciduous, opposite, pinnately compound leaves have 3 - 7 ovate or elliptical leaflets, which measure 2 – 4 inches long (5 – 10 cm) and 1 - 1 ½ inches wide (2.5 – 3.75 cm). Upper surfaces are light green, lower are paler. Leaflet margins are coarsely saw-toothed and occasionally lobed. Foliage turns yellow or occasionally red in autumn.

Flowers: Yellow-green, 3/16 inch (4.5 mm) long flowers appear clustered on drooping stalks before leaves come out in spring, with male and female flowers on separate plants; thus box elder is dioecious.

Fruit: Single-seeded white to pale yellow, paired samaras with conspicuous wings, mature in summer and remain on tree through winter.

Site Ecology: Adapted to all soil types. This is a very tough tree that tolerates heat, cold, wind, seasonal flooding and drought. Typically found in moist habitats such a river and stream banks. Box elder grows in sun to partial shade in a 10 – 20 inch (25 – 50 cm) average annual rainfall regime.

Natural Significance: Riparian box elder communities provide important habitat for many wildlife species and protect livestock from temperature extremes in summer and winter. Many species of birds and squirrels feed on the seeds of box elder. This tree may be poisonous to livestock

Ethnobotanical Use: The Plains Indians used the sap as a source of syrup, and it is still used today, but the product is not as sweet as sugar maple syrup.

Commercial Use: Useful for stream bank erosion control and as a wind break. The species is widely planted as an ornamental. Wood is of low commercial value.

Propagation: Propagated by seed that needs to be stratified at 41 degrees F (9 degrees Celsius) for 90 days.

Remarks: The tree is periodically attacked by box elder bug. Species has a short life span; averages about 35 years but can live to 75 – 100 years. Heavy pubescence on the leaves distinguishes *A.n.* var. *californicum* from the 5 other recognized subspecies. This variety only occurs in California.



Achillea millefolium – Common Yarrow

Achillea: named after the Greek warrior Achilles; *millefolium*: thousand leaves or much divided leaves.

Plant Family: – Asteraceae - Sunflower Family

Geographical Distribution: Throughout California except the deserts; below 11,500 feet (3,500 meters)

Plant Communities: Yarrow species are found in almost all plant communities except the alkali sink scrub, Joshua tree woodland, and creosote bush scrub.

Habitat: Many habitats, except deserts.

Size: Usually is from 1 – 4 foot tall (0.3 – 1.3 meters) including flower stems.

Bark/Trunk/Twigs: Numerous simple erect twig-like stems; it is a shrub with no trunk or bark although the stems do become woody with age.

Foliage: Semi evergreen herbaceous perennial with 3 pinnately dissected fern-like leaves covered with white woolly hairs; green to grayish green color; very aromatic

Flowers: Very small flower heads, ¼ inch (0.6 cm) that collectively form a tight flattened cluster; white to pink; blooms from June to September; flowers are on stiff stems up to 4 feet (1.3 meters) high raising well above the vegetation. Flower heads turn dusty brown in fall.

Fruit: Produces many tiny, 2 mm, seeds. If seeding to replant, do not cover the seed as they need light to germinate.

Site Ecology: Sun to partial shade, moderate water to drought tolerant, will do well in a variety of soil types, but drainage must be good.

Natural Significance: Seeds are winter forage for birds such as towhees, juncos, and sparrows; flowers attract bees and butterflies.

Ethnobotanical Use: Yarrow was brewed into a tea to treat a variety of ailments and the Native Californians called it “life medicine”.

Commercial Use: seeded as a ground cover; seeded to stabilize slopes; dried flower arrangements; used in a variety of applications in landscaping.

Propagation: Regenerates most effectively with seeds that are left on the soil surface and exposed to light; also can be propagated by dividing rhizomes.

Remarks: Subject to aphid infestations; spreads by underground rhizomes that can result in invasiveness on favorable sites. With more than 85 species of yarrow, the number of cultivars that have been developed is probably undocumented. California has only one native specie. The genus name *Achillea* is named after the warrior Achilles because during battle he treated the wounds of his men with yarrow to enhance blood coagulation.



Adenostoma fasciculatum – Chamise

Adenostoma: Adeno means gland or glandular; *fasciculatum*: bound together or bundled.

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Foothills surrounding Central Valley, central Coast Ranges, and throughout southern California from 500 - 5,000 feet (150 – 1,500 meters)

Plant Communities: Grows mostly in chaparral and foothill woodland communities.

Habitat: One of the more common shrubs of the coastal, open forests, and woodlands. The chaparral plant community has chamise as one of its major inhabitants.

Size: A much-branched shrub 2 - 12 feet tall (0.6 – 3.5 meters); often in dense pure stands that are impossible to walk through.

Bark/Trunk/Twigs: Diffusely branched, stems straight, bark shreddy and reddish to grayish brown; fire resistant burls are at base of each shrub

Foliage: Evergreen, tiny needle-like leaves in bundles that surround stem, alternately arranged and sticky. Young foliage is light to yellow green and becomes darker with age.

Flowers: White flowers are in a dense terminal panicle; flowers are minute but panicle is large and showy at ends of stalks; blooms from February to July

Fruit: Fruit is a hardened achene (a small dry one-seeded fruit that does not open readily) clustered at the ends of reddish colored stalks; seed clusters range in color from burnt orange to maroon.

Site Ecology: This is a tough plant that stands full sun, variable soil and limited amounts of water.

Natural Significance: Is important shelter for many animals; goldfinches and woodrats eat the seeds. Chamise is an excellent honey plant for bees. This shrub is a great stabilizer of watersheds, especially in Southern California. Deer graze new growth after a fire.

Ethnobotanical Use: Native Americans had many medical uses for the leaves, including treating skin ailments, colds, and snakebites.

Commercial Use: Chamise is probably not used commercially.

Propagation: Chamise most often regenerates by stump sprouting. Growth from seeds is rare in the wild, but can be done under garden conditions.

Remarks: A common chaparral plant of lower foothills; often occurs in pure stands; after fire, these plants sprout abundantly from stumps. It is sometimes called greasewood. Dense stands are almost impenetrable to humans on foot and on horseback. A second California species is Red Shank, *Adenostoma sparsifolium*, which is found from San Luis Obispo County to Baja California



Aesculus californica – California Buckeye

Aesculus: Linnaeus' name for this genus but the word in Latin means edible acorn; *californica*: from California

Plant Family: Sapindaceae (Previously Hippocastanaceae) – The Soap Berry Family

Geographical Distribution: California endemic foothill woodlands and valleys of the Coast Ranges, Sierra Nevada, and Tehachapi Mountains; below 5,500 feet (1,700 meters)

Plant Communities:

Habitat: Intermittent riparian streams and/or dry, hot slopes of the foothills.

Size: A multistemmed large shrub to small tree from 12 - 35 feet tall (3.5 – 10 meters) with single trunks of 8 - 20 inches in diameter (20 – 50 cm) and multi-stem trunks of 4 – 6 inch diameter (10 -15 cm); the tree is rapid grower and sometimes shrub like and spreading. It is long lived; up to 200 years.

Bark/Trunk/Twigs Smooth grayish white bark that is especially vivid after leaf fall. Twigs are stout and hairless. They are reddish the 1st year and become darker with age. They also show conspicuous triangular leaf scars.

Foliage: Summer deciduous green, palmately compound leaves in leaflets of 5-7 and each leaflet 2 ¼ - 6 ½ inches (6-17 cm) long, with a finely toothed margin and (particularly in spring) downy surfaces; each leaflet oblong-lanceolate and finely serrated; early spring foliage, but drop leaves beginning in July. The trees look dead in mid to late summer.

Flowers: Great showy spring flowers; erect candelabra like flowers 3-6 inches in length; white to rose colored.

Fruit: Small pear-like or fig shaped fruit is in fuzzy green husk; seed turns shiny brown color and has a “buckeye” where it attached to the parent plant. Large 1 – 3 inch long seeds (2.5 – 7.5 cm).

Site Ecology: Grows best in a coarse, well drained soil;

drought tolerant; pH 5.5-7.5; will grow naturally in a 16-75 inch (40 – 180 cm) precipitation range.

Natural Significance: When the shoots are small and leaves are new they are low in toxins and are grazed by livestock and wildlife.

Ethnobotanical Use: Seeds used by natives as food (esp. when other food was scarce) after rather tedious preparation as the seed is poisonous to human in raw form; used to stun fish in quiet pools; medicinal applications include: suppositories for hemorrhoids, bark poultice for snake bites and as toothache remedy.

Commercial Use: Buckeye is planted as an ornamental. California buckeye is valuable as a soil binder on stream or river banks and steep slopes.

Propagation: Propagates best by its large seeds.

Remarks: Flowers are poisonous to honey bees. Harvest seed in November and plant very shallow in well, drained soil. Germinating seed must be kept damp if not enough winter rain. Water the first year; should reach 1 foot first year. A single spring time watering is probably all that's necessary after year one. There are some great specimens in the UC Davis arboretum.



***Agave deserti* - Desert Agave/Century Plant**

Agave: admired one in reference to the stately nature of century plant; *deserti*: of or from the desert

Plant Family: Liliaceae – Lily Family

Geographical Distribution: Sonoran desert mountains (low desert around Salton Sea), Arizona, and Baja California below 5,000 feet (1,500 meters).

Plant Communities: Creosote Bush Scrub

Habitat: Rocky slopes and dry washes of the lowland desert

Size: Up to 2 feet (60 cm) tall and 3 feet (90 cm) wide with a flower stalk as tall as 15 feet (4.5 meters).

Bark/Trunk/Twigs An evergreen succulent with no true trunk

Foliage: Plant forms a rosette of fleshy gray-green leaves that are 1 – 2 ½ feet (30 – 75 cm) long and 2 – 4 inches (5 – 10 cm) wide. The leaves have spines along the margins

Flowers: Yellow flowers from May to July are at the ends of stalks. The individual flowers are funnel shaped and 1 ¼ - 2 ½ inches (3 – 6 cm) long and are massed on top of the stalk.

Fruit: An oval capsule full of black seeds

Site Ecology: Grows in full sun, very drought tolerant and needs excellent drainage. Agave is cold hardy to 5 degrees F (-15 degrees C).

Natural Significance: Agave is the larval food for the California Giant Skipper Butterfly

Ethnobotanical Use: The desert dwelling Indians used fibers from the leaves to make cloth, bowstrings, and rope. Young flower stalks, buds, and hearts of plants were roasted and eaten. Food from the Agave often became a dietary staple, especially in drought years. Alcoholic drinks were also manufactured from the sweet juices. Sharp leaf tips used for guiding fibers in basket making and for tattooing.

Commercial Use: Planted as an ornamental, works well in a desert garden and also can be grown in containers

Propagation: Can be propagated by seeds, bulbs, rhizomes, or tubers.

Remarks: Takes about 30 – 40 years to reach maturity and bloom. Most plants bloom once and die.

Ailanthus altissima – Tree of Heaven (non-native)*Ailanthus*: reaching to heaven; *altissima*: tall or high**Plant Family:** Simaroubaceae – (no common name)**Geographical Distribution:** Abundant in Sierras and Klamath ranges; below 4,000 feet (1,200 meters). Tree of heaven is native to northeast and central China and Taiwan.**Plant Communities:** Thrives along riparian corridors, but will grow almost anywhere in California's Central Valley oak woodlands.**Habitat:** Along streams and river canyons throughout state, but not in desert.**Size:** Single stem tree 40 – 70 feet tall (12 – 21 meters) with a 1 foot diameter (30 cm) trunk. It is one of the fastest growing trees in North America, but it is also short lived with 50 years its maximum.**Bark/Trunk/Twigs:** The twigs are reddish in color. The branches are light to dark gray in color, smooth, lustrous, and containing raised lenticels that become fissures with age. The ends of the branches become pendulous. All parts of the plant have a distinguishing strong odor that is often likened to peanuts, or cashews.**Foliage:** Deciduous, alternate, pinnately compound with 13 - 25 leaflets 12 - 36 inches long (30 – 90 cm); leaflets egg to lance shaped 2 - 6 inches long (5 – 15 cm); margins entire, tips sharp pointed and bases horizontal**Flowers:** Dioecious; inconspicuous yellowish green female seed bearing flowers; pollen bearing flowers on male trees are more profuse and smelly to attract pollinators.**Fruit:** Whitish; fruit are 1/5 inch (5 mm) clusters of samaras (winged) with the seed in the middle of a papery twisted wing; the seeds are in reddish-brown clusters that are rather attractive.**Site Ecology:** *Ailanthus* is an opportunistic plant that thrives in full sun and disturbed areas. It spreads aggressively both by seeds and vegetatively by root sprouts, re-sprouting rapidly after being cut. It is considered a shade-intolerant tree and cannot compete in low-light situations. It grows rapidly on harsh sites; in fact, it is so tough that it is the tree that grew against all odds in [A Tree Grows in Brooklyn](#).**Natural Significance:** An aggressive weed in disturbed areas, very invasive, hard to eliminate, foliage, flowers, and twigs emit an unpleasant odor when crushed, but not like peanut butter!!**Ethnobotanical Use:** As an introduced exotic, it is out of place and has no use, but is used extensively in China (see below).**Commercial Use:** *Ailanthus* can certainly be used to prevent erosion and add vegetation to a highly disturbed site, but its aggressiveness has made it a weed in most instances. In China its leaves serve as food for the *Ailanthus* silk moth. The silk is stronger than mulberry silk but is not as glossy or as smooth textured. The roots, leaves and bark are still used today in traditional Chinese medicine, primarily as an astringent.**Propagation:** This plant easily reproduces by either seeds, cutting, or root sprouts.**Remarks :** Native to China, introduced by Chinese settlers in 1874 to the Mother Lode; now a naturalized species; has spread across the US; largest specimen is in Long Island, NY and is 64 feet tall by 6 feet 4 inches in diameter. Have you ever read [A Tree Grows in Brooklyn](#) by Betty Smith? *Ailanthus* produces an alleopathic chemical called ailanthone, which inhibits the growth of other plants. Tree is unusual because all of its relatives are native to the tropics, rather than a temperate climate.

Alnus incana ssp. Tenuifolia – Mountain Alder

Alnus: the classical Latin name for this genus; *incana*: grayish or hoary; *tenuifolia*: with finely-divided, slender leaves

Plant Family: *Betulaceae* – Birch Family

Geographical Distribution: Mountain Alder is found from central Alaska and the Yukon Territory, southeast to western Saskatchewan and British Columbia, and south throughout the Mountain States to New Mexico and California. In California it grows in the Klamath and Cascade Ranges and the Sierra Nevada between 4,000 – 8,000 feet (1,200 – 2,400 meters) elevation.

Plant Communities: This alder is found in yellow pine forests, red fir forests, montane coniferous forests, and wetland-riparian areas.

Habitat: Commonly found in moist mountain canyons, swales, open-canopy riparian stands, and upper montane meadows.

Size: Mature plants are 6 ½ - 30 feet (2 – 9 meters) tall with trunks 4 – 8 inches (10 – 20 cm) in diameter. The crown of the shrub/tree is broad and spreading.

Bark/Trunk/Twigs: A large multi-stemmed shrub or small tree that is often found growing in thickets. The bark is thin and gray to reddish gray. Older plants develop a scaly bark. The twigs are slender, light green and hairy. Lenticels are evident on the twigs.

Foliage: The simple deciduous leaves are arranged on twigs alternately and range from an oval to egg shape. The upper surface of the leaf is dark green and the lower surface is yellowish green. Both surfaces tend to be hairless. The leaves are 2 – 4 inches (5 – 10 cm) long and 1 – 2 ½ inches (2.5 – 6 cm) wide. The margins are doubly serrated with tip that varies from round to sharp pointed and bases that are round to heart shaped.

Flowers: Both male and female catkins are produced during the growing season prior to blooming. Catkins expand before the leaves emerge in the spring and flowering generally begins during March and April. Male catkins grow in clusters of 2 to 4. They are 0.8 to 3 inches (2 - 8 cm) long and pendulous at maturity. Female catkins are woody and resemble cones, growing in clusters of 2 to 6.

Fruit: Produces cones that are ½ - ¾ inch (1.25 – 2 cm) long that are green when young and mature to a brown color. Each cone scale encloses a small winged seed.

Requirements: This shrub is shade intolerant. If there are not periodic disturbances, it can be over grown. Flooding is a disturbance that allows Mountain Alder to reseed itself. It grows best in coarse to medium, nutrient rich, moist soils. Mountain alder can tolerate floods but not drought. It is able to survive extremely cold winters.

Natural Significance: Leaves and twigs provide important browse for deer, moose, and elk. Birds eat alder buds and seeds. Thickets also act shelter belts for numerous species. Mountain Alder also protects stream banks and water sheds from erosion.

Ethnobotanical Use: Bark in conjunction with other products was made into red dyes. The list of medicinal uses is huge. This plant was the aspirin of natural plant remedies.

Commercial Use: Alder wood is used to make furniture & novelty items. The wood is used to smoke fish.

Propagation: It reproduces by seed, rhizomes, or root suckers.

Remarks: Like other alders its root system develops nodules that fix atmospheric nitrogen. This is an important nutrient source in areas the alder inhabits.



***Alnus rhombifolia* – White Alder**

Alnus: the classical Latin name for this genus; *rhombifolia*: diamond-shaped leaves.

Plant Family: Betulaceae – The Birch Family

Geographical Distribution: Throughout the Pacific Northwest, Nevada, Idaho, and Montana

Habitat: open, rocky stream banks and often adjacent slopes, even where rather dry, at elevations from 300 – 8,000 feet (90 – 2500 meters)

Plant Communities: Because of its wide range in elevation, white alder is found in low elevation oak woodland, chaparral, douglas fir forest, mixed-evergreen forest, redwood forest, riparian (rivers & creeks), and higher elevation yellow pine forest.

Size: Grows 40 to 80 feet in height (12.5 - 25 meters) with trunks 1 – 2 feet (30 – 60 cm) in diameter.

Bark/Trunk/Twigs Light gray, smooth bark becomes darker and broken into scaly plates with age. There are dark upside down vee marks where branches grow from the trunk. Twigs are slim and at first light green and pubescent, becoming smooth and dark red-orange and flecked with small scattered lenticels.

Foliage: Narrowly elliptic to rhombic, alternately arranged, 1 ½ to 3 inches long (3 – 5 cm) leaves have usually singly serrate margins. Upper surfaces are green, lower yellowish-green with prominent parallel veins. The leaves are deciduous, but do not change color before dropping in winter.

Flowers: Monoecious; pollen bearing catkins (male flowers) in clusters of 3 – 5 and 2 - 8 inches long (5 - 20 cm); female catkins are short and thick, borne at the ends of branchlets.

Fruit: The many-scaled, cones are ¼ - ½ inches (10 – 29 mm) long and bear one small, round unwinged nutlet per scale. Cones are initially green but turn dark brown with age and are shed in fall/winter.

Site Ecology: White alder is a very fast growing tree in cool, moist to wet environments, only mildly shade intolerant, it will do well in shaded stream banks; must have a constant source of moisture to succeed. White Alder grows very fast to 30 feet (9 meters) in 5 to 6 years.

Natural Significance: Leaves and twigs provide browse for grazers, birds eat buds and seeds. It provides habitat for birds and wildlife and stabilizes tree banks.

Ethnobotanical Use: Used medicinally for diarrhea, skin problems in children, and on burns. Dried bark used as a blood purifier and facilitate child birth. Juice was used as a source of red dye and the wood was used to smoke salmon, eels, and deer meat. The small branches were used to make arrow shafts.

Commercial Use: Wood used in furniture and novelty items and to smoke fish and meat.

Propagation: Stratify seeds for 60 – 90 days at 40^o F prior to planting.

Remarks: Nitrogen fixing; there are 30 species of Alder world wide, with 4 of these are native to California: *A. incana* ssp. *tenuifolia* (mountain alder), *A. rubra* (red alder), and *A. viridis* ssp. *sinuata* (thinleaf of Sitka alder). The white alder is most closely related to the red alder (*Alnus rubra*), differing in the leaf margins being flat, not curled under. This tree can be useful in a wet spot where nothing else will grow.



Alnus rubra oregona – Red Alder

Alnus: the classical Latin name for this genus; *rubra* means red and *oregona* refers to being from Oregon.

Plant Family: Betulaceae – The Birch Family

Geographical Distribution: Occurs from southeastern Alaska to San Luis Obispo County at elevations to 3,000 feet (1,000 meters). Other than a northern Idaho colony, red alder occurs mostly along the coast.

Plant Communities: Grows in northern coastal scrub and montane woodlands

Habitat: Grows along stream banks, in moist flood plains; and along lake shores, wet slopes, and sandy coastal areas.

Size: Red alder grows to 90 feet (27 meters) in height and is the largest of the North American alders. Its typical height is 40 – 60 feet (12 – 18 meters) with trunks from 1 – 3 feet (30 – 90 cm) in diameter.

Trunk/Bark/Twigs: Red Alder is a graceful looking tree with a straight trunk. A thin, smooth, gray bark breaks into darker, shallow rectangular plates with age. The inner bark of red alder is red, hence the common name. Sometimes red alder bark is so thin and light colored that it is mistaken for paper birch (*Betula papyrifera*).

Foliage: Deciduous, leathery leaves are ovate to elliptic, 3 – 6 inches long (7.5 – 15 cm) and 1 - 2 ½ inches wide (2.5 – 6 ¼ cm), with deeply doubly serrate to crenate margins, with margins tightly rolled under. Upper surfaces are dark green and hairless, lower are pale and have prominent, parallel, rust colored veins with up to 10 – 15 pairs of side veins.

Flowers: Flowers are tiny and occur in spring. The male flowers are yellowish, 2 – 8 inches long (5 – 20 cm) pollen-bearing catkins in clusters of 3 – 5. The female flowers are reddish in color.

Fruit: many-scaled, cone-like catkins are ½ - 1 ¼ inches long (1.25 – 3 cm) and bear one small, winged nutlet per scale

Site Ecology: Red alder is shade intolerant, yet prefers moist, cool sites. It grows on a variety of soil types from gravel through clay. It can survive light surface fires despite thin bark and is a rapid invader of exposed soils in its range.

Natural Significance: The thickets adjacent to wet area provide habitat for a wide variety of birds and small animals. Deer browse the leaves

Ethnobotanical Use: Wood used by Native Americans for medicinal purposes. The inner bark yields a red dye.

Commercial Use: Wood used to make inexpensive furniture, cabinets, tool handles, and paper pulp. It is planted as an ornamental on wet sites and used to stabilize soils after fires or other disturbances.

Propagation: Red alder can be propagated by both seeds and cuttings.

Remarks: No other western alder has rolled under leaf edges or cones over ¾ inch (2 cm) long. Red alder trees fix nitrogen in the soil.



***Ambrosia chamissonis* – Silver Beach Bur**

Ambrosia is Greek for food of the gods and *chamissonis* is after French botanist Adelbert von Chamisso (1781-1838)

Plant Family: *Asteraceae* – Sunflower Family

Geographical Distribution: One of the most common plants found on coastal sand dunes from Baja California to British Columbia, and on the Channel Islands at less than 100 feet elevation (30 meters).

Plant Community: Coastal strand

Habitat: Oceanside to a short distance inland on sand dunes

Size: Prostrate stems up to 5 feet (1.5 meters) long and may reach 1 foot (30 cm) tall. The entire plant may form large sprawling mats up to 10 feet (3.3 meters) across.

Bark/Trunk/Twigs: This herbaceous plant has many brown to grey branches that may be covered with silky hairs. The hairs seem to be more prevalent in plants in California. Further north the hairs are sparse or absent and the plant has a more grey-green appearance.

Foliage: The simple leaves are on long petioles and extremely variable. They may be ovate, rhombic, oblanceolate, or triangular. They may be toothed to 3 pinnately lobed.

Flowers: The plant is monoecious with male and female flowers on the same plant but on different heads, the male flowers packed on terminal spikes with the female flowers below the male. The multi-flowered males are yellowish green and the single female flower is about the same color. Silver Beach Bur blooms from July to November.

Fruit: This is a round, reddish-brown bur with 10 – 20 thick based spines on each bur.

Requirements: Silver beach bur needs excellent drainage and full sun; salt tolerant

Natural Significance: Nothing noted

Ethnobotanical Use: Plant used as medicine for healing and strength. Children played with stems that exuded a blood-colored juice; looked like they had been injured.

Commercial Use: This plant helps to stabilize dunes and prevent erosion caused by the wind

Propagation: Seeds are collected between April to December. Mature inflorescences are brown. Seeds are burr like, 5 to 10 mm long, greyish brown. Seeds drop from plant when mature.

Remarks: Some scientists have assigned the less hairy plants a subspecies name of *A. chamissonis ssp. bipinnatisecta*. Silver beach bur is a species of ragweed.



***Amelanchier alnifolia* – Service Berry**

Amelanchier is from an old French common name and *alnifolia* means with leaves like genus *Alnus* (alder).

Plant Family: Rosaceae – Rose Family

Geographical Distribution: California north coast, Klamath Range, outer North Coast Ranges, high Sierra Nevada Mountains, Alaska, and New Mexico. There are 3 or 4 similar species in the northwest and the Rocky Mountains; from 165 – 8,580 feet (50 – 2,600 meters) elevation.

Plant Communities: In California occurs in chaparral, pinyon-juniper, and coniferous forest communities.

Habitat: Found in open shrub land and coniferous forests

Size: A shrub that ranges between 3 – 26 feet (1 – 8 meters) tall

Bark/Trunk/Twigs: Twigs may be without or covered with matted hairs and are reddish brown when young and gray-brown with age. Bark is light brown and tinged with red, usually smooth with a few fissures.

Foliage: Leaf blade are elliptic to round and 2/3 – 2 inches (1 – 5 cm) long and 1/2 - 1 7/8 inches (0.8 – 4.5 cm) wide. They are generally serrated above the middle and pinnately veined.

Flowers: Flowers are white and individually about 1 inch (2.5 cm) across and bloom time is April – June.

Fruit: Fruits are berrylike pomes (look and taste like blueberries) borne in hanging clusters. Each fruit contains 4 to 10 small seeds and are purple in color when mature.

Site Ecology: Tolerates infertile, as well a fertile soils, soils must be well-drained. Needs moderate moisture and will endure periods of low moisture, but is not drought tolerant.

Natural Significance: Serviceberry is a valuable wildlife plant. Deer, Elk, and Woolly Mammoths browse twigs and foliage; fur and game mammals such as black bear, beaver, and hares consume twigs, foliage, fruits, and bark. Upland game birds consume the fruits and buds, and many species of rodents and songbirds eat the fruits.

Ethnobotanical Use: Native Americans used serviceberry wood to make arrow shafts, spears, and digging sticks. They made a tea, used for treating colds, by boiling the branches. They also consumed the berries

Commercial Use: Serviceberry is used for reclamation and for wildlife, watershed, and shelterbelt plantings. It is also planted as an ornamental and to produce commercial fruit crops. The fruits are added to pastries and used for making jelly or syrup. Several cultivars of Serviceberry have been developed.

Propagation: It can be started from seed or vegetative cuttings.

Remarks: There are at least five varieties of service berry, but there is not total agreement on this classification. It seems that three of these are found in the Sierra Nevada and their ranges overlap. They include: *A. ainifolia* var. *pumila*, *A. ainifolia* var. *semiintegrifolia*, and *A. ainifolia* var. *utahensis*. All of these service berries hybridize making identification quite difficult. The description above is generalized to cover all three varieties. Consuming only or large quantities of service berry can result in death due to the high concentration of cyanogenic glycosides in young twigs.

Aquilegia formosa – Western Columbine

Aquilegia means eagle in reference to the claw like nectaries; *Formosa* means handsome, beautiful, well-formed (kind of like your instructor).

Plant Family: Ranunculaceae – Buttercup Family

Geographical Distribution: Native from southern Alaska to Baja California and east to western Montana and Utah; between 4,000 – 9,000 feet (1,200 – 2,700) meters. Columbine is not native to the central valley floor of California.

Plant Communities: Grows in Chaparral, Mixed-evergreen Forest and Riparian (rivers & creeks).

Habitat: Moist, open woods, banks and seeps;

Size: 2 - 3 foot (60 – 90 cm) tall perennial

Bark/Trunk/Twigs An open-branched, herbaceous perennial

Foliage: Divided leaves into trifoliate leaflets that are $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 4 cm) long and wide with delicate, blue-green color. Leaf shape is orbicular with a crenate leaf margin.

Flowers: Pendent 2 inch (5 cm) wide flowers range from red to yellow and bloom from May through August and hang at the end of branches.

The flowers are quite striking with 5 red lanceolate shaped sepals and fused funnel-shaped petals transitioning from red to yellow. The central reproductive parts, stamen and pistil are yellow in color. A really cool flower!

Fruit: a brown pod

Site Ecology: Uses medium amount of water but does well in dry or wet conditions; grow in full sun to part shade; grows in rocky or dry, nutrient poor soils.

Natural Significance: Flowers attract hummingbirds and are pollinated by the birds and Sphinx moths.

Ethnobotanical Use: The nectar was eaten as a candy by Native American peoples. The young

leaves of variety *truncata* were gathered before flowering, boiled, and eaten as greens by indigenous peoples of California. Some Plateau Indian tribes used the *Aquilegia formosa* seeds to concoct a perfume and also to treat head lice (go figure!!). The flowers are edible and the seed are poisonous with a chemical related to cyanide..

Commercial Use: Columbines are easy to grow; just plant, water, and prune old flower stalks back annually. This is a very attractive long blooming addition to any garden. It will probably do better in a shadier or north side oriented planting in the Central Valley.

Propagation: Easily propagated by seeds that have been stratified for 4 – 5 days at 40⁰ F, then placed in flats in the fall. Western columbine can also be propagated by division.

Remarks: Plant is rather short-lived and needs to be replaced about every three years under a cultivated regime.



Arbutus menziesii – Pacific Madrone

Arbutus: an old Latin name; *menziesii*: Archibald Menzies (1754-1842) was an English naturalist who collected and classified plants in the United States.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: From Vancouver Island south to Mexico, at elevations from 300 – 5,000 feet (100 – 1,500 meters)

Plant Communities: Grows in the northern coastal forests.

Habitat: Canyons and upland slopes in forests, oak and coniferous woodlands, often as understory. Many sites tend to be dry and influenced by the ocean, although there are exceptions.

Size: Typically to 25 feet tall (7.6 meters) but can reach 80 feet (24 meters). Trunks are 1 – 3 feet (30 – 100 cm) in diameter.

Bark/Trunk/Twigs: Single or multi-trunked; Smooth, thin, red bark on branches peels in strips, older bark on trunk is darker and fissured and may show none of the red “underbark”. Madrones have a lot of wandering angled to horizontal branches. The upper story of the tree is sparse.

Foliage: Elliptical, 2 - 4 ½ inches long (5 – 11.25 cm), 1 – 3 inch wide (2.5 – 7.5 cm) evergreen foliage is thick and leathery, shiny dark green above and whitish beneath, and alternate in arrangement. Margins are entire or have fine serrations. 1 inch (2.54 cm) long petioles are grooved. Leaves turn red as they age.



Flowers: White to pinkish ¼ inch (6.25 mm) urn-shaped flowers occur in terminal clusters measuring 2 – 6 inches long (5 – 15 cm) and wide in early spring.

Fruit: orange-red, berry-like fruit to ½ inch (1.25 cm) in diameter have approximately 20 dark brown seeds and mealy pulp and mature in autumn.

Site Ecology: Moderately shade tolerant; prefers acid soil with good drainage. Remember, this is a coastal plant and in a central valley planting its requirements are exacting. A good substitute for Pacific Madrone would be the hybrid *Arbutus* ‘Marina’, a smaller tree with most of the Madrone characteristics.

Natural Significance: The foliage is not very palatable, therefore not consumed by wildlife or livestock. Fruit is edible, especially to band tail pigeons and other birds and mammals. Fruit also edible for human but can cause cramping if eaten in abundance. Flowers are used by honey bees in honey production and deer will consume them.

Ethnobotanical Use: Bark has been used in leather tanning.

Commercial Use: Harvested for firewood and wood also used for cabinets and novelty items.

Propagation: Madrone can be propagated by half ripe wood cuttings collected in the fall or seed that has been stratified for 60 – 90 days at 40⁰ F.

Remarks: Pacific Madrone can resprout following injury from fire or cutting. It is susceptible to a fungal disease known as “Madrone Canker”. Trees can be long-lived to 400 – 500 years old.

Actostaphylos manzanita – ‘Dr Hurd’ Manzanita (Parry Manzanita)

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Manzanita* is the Spanish word for small apple. Dr. Cuthbert Hurd's garden was where this plant was found growing in 1972.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: A hybrid that probably originated in Sonoma County, California.

Plant Communities: Most likely would be found in chaparral, northern oak woodlands, yellow pine forests and central oak woodlands.

Habitat: Grows in a variety of places including grasslands, woodlands, and chaparral.

Size: ‘Dr Hurd’ Manzanita is a small tree that reaches 15 feet (4.5 meters) tall and the same width.

Bark/Trunk/Twigs: Red peeling bark with a multi-branched up right scaffold arrangement makes this manzanita a striking specimen both in the wild and in the garden.

Foliage: Oval shaped light leaves that vary in color from dark green to olive green to blue green to a green with white overtones.

Flowers: Clusters of bell shaped white flowers appear from January – March.

Fruit: It has roundish ½ inch (1.25 cm) green berries that turn red at maturity.

Site Ecology: This manzanita needs a loose well drained soil and full sun. However, it will tolerate a heavier soil than most manzanitas.

Natural Significance: ‘Dr Hurd’ flowers attract bumblebees and butterflies and a wide range on animals consumed the berries; including, bear, coyote, deer, and numerous bird species.

Ethnobotanical Use: Nothing noted particularly, however all manzanitas were used extensively by Native Americans. A cider was made from the berries and the hard wood was fashioned into a variety of tools or carved into artistic items.

Commercial Use: This is an excellent garden selection, but probably needs to be planted on a mound to prevent over watering. Drip irrigation is preferred as manzanitas are susceptible to root rot and a fungal stem disease caused by overhead watering.

Propagation: Dr. Hurd manzanita can be propagated from both seeds and cuttings. The seeds require pretreatment and then are still slow to germinate. Treatments include sulfuric acid or boiling water scarification followed by cold treatment of about 35 – 41 degrees (2 – 5 C) for 2 months or burning straw or pine needles over the seeds after they have been planted in flats. Marjorie Schmidt gives a detail procedure for propagating manzanita cuttings in her venerable book Growing California Native Plants. Probably in the case of this horticultural variety, cuttings will assure a more consistent plant.

Remarks: There are number of cultivars of Parry Manzanita, ‘Dr. Hurd’ being one of them. This form was found by John Coulter of the Saratoga Horticultural Foundation in 1972, growing in the garden of Dr. Cuthbert Hurd in Portola Valley. It was probably a seedling from Louis Edmunds Native Plant Nursery (one of the old native plant growers that were in Danville in the 1950's.) Concerning the origin of this plant, Saratoga Horticultural Foundation said, "Although this plant has obvious affinities with *Arctostaphylos manzanita* it is undoubtedly of hybrid origin". This was most likely a seedling collected within a native garden where *Arctostaphylos manzanita*, and *Arctostaphylos stanfordiana*, were members. In Sonoma County, California, these species occur together and readily hybridize. There are over 230 native and cultivated manzanitas.



Arctostaphylos glauca- Big Berry Manzanita

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Glauca* is Greek and means with a fine whitish bloom, or sea green, or bluish green coloring of the leaves..

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Occurs from the San Francisco Bay Area south to the Southern California Mountains and Baja California at elevations from sea level to 4,500 feet (1,360 meters).

Plant Communities: Grows in chaparral, northern coastal scrub, mixed evergreen forests, and yellow pine forests.

Habitat: Found in woodlands and chaparrals at low to mid elevations.

Size: Commonly reaches as high as 25 feet (7.5 meters) and as wide.

Bark/Trunk/Twigs: Bark is smooth and deep red-brown. Twigs are covered in a greenish wax and occasionally have bristles.

Foliage: Evergreen, oval leaves are 1 – 2 inches long (2.5 – 5 cm) and rounded at the base. Both upper and lower surfaces are grayish-green, hairless, and waxy. Margins can be entire or finely toothed.

Flowers: Inflorescences are open, droopy clusters of white to pale pink urn-shaped flowers measuring not more than 1/3 inch (8.25 mm) each. Bracts are scale-like with the exception of the lowest, which is larger and leaf-like.

Fruit: Spherical ½ inch (1.25 cm) berry-like drupes are very sticky. The fruit can be abundant and hang on the parent plant well into the fall.



Site Ecology: Lacks burls and will therefore not re-sprout after fire. Big berry manzanita is quite a tough plant that withstands heat, full sun and drought conditions.

Natural Significance: Fruit is edible and supplies an important food source for a large variety of birds and wildlife.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses.

Commercial Use: Used as an ornamental in dry climates.

Propagation: To develop from cuttings, collect tips in the spring, dip them in IBA#1, place in vermiculite under high humidity. To develop from seeds scarify the seeds in sulfuric acid for 24 hours before planting.

Remarks: The species is easily identified by its large fruit. Chemicals in the foliage prevent the growth of annual plants within the plants drip line. The largest known specimen lives in Sunol Regional Park in Alameda County and measures 33 feet (10 meters) in height with a trunk diameter of 16 ½ inches (41 cm).

Arctostaphylos hookeri 'Ken Taylor' – Monterey Manzanita

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Hookeri* is after Sir William J. Hooker (1785 – 1865), director of the Royal Botanical Garden at Kew, England.

Plant Family: Ericaceae – Heath Family

Geographical Distribution: Central coast of California and the San Francisco Bay region less than 2,000 feet (600 meters) elevation

Plant Communities: Grows in coastal scrub, and woodlands

Habitat: Prefers a coastal environment

Size: 2 feet (60 cm) tall by 6 feet (2 meters) wide; more of a ground cover

Bark/Trunk/Twigs: The ground hugging maroon branches root where they touch the ground

Foliage: Shiny evergreen, alternate, 1/3 – 2 1/4 inches (0.8 – 3 cm) long and 1/4 - 3/4 inches (0.4 – 1.5 cm) wide, elliptic to oblanceolate, base rounded, and margins entire.

Flowers: Flower color is white to light pink.

Fruit: Less than 1/2 inch (1.25 cm) berries

Site Ecology: Grows in full sun and needs only occasional water

Natural Significance: Fruit probably consumed by birds and other wildlife.

Ethnobotanical Use: None discovered

Commercial Use: A great landscape plant in the right environment

Propagation: Obviously by layering or cuttings; see bark etc. above.

Remarks: The Manzanita genus is found mainly on the West Coast and Mexico. Tough, picturesque shrubs and small trees are found in considerable variety in California. Their ornamental features include reddish to purple, often crooked trunks, round to pointed oval, green to greyish green leaves, and clustered, fragrant urn shaped blossoms, painted pink to white. The flowers are borne mostly in late winter and early spring and, often develop into attractive berries. Grows in full sun, well drained soil, occasional to no supplemental watering once established. Most are hardy to 0-10oF. There are at least 9 cultivars of *A. hookeri*; and 'Ken Taylor', like all *A. hookeri*, would be suited for a coastal or more temperate environment than the central valley.

Actostaphylos densiflora – ‘Howard McMinn’ Manzanita (Vine Hill Manzanita)

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Densiflora* means a habit of stem growth that is crowded, close, or dense. Howard McMinn, a botany professor at Mill College in Oakland, California, collected seed in habitat and cultivated plants on the Mills College campus. In he gave plants to the Saratoga Horticultural Foundation and in 1955 they introduced the ‘Howard McMinn’ Manzanita.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: ‘Howard McMinn’ has a very narrow restricted range near Sebastopol in Sonoma County, California. Since cultivars are horticultural selections and garden hybrids, they do not technically have a natural range.

Plant Communities: The wild “Howard McMinn” would be found in the closed-cone pine forest and coastal sage scrub.

Habitat: Grows in a variety of places including grasslands, woodlands, and chaparral.

Size: A medium-sized, evergreen mounding shrub to 7 -10 feet (2 – 3 meters) tall by as wide with a densely-branched structure - can be kept smaller by pruning.

Bark/Trunk/Twigs: It has smooth dark red bark. The young stems are reddish color.

Foliage: This manzanita has bright green leaves $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 3.5 cm) long that range from elliptic to narrowly lanceolate with a wedge shaped base and entire margin.

Flowers: ‘Howard McMinn’ blooms from late winter into spring with showy white tinged with pink flowers.

Fruit: These are small spherical red berries about $\frac{1}{4}$ inch (5 - 6 mm) in diameter.

Site Ecology: 'Howard McMinn' is excellent where you are trying to transition from a watered flower bed to the natural. It likes to be five to ten feet from a watered area where it can get the root moisture without the wet feet it hates. It is one of the most garden tolerant of the manzanita, and although you can kill it from overwatering or under watering. It tolerates from sand to clay soils and does well in full sun to part shade.

Natural Significance: Moths, hummingbirds, butterflies and all sorts of other native wildlife like the plant, both the flowers and the fruit.

Ethnobotanical Use: Native Americans used berries to make tea and flavor other foods. Tea was also made from the bark to treat poison oak and kidney infections. The wood was used to carve spoons, canes, head ornaments, and pipe stems.

Commercial Use: This probably one of the best garden/landscape manzanitas.

Propagation: Howard McMinn manzanita can be propagated from both seeds and cuttings. The seeds require pretreatment and then are still slow to germinate. Treatments include sulfuric acid or boiling water scarification followed by cold treatment of about 35 – 41 degrees (2 – 5 C) for 2 months or burning straw or pine needles over the seeds after they have been planted in flats. There are other methods, as well, but the seeds are slow to germinate and erratic in germination percentage. Marjorie Schmidt gives a detail procedure for propagating manzanita cuttings in her venerable book Growing California Native Plants. Probably in the case of this horticultural variety, cuttings will assure a more consistent plant.

Remarks: 'Howard McMinn' was selected from wild stands of *Arctostaphylos densiflora* from Sonoma County.



***Arctostaphylos manzanita* – Common Manzanita**

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Manzanita* means little apple in Spanish.

Plant Family: Ericaceae – The Heather Family

Range: Occurs north of Contra Costa and Mariposa Counties and into the Klamath Mountains and the Northern Coastal ranges at elevations between 650 – 5,000 feet (200 – 1,500 meters)

Plant Communities: Grows in closed cone pine forests, chaparral, foothill woodlands, and lower elevations of yellow pine forests.

Habitat:

Size: Common manzanita can reach 23 feet high (7 meters) and wide with a trunk diameters from 6 – 24 inches (15 - 60 cm).

Bark/Trunk/Twigs: Bark is dark reddish-brown and smooth. Twigs are densely covered with fine, whitish hairs.

Foliage: Evergreen, $\frac{3}{4}$ - 2 inches long (1.9 – 5 cm) leaves are elliptical to nearly round and green to gray-green on upper and lower surfaces. Blades are hairless or finely hairy and can be dull or shiny. Margins are entire and leaf stalks short. Both leaf surfaces are the same color.

Flowers: Inflorescences are droopy $\frac{1}{2}$ - 2 inches long (1.25 – 5 cm) and oblong in shape with clusters of white to pale pink urn-shaped flowers measuring not more than $\frac{1}{3}$ inch (8.25 mm) each and appearing in spring.

Fruit: Berry-like fruits are round to slightly flattened and measure $\frac{1}{3}$ - $\frac{1}{2}$ inch in diameter 8.25 – 12.5 mm). Fruits emerge white and mature to a deep red-brown.

Site Ecology: Intolerant of fire damage. Once established it is a very drought tolerant plant.

Natural Significance: Berries are consumed by wildlife and colonial

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses. Manzanita berries are rich in vitamin C. The wood from manzanitas was burn in many ceremonies because it produced little smoke.

Commercial Use: The twisted trunks and limbs of Manzanita are fashioned into novelty items going under the name of “Mountain Driftwood”. The wood is hard and makes excellent fire wood.

Propagation: To develop from cuttings, collect mature wood, dip them in IBA#1, place in vermiculite under high humidity. To develop from seeds collect in winter, scarify, stratify for 60 – 90 days at 40⁰ F.

Remarks: The species has 6 subspecies due to variations in leaf color and hairiness. All manzanitas hybridize freely with other members of their genus. This makes specific identification somewhat difficult. To compound the ID difficulty there are 56 species of manzanita native to California.



***Arctostaphylos mewukka* ssp. *mewukka*- True (Indian) Manzanita**

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Mewukka* is after the Native American in tribe, the Miwuks, who live in the Sierra Nevada foothills and higher elevations..

Plant Family: Ericaceae – The Heather Family

Geographical Distrubtion: Found in the Central Sierra Nevada at elevations from 2,500 - 6,000 feet (760 – 1,820 meters).

Plant Communities: Occurs in chaparral, yellow pine forests, and mixed evergreen forests.

Habitat: Indian manzanita is a species

Size: Typically grows 3 – 6 ½ feet in height (0.9 – 2 meters).

Bark/Trunk/Twigs: Bark is smooth and deep red-brown, peeling in curling strips at the end of the growing season. Twigs glabrous (without hairs) to puberulent (a few scattered hairs).

Foliage: Evergreen ¾ - 2 ¼ inches long (1.9 – 5.6 cm) are round to ovate. Both surfaces are gray-green to gray and hairless. Margins are entire. Sometimes this manzanita's leaves appear to have a bluish cast.

Flowers: Inflorescences are droopy ½ - 2 inches long (1.25 – 5 cm) clusters of white urn-shaped flowers measuring not more than 1/3 inch (8.25 mm) each and appearing in spring.

Fruit: Spherical ¼ - 1/3 inch (6.25 – 8.25 mm) berry-like drupes are dimpled and red to dark mahogany brown.

Site Ecology: Fire tolerant, re-sprouting from a live root system.

Natural Significance: Aids in revegetation after fire thus protecting exposed slopes from erosion. The fruit is consumed by birds and wildlife.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider and a jelly were made from the berries, as well. The fruit and leaves had numerous medical uses.

Commercial Use: Aids in revegetation after fire, protecting exposed slopes from erosion.

Propagation: Stratify seed for 60 – 90 days at 40⁰ F before planting or can also start plant from cuttings. It resprouting abilities indicate it also be propagated by sprouting carefully harvested roots.

Remarks: Relatively unknown to cultivation, but possibly worthwhile, especially within its native range. *A. m. ssp truei* , True's Manzanita, is an uncommon sub species. There are 60 species of manzanita with 56 of them native to California.



***Arctostaphylos myrtifolia* – Ione Manzanita**

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Myrtifolia* means leaves like a myrtle tree

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Occurs in the foothills of the Sierra Nevada exclusively in Amador and Calaveras Counties; grows in a narrow band between 330 – 1,000 feet elevation (100 – 300 meters).

Plant Communities: Grows in chaparral and foothill woodlands.

Habitat: Typically found in a densely growing but dry upland areas that is dominated by *Heteromeles arbutifolia*, *Ceanothus*, and *Adenostoma fasciculatum* or *Quercus douglasii* at the higher elevations.

Size: Commonly 3 - 4 ½ feet (0.9 – 1.4 meters) in height.

Bark/Trunk: Bark is reddish and smooth and usually covered with a whitish bloom. Twigs are finely glandular and bristled (pubescent).

Foliage: Evergreen, narrowly elliptic leaves are ¼ - ¾ inch long (0.625 – 1.9 cm) and rough to the touch. Both upper and lower surfaces are bright green and shiny. Margins are entire.

Flowers: Inflorescences are clusters of white urn-shaped flowers measuring not more than 1/3 inch (8.25 mm) each and appearing in spring.

Fruit: Small spherical berry-like drupes are mahogany brown.

Site Ecology: In its native range, it grows on shallow, acidic, sandy soils over hardpan.

Natural Significance: Fruit is edible and supplies a food source for wildlife.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses.

Commercial Use: Species is cultivated for ornamental use.

Propagation: Stratify seeds for 60 -90 days at 40⁰ F before planting. Ione manzanita can also be started from cuttings.

Remarks: This species is rare and endemic to the Ione area. It is federally listed as threatened, though is fairly common within its limited area.

***Arctostaphylos nevadensis* – Pinemat Manzanita**

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Nevadensis* is in reference to the State of Nevada or Nevada County, CA.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Widespread in the mountains of Northern California (Tulare County northward) and the Pacific Northwest at elevations from 6,000 - 10,000 feet (1,818 – 3,000 meters).

Plant Communities: Grow in upper montane forests, red fir forests, lodgepole forests, and subalpine forests.

Habitat: Occurs in montane and sub-alpine coniferous forests and chaparral.

Size: This shrub grows to 2 feet tall (0.6 meters) and up to 8 feet across (2.4 meters).

Bark/Trunk/Twigs: Smooth, red, bark exfoliates in curls. Twigs are finely hairy.

Foliage: Evergreen, egg- to lance-shaped leaves are ½ - 1 ½ inches long (1.25 – 3.74 cm) and bright green. Upper and lower surfaces are similar in color and texture, margins are entire.

Flowers: Inflorescences are dense clusters of white to pale pink urn-shaped flowers measuring not more than 1/3 inches (8.25 mm) each and appearing in summer.

Fruit: Spherical ¼ inches (6.25 mm) berry-like drupes are brown and hairless.

Site Ecology: Dependent on a climate providing winter snow cover for success. Ideal site would be dry, well-drained and in full sun

Natural Significance: Fruit is edible and supplies a food source for wildlife. The dense mound of leaves also provide excellent cover for a multitude of species.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. The berries were also dried and used later. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses including as a treatment for diarrhea and poison oak poisoning. The leaves were also dried, mixed with tobacco and smoked. The wood was used to make canes, reels for string, spoons and scraping sticks.

Commercial Use: Landscape value includes ground cover application; it is highly drought tolerant, plant so it is on north side of structure or as an understory plant in the central valley.

Propagation: Stratify seed for 60 - 90 days at 40° F before planting. It can also be propagated by cuttings.

Remarks: Species is a commonly occurring prostrate, spreading shrub in the mountains of Northern California. Hybrids of Pinemat and Greenleaf and Whiteleaf Manzanitas result in plants showing intermediate characteristics.



Arctostaphylos patula – Greenleaf Manzanita

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Patula* means spreading or opened up.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Widely distributed in California, from coastal mountains north of Lake County, and as far south in inland mountains as the San Jacinto Mountains in Southern California. Outside of California, it is found in the Pacific Northwest, the Rocky Mountains, and Baja California. Its distribution includes a wide range in elevations between 2,500 – 11,000 feet (750 – 3,350 meters).

Plant Communities: Grows in montane and sub-alpine forests, foothill woodlands and chaparrals.

Habitat: Greenleaf manzanita grows in a variety of habitats ranging from deep fertile soils to infertile serpentine soils. There a very healthy plant growing in the Knights Ferry area of California.

Size: This shrub reaches 3 – 9 feet (0.9 – 2.7 meters) in height with a 3 - 12 feet (0.9 – 3.6 meter) spread

Bark/Trunk/Twigs: Bark is smooth and deep chestnut-brown. Twigs are sticky, slender, and covered with golden hairs. It may have burls on the trunk.

Foliage: Evergreen, oval leaves are 1 - 2 ½ inches long (2.5 – 6.75 cm) and have rounded bases. Both surfaces are green and hairless. Margins are entire.

Flowers: more than 1/3 inch (8 mm) each. Bracts are scale-like with the exception of the lowest, which is larger and leaf-like.

Fruit: Spherical ¼ - 1/3 inch (6 – 8 mm) berry-like drupes are hairless and dark red.

Site Ecology: Common in climates where there is snow cover in winter and cool temperatures in summer. Typically grows on dry, well-drained, full sun sites.

Natural Significance: Fruit is edible and supplies a food source for wildlife.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses.

Commercial Use: Not researched

Propagation: Greenleaf manzanita can be propagated from cuttings, through layering, of seed that has be stratified for 60 – 90 days at 40⁰ F.

Remarks: Populations in some areas have multiple trunks and burls which re-sprout after fire, while others are single-trunked and lack burls. Greenleaf manzanita hybridizes with whiteleaf (*Arctostaphylos viscida*) and pinemat manzanita (*Arctostaphylos nevadensis*; producing offspring that is intermediate in form to its parents.



Arctostaphylos uva-ursi – kinnikinnick or Bearberry

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Uva-ursi* literally means "bear's grape" referring to the fruit.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Kinnikinnick is a widespread, circumpolar species. In North America, it grows from Alaska and across Canada and the northern United States to New England and Newfoundland. Its range extends south in the Rocky Mountains to New Mexico. In eastern North America, it extends south along the Atlantic Coast to New Jersey and in the Appalachian Mountains to Virginia. In California it is found along the coast from Del Norte to Monterey counties and in a few isolated populations in the Sierra Nevada.

Plant Communities: Coastal sage scrub and coastal strand

Habitat: This is primarily an understory plant

Size: Kinnikinnick is a prostrate plant that ranges from a few inches to 1 foot (5 – 30 cm) tall and under ideal conditions can form a 6 – 12 foot (1.8 – 3.6 meter) ground cover.

Bark/Trunk/Twigs: Kinnikinnick is a prostrate, evergreen shrub that produces extensive trailing stems. The bark is thin and exfoliates in large flakes and when visible may be tinged in red.

Foliage: The leathery, dark green leaves are about 0.5 to 1 inch (1.27-2.54 cm) long. They are arranged alternately and are lighter on the underside than on the surface.

Flowers: The flowers are borne in clusters on terminal racemes and range from white to bright pink.

Fruit: by bright red berrylike drupes, 0.25 to 0.4 inch (6-10 mm) broad. Each drupe contains five (sometimes four) single-seeded nutlets.

Site Ecology: Although an understory plant, it is shade intolerant and will not thrive in totally shaded environments. It prefers well-drained soils that are nutrient poor and range from coarse to moderate texture. It is only semi drought tolerant and does better with regular watering.

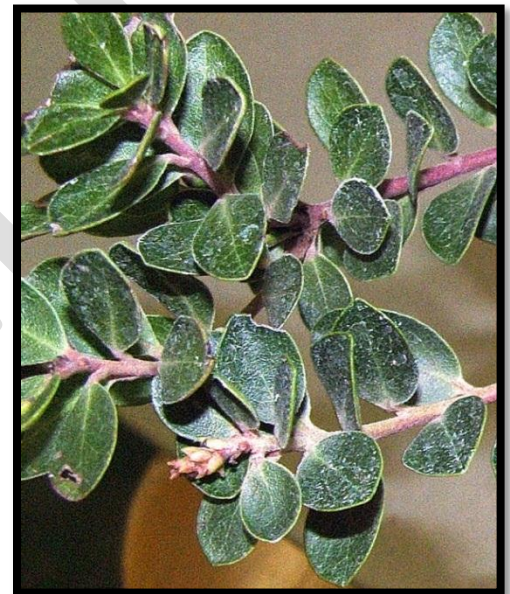
Natural Significance: Bighorn sheep, deer, moose, elk and mountain goat browse bearberry vegetation. The fruit is consumed by a wide variety of birds and mammals. The berries are especially important to bear in the early spring.

Ethnobotanical Use: The primary use of Kinnikinnick by Native Americans was to powder the leaves and apply them on a variety of skin ailments. However, the entire list of uses of this plant is extensive and beyond the scope of this notation. Check the University of Michigan ethnobotanical web site for a detailed listing.

Commercial Use: Kinnikinnick is very useful in erosion control plantings and attractive along highway embankments. It is an attractive and excellent garden ground cover on sunny, sandy banks, along roadways, rock walls, rockeries, parking strips, and other sunny places. Several cultivars have been developed for this purpose. This is a difficult plant to grow in a Central Valley garden.

Propagation: *Uva-ursi* can be propagated from both seeds and cuttings. The seeds require pretreatment and then are still slow to germinate. The best method appears to be from stem cuttings taken in the fall. Kinnikinnick roots normally form endomycorrhizae associations, and cuttings can be inoculated with endomycorrhizal fungi prior to rooting

Remarks: Kinnikinnick is the most wide spread of all manzanitas, as it is found from coast to coast. There are at least 5 reported subspecies, but this is not agreed on by all taxonomists.



***Arctostaphylos viscida* spp. *mariposa*- Mariposa Manzanita**

The name comes from the Greek words 'arktos' meaning "bear" and 'staphyle' meaning "grapes" in reference to bears eating the fruit. *Viscida* describes the small sticky globules of brown, viscid liquid on the end of the hairs on the stem.

Plant Family: Ericaceae – The Heather Family

Range: Found in the foothills of the Central Sierra Nevada and the lower margins of the Sierra Chaparral Community, at elevations from 500 – 6,000 feet (150 – 1,820 meters).

Plant Communities: Grows in montane coniferous forests, woodlands and chaparral.

Habitat: Inhabits rocky slopes,

Size: This erect shrub typically reaches 12 feet in height (3.6 meters) with trunks up 14 inches (35 cm) in diameter.

Bark/Trunk/Twigs: Bark is smooth and deep red-brown, peeling in curling strips at the end of the growing season. Twigs are slender and may have a dense covering of fine hairs.

Foliage: Leaves are oval, evergreen, ½ - 1 inch long (1.25 – 2.5 cm) leaves have rounded bases and smooth or finely toothed margins. Both upper and lower surfaces are gray-green and waxy. This species is sometimes called white leaf manzanita because the leaves have a whitish cast; this distinctive feature makes identification of this species fairly easy.

Flowers: Flowers are borne on branches that are covered with small spiky hairs and range in color from white to pink.

Fruit: Spherical ¼ - 1/3 inch (6.25 – 8.25 mm) berry-like drupes are dimpled and dark mahogany brown.

Site Ecology: : Like all the manzanita prefers a dry, well-drained full sun site. It will not re-sprout after fire.

Natural Significance: Berries are consumed by wildlife. Native pollinators visit flowers in the early spring.

Ethnobotanical Use: Native Americans ate berries raw, cooked, or made into a meal that was used for porridge. Cider was made from the berries, as well. The fruit and leaves had numerous medical uses.

Commercial Use: The twisted trunks and limbs of Manzanita are fashioned into novelty items going under the name of “Mountain Driftwood”. This manzanita would be a choice for the xeriscape garden as it will not tolerate summer water.

Propagation: Stratify seeds for 60 – 90 days at 400 F. White Leaf Manzanita can also be propagated by cuttings.

Remarks: Often referred to by the incorrect name *Artostaphylos mariposa*. There are three subspecies of *A.viscida*: *A.v.spp. pulchella* in the Northern Coast Ranges, *A.v.spp. Viscida* in the Klamath Mountains, and *A.v. spp. mariposa* in the Sierra Nevada. There are 60 species of manzanita with 56 of them native to California.

***Armeria maritime* var. *californica* – Common Thrift or Sea Pink**

America is an ancient Latin name for a *dianthus*. *Maritime* is in reference to close proximity to the ocean.

Plant Family: Plumbaginaceae – leadwort Family

Geographical Distribution: Common along California's north coast becoming less common the farther south one travels; usually less than 650 feet (200 meters) elevation

Plant Communities: Grows in coastal prairies

Habitat: Coastal bluffs and strands and sand beaches; under the harsh conditions of salt spray and winds

Size: Small bunch grass like plant 2 – 16 inches (5 – 40 cm) tall

Bark/Trunk/Twigs There are no trunk or bark as plant is low growing with a basal cluster of many narrow leaves.

Foliage: Leaves are 2 – 4 inches (5 – 10 cm) long, linear, entire, sessile with 1 – 7 parallel veins. Leaves are dark green and grass like.

Flowers: Borne on leafless stalk that protrudes above the foliage; flower heads are $\frac{3}{4}$ - 1 inch (2 – 2.5 cm) wide and resemble small round buttons. Numerous pink to lavender 5 petal flowers make up the head. Flowering last a long time – March into the fall.

Fruit: Seeds are in the dried, straw colored flower heads

Site Ecology: This plant fools you. It does not look very tough, but will stand extreme conditions including full sun and little water. However, Sea Pink also thrives under garden conditions and is a good container plant. Needs to be planted in a well-drained situation; sand may be the best choice.

Natural Significance: None observed

Ethnobotanical Use: None observed

Commercial Use: *Armeria* is a colorful addition to garden borders, rock gardens, and ground cover landscapes.

Propagation: *Armeria* can be sown by seeds or the plant divided and the rhizomes planted.

Remarks: Foliage mounds tend to rot in the center if grown in moist, fertile soils or in heavy clay. Good drainage is essential. Deadhead spent flower stems to encourage additional bloom. Remember, in the wild, thrift or sea pink commonly grows in saline environments along coastal areas where few other plants can grow well, hence the common name



Artemisia californica – California Sagebrush

Artemisia refers to Greek goddess Artemis who so benefited from a plant of this family that she gave it her own name. Also was old Latin name given to mugwort or wormwoods. *Californica* means the plant from California.

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: Marin County south into southern California and Baja; grows below 2,500 feet (750 meters).

Plant Communities: Grows in coastal sage scrub, northern coastal scrub, under story plant in red fir forests, lodgepole forests, and subalpine forests, shad scale scrub, and chaparral.

Habitat: Typically found in dry foothills but will also grow in forests and woodlands, as noted above.

Size: A shrub that grows between 2 – 6 ½ feet tall (0.6 – 2 meters) and almost as wide; grows in an upright to sprawling manner.

Bark/Trunk/Twigs: A dense mass of woody stems branching from the base with the older stems dark gray and twigs very light gray and flexible.

Foliage: Evergreen to drought deciduous, therefore in many habitats it may lose its leaves early in the summer. Long, narrow soft gray-green leaves from ½ - 1 inch long (12 – 25 mm) clustered at nodes and divided into 2 – 4 lobes. Leaves are gray, covered with close pressed hair and rolled under to give them a thread-like appearance. Blades are aromatic.



Flowers: Inconspicuous small green flowers that grow on terminal stems rising above the plant. Flowers are mixed with leaves and are numerous.

Fruit: Very small, resinous with a minute crown pappus (small crown-like projections) and wind dispersed.

Site Ecology: Does best in full sun. Requires little water after established, in fact does not like a wet habitats. CA sagebrush is adaptable to a variety of soil types.

Natural Significance: Great wildlife plant, Quail love it!

Ethnobotanical Use: Sagebrush can be used for cooking or to make a tea. The Coastanoans have used a decoction of the plant as a treatment for colds and coughs. Smoke of burning brush used for removing skunk odor; it was also smoked as a tobacco. Branches were used to make light arrow foreshafts.

Commercial Use: Cultivars have been developed and enhanced the ornamental use of California Sagebrush. Sagebrush has also been used in restoration projects, especially in difficult microenvironments. Cultivars A.c. ‘Canyon Gray’ and A.c. ‘Montara’ have been selected for ornamental use for their superior form. Plant makes a good ground cover.

Propagation: Most commonly propagated by seed; it produces huge numbers of seeds.

Remarks: Of the 300 species of sagebrush, 21 are native to California. Seeds germinate after wildfires, and burnt plants crown sprout after fires. Good plant for starting back a difficult south facing coastal sage scrub site. Sagebrush is allelopathic, which means it produces chemicals that leach into the soil and inhibit the growth of adjacent plants. It is not a true sage.

***Artemisia pycnocephla* – Beach Sagewort or Wormwood**

Artemisia refers to Greek goddess Artemis who so benefited from a plant of this family that she gave it her own name. Also was old Latin name given to mugwort or wormwoods. *Pycnocephla* means having heads in thick clusters.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: This west coast native's range extends from the central Oregon coast to the central California coast. Typically grows in less than 650 feet (200 meter) elevation.

Plant Community: Coastal Strand

Habitat: Grows in sandy and/or rocky beaches

Size: Vegetative plants 1.5 – 2 feet (45 – 60 cm) tall and inflorescence may reach 2.5 feet (75 cm)

Bark/Trunk/Twigs: As a subshrub it forms a mound of dense whitish-gray tomentose throughout plant material (covered with hairs). It is slightly aromatic.

Foliage: Lower leaves are borne on a stem and 1 – 3 inches (3 – 8 cm) of 2 – 3 pinnately divided lobes and the dense foliage ranges in color from light green to nearly white

Flowers: Flowers are in spike-like heads and range from white to yellow with bloom time from July – August.

Fruit: Seeds are tiny, less than 1.5 mm and glabrous.

Requirements: Prefers sandy soil that is well-drained and dry, full sun. Plant is drought tolerant.

Natural Significance: Plant is used as sand dune stabilizer.

Ethnobotanical Use: Nothing cited

Commercial Use: There is a widely popular cultivar names 'David's Choice' used in lower water use landscapes. The cultivar seems to be a tougher plant than the true native, as it better withstands freezing temperatures.

Propagation: Can be propagated by seed or division of the root crown.

Remarks: May cause hay fever in sensitive people. Plant is a fire hazard after a couple of years if not exposed to salt spray.



Artemisia tridentata – Big Sagebrush

Artemisia refers to the Greek goddess Artemis who so benefited from a plant of this family that she gave it her own name. Tridentata means three-toothed

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: Big sagebrush is found throughout the intermountain West, inland mountains in California, Mojave Desert at elevations from 1,500 - 10,500 feet (450 – 3,181 meters); also to Washington and New Mexico.

Plant Communities: Grows as an under story plant in red fir forests, lodgepole forests, and subalpine forests, sagebrush scrub, shad scale scrub, and chaparral.

Habitat: Grows on high, dry flats and plains and on mountain slopes; sites are usually quite dry.

Size: height ranges from 1 ½ - 10 feet (45 cm – 3 meters)

Bark/Trunk/Twigs: Big sagebrush has a thick, distinct trunk with gray shreddy bark and much branched silvery stems.

Foliage: Evergreen, pubescent, gray wedge-shaped leaves are ½ - 1 ½ inches (1.25 – 3.75 cm) long and clustered at axillary nodes, tips are divided into 3 lobes. The gray color of the leaves is caused by a dense covering of hair.

Flowers: Terminal inflorescences are panicles 6 – 18 inches long (15 – 45 cm) tiny bearing cream colored flowers.

Fruit: is an oblong, single seeded achene with a disk like top.

Requirements: Leaves are drought deciduous

Natural Significance: Important as a browse plant for deer; seeds provide food for birds and chipmunks. Plant provides habitat for many bird species. *A. tridentata* is the larval host for the Hera Buckmoth.

Ethnobotanical Use: Dried leaves and stems burned, in the homes and sweathouses, as a disinfectant and air purifier. Decoction and infusions of plant parts taken for stomach complaints, pneumonia, colds, rheumatism, sore throats, sores and pimples, diarrhea, as an eye wash, and as an inhalant for headaches.

Commercial Use: Nothing noted

Propagation: Not researched

Remarks: Of the 300 species of sagebrush, 21 are native to California. Several separate sage species and sub-species with similarly divided leaves makes identification difficult; not a true sage.



Asclepias fascicularis – Narrowleaf Milkweed – (Butterfly Weed)

Asclepias: Aesculapius was the mythical god of medicine. *Fascicularis* means clustered in bundles.

Plant Family: Asclepiadaceae – Milkweed Family

Geographical Distribution: Native from Southeast Washington and adjacent Idaho through California, Oregon into Baja California and west into Nevada from 165 – 6,600 feet (50 – 2,000 meters) elevation. This milkweed is not native to the California coast or the desert.

Plant Communities: Grows in chaparral, mixed-evergreen forests, riparian (rivers & creeks), southern oak woodlands, yellow pine forests, red fir forests, lodgepole forests, and valley grasslands.

Habitat: Milkweeds grow in a wide variety of open areas in a wide array of communities.

Size: This herbaceous perennial will grow to 3 foot (90 cm) tall and form a multi-stemmed plant.

Bark/Trunk/Twigs: It's herbaceous, so there is no bark. Stems are twig-like and very long a narrow. They are green when young but become straw color with age.

Foliage: Leaves are almost linear to lanceolate and up to 5 inches (12.5 cm) long and 1 inch (2.5 cm) wide. Leaves are arranged opposite and may be whorled.

Flowers: All flower parts are fused into a massive ½ - 1 inch (1.25 - 2.5) umbrel and clustered into crowns on the ends of 12 – 24 inch (30 – 60 cm) long stalks. The flowers are greenish-white and sometimes tinged with purple. They bloom from June to September.

Fruit: These are pods about 3 – 6 inches (7.5 – 15 cm) long that split long wise and release silky hairs and numerous seeds.

Site Ecology: Milkweeds tolerate soils from sand to clays, need only moderate water and are somewhat drought tolerant. They grow in full sun to part shade.

Natural Significance: Extremely important food source for the caterpillar of the Monarch butterfly. Numerous other butterfly species feed on the pollen of the milkweed flower.

Ethnobotanical Use: Zuni people utilize the silky seed fibers, which are spun on a hand-held wooden spindle, made into yarn, and woven into fabric (especially for dancers). Pueblo people eat green milkweed pods and uncooked roots from one of the species that forms fleshy tubers underground. The most common use for these plants, recorded among almost all the tribes throughout California, was to obtain a kind of chewing gum from the sap of *Asclepias fascicularis* and other milkweed species. The sticky white sap was heated slightly until it became solid, and then added to salmon fat or deer grease. Blossoms were eaten raw and used to make a tea a gum. Juice from boiled flowers was used to treat eye infections, snakebites, wounds and coughs.

Commercial Use: Milkweed does have landscape value, especially if you are planting a butterfly garden; however, the plant can become invasive, my wife really got on me as this plant began to take over.

Propagation: It can be easily started from its underground rhizomes.

Remarks: Milkweed sap contains a lethal brew of cardenolides (heart poison), which produces vomiting in low doses and death in higher doses. Chemicals from the milkweed plant make the monarch caterpillar's flesh distasteful to most animals. The alkaloids associated with this milkweed and other milkweeds give the monarch and other butterflies that feed on it protection from predators. This plant is subject aphid infestations.



Astragalus nuttallii – Nuttall’s Milk Vetch

Astragalus was a named used by Pliny for a plant with vertebra-like knotted roots. *Nuttallii* is after Englishman Thomas Nuttall (1786 – 1859), a botanist, ornithologist and curator of the Harvard Botanic Gardens.

Plant Family: *Fabaceae* – Legume Family

Geographical Distribution: North and Central California coast to Baja California at 500 feet (150 meters) or less elevation.

Plant Communities: Coastal Sage Scrub and Coastal Strand

Habitat: Open coastal bluffs, dunes and sandy areas

Size: 12 – 18 inches (30 – 45 cm) tall by 18 – 24 inches (45 – 60 cm) wide.

Bark/Trunk/Twigs: If the conditions are harsh with salt spray or drought they will be soft, fuzzy gray. If the conditions are easy and life good they will be green. A perennial herb forming thick, tangled clumps of hairy to hairless stems up to a 3+ feet (1 meter) in length.

Foliage: The pinnate leaves are from 1 – 6 ½ inches (2.5 – 17 cm) long and contain 21 - 43 leaflets. The leaflets are opposite along the midrib, obovate shaped and slightly cupped.

Flowers: The inflorescence is a large, dense body of up to 125 flowers, each around ½ inch (1 - 1.5 cm) long. The flowers are dull cream-colored and sometimes purple-tinted. Bloom time is mid spring to early summer.

Fruit: The fruit is an inflated legume pod up to 2 ½ inches (6 cm) long which dries to a papery texture and contains many seeds in its single chamber. The pods are a dark brownish-gray and the seeds are flattened with a notch where attached in the pod.

Requirements: Full sun, drought tolerant, tolerates ocean spray

Natural Significance: This species was cited as being a food source for a number of lepidopteron (moths and butterfly) species.

Ethnobotanical Use: Nothing noted

Commercial Use: Since this *Astragalus* has presence all year this locoweed makes a good small scale groundcover with a distinct character and flowers. Will drive people loco trying to figure out what it is?

Propagation: From its numerous seeds in the pods.

Remarks: There more than 2,000 species of *Astragalus* with 98 native to California and 2 varieties of *nuttallii*.



***Astragalus asymmetricus (leucophyllus)* – San Joaquin Locoweed or San Joaquin Milkvetch**

Astragalus was a named used by Pliny for a plant with vertebra-like knotted roots. *Asymmetricus* means not symmetrical in reference to the plants leave.

Plant Family: Fabaceae – Legume Family

Geographical Distribution: San Joaquin Valley, San Francisco Bay area, and inner south coast region, between 150 – 2,900 feet (50 – 900 meters) elevation

Plant Communities: Grows in Central Valley, foothill woodlands and chaparral.

Habitat: Grassy areas, open woodlands and disturbed sites (roadsides)

Size: 1 ½ - 4 feet (50 – 120 cm) tall

Bark/Trunk/Twigs A thick erect stem; stems often hollow covered with thick silky hairs. Often times locoweed forms spreading clumps.

Foliage: Leaves are 2 – 8 inches (5 – 20 cm) long with stiff, curved midrib and lower stipules fused into a sheath covered with 15 – 35 linear to elliptic leaflets

Flowers: The inflorescence is made up of 15 – 45 cream colored pea-like flowers each about ½ - ¾ inches (1 – 2 cm) long

Fruit: An inflated legume pod that hangs from the dried flower bunch. This pod is filled with many smooth seeds generally notched at the attachment scar.

Site Ecology: Lepidoptera (moths and butterflies) visit locoweed when it is in bloom.

Ethnobotanical Use: *Astragalus* has a history of use in herbal medicine.

Commercial Use: There are a wide variety of *Astragalus* based products available commercially. Research is ongoing as to the medicinal possibilities of *Astragalus*; unsure as to whether this species is being investigated.

Propagation: Not researched, but due to its high volume of seed production, would assume most often reproduces by seed.

Remarks: This genus has a huge number of species. There are 94 *Astragalus* native to California. Identification is very difficult. Both the flower and the fruit are needed for more certainty in identification. The one described here is rather local and the description has been generalized.



***Atriplex lentiformis* – Brewer's Saltbush**

Atriplex was a name used by Pliny. *Lentiformis* means lens shaped or bi-convex

Plant Family: Chenopodiaceae – The Goosefoot Family

Geographical Distribution: Great Central Valley, lower Sierra Nevada and Coast Ranges, Transverse Range, desert, to Utah and northern Mexico; grows from sea level to 5,000 feet (1,500 meters).

Plant communities: Grows in valley, foothill woodlands, chaparral, sagebrush scrub, shadscale scrub, and alkali sink scrub.

Habitat: Especially adapted to alkaline and saline washes, dry lake beds, and scrubland.

Size: Medium shrub 3 – 10 feet tall (0.9 – 3 meters) and usually wider than tall; forms a rather disheveled mound that eventually is impossible to penetrate.

Bark/Trunk/Twigs : Multi-stemmed trunk with erect branches, older wood gray-brown and twigs grayish-green; branches and twigs very dense.

Foliage: Evergreen alternative leaves clustered at stem on short petioles. Most leaves ovate with entire margins, gray-green in color and scaly. Leaves are from 1/3 – 2 inches long (0.75 – 5 cm).

Flowers: Plants are both monoecious and dioecious with pistillate flowers in panicle heads at the extended leaf stocks. Flowers are very small but noticeable because they are so numerous; yellow in color.

Fruit: Seeds are single and in small bladder-like pod that turns hard and gray at maturity.

Site Ecology: Very drought tolerant plant that requires little or no water once established. Saltbush also thrives in saline-alkaline soils due to its ability to harvest excess sodium and calcium.

Natural Significance: Tremendous bird plant as it large seed crop and dense vegetation provides food and habitat respectively during winter months. Leaves are a browse for deer and seeds are eaten by rabbits, kangaroo rats, and ground squirrels.

Ethnobotanical Use: All parts of the plants are edible. Leaves were a source of salt. The plant was also used to treat ant bites and treat stomach pain.

Commercial Use: The rapid growth of *A. lentiformis* has made useful in restoration projects, as a hedgerow or a living fence. If you have plants that can be damaged by a large bird population, don't plant saltbush near them.

Propagation: This plant is a enormous seed producer. New plants will spring up in a rather wide spread area surrounding the parent plant.

Remarks: Jepson list 43 different species of *Atriplex* present in California, although hybridization is not rampant amongst the various species, classification is not always clear cut. This species is also commonly called big saltbush and quail bush. Saltbush in a roadside hedge next to commercial almonds has resulted in the resident birds plucking the February almond blossoms to the extent of almost total crop loss.

***Baccharis pilularis* ssp. *consanguinea* – Coyote Brush (Chaparral Broom)**

Baccharis' etymology is uncertain. Bacchus is the Greek god of fertility, wine revelry, and sacred drama. In Latin Bacca is a fruit or berry. *Pilularis* means having globules, referring to either galls on the stems or flower buds. *Consanguinea* means related.

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: Sierra Nevada Foothills, Coast, Peninsular, and Transverse Ranges, Oregon, and northern Mexico; sea level to 5,000 feet (1,500 meters)

Plant Communities: Grows in northern coastal scrub, closed cone pine forest, and coastal sage scrub.

Habitat: Coyote brush is found in oak woodlands, coastal bluffs, along roadsides and other disturbed areas; sometimes on serpentine soils.

Size: 2 - 12 feet tall (0.6 – 3.5 meters) and spreading as wide; plants can be leggy or compact, but do take up a lot of space. There are at least three dwarf cultivars: 'twin peaks' 'Point Reyes' and 'pigeon point' that are ground covers; spreading as noted above but only reaching 12 inches (30 cm) in height.

Bark/Trunk Twigs: The dense multi-stemmed shrub form of coyote brush makes the smooth brownish tan bark almost unnoticeable.

Foliage: Evergreen and green, 3 principal veins originate from base, egg-shaped and ½ to 1 ½ inch long (2.5 – 4 cm), margins irregularly toothed

Flowers: Male flowers and female flowers occur on different plants. Male flowers are yellow and less conspicuous than female flowers. Female flowers are a rather white cottony mass that turns brown with age. In our area one of latest blooming plants (Sept.-Dec.).

Fruit: Seeds from female plants root readily.

Site Ecology: Drought tolerant, too much water will kill it; has an important mycorrhizal association; tolerates a wide range of soil textures.

Natural Significance: Excellent over wintering for many species; seeds eaten by birds all winter. Some species of sparrows and wren tits will spend their entire lives in a "coyote bush forest". Coyote Brush is tremendous pollen, and to a lesser extent, honey source for both native insect species and honey bees.

Ethnobotanical Use: Native Americans used infusion of plant as a general remedy and light pithy wood was used for arrows.

Commerical Use: Used in restoration projects because of its rapid growth. Coyote Brush can be both a visible and physical barrier when planted as a hedge row.

Propagation: Readily reseeds itself naturally and can be easily propagated by cuttings.

Remarks: Along the coast, in wind swept salt sprayed areas it forms dense mats; inland it grows erect. There are probably two different cultivars of coyote brush and it is short lived under cultivation. The cultivars 'Pigeon Point', 'Point Reyes', and 'Twin Peaks' probably were selected from wild mutations. Subject to number a insect pests, but coppicing usually breaks their life cycles. I personally have not observed insect pest problems.



***Baccharis salicifolia* – Mule Fat**

Baccharis' etymology is uncertain. Bacchus is the Greek god of fertility, wine revelry, and sacred drama. In Latin Bacca is a fruit or berry. *Salicifolia* means salix (willow) like leaves.

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: Grows in the Cascade and Sierra Nevada foothill, the central valley, north and south western California, the Tehachapi's, and the desert to Texas, Mexico and South America, below 2,500 feet (750 meters).

Plant Communities: Grows in valley grassland, valley and foothill woodlands, and riparian woodlands.

Habitat: Mule fat occupies canyon bottoms, streamsides, and ditches; often forming thickets.

Size: Large shrub that will grow to 15 feet (4.5 meters) tall, but is usually shorter.

Bark/Trunk/Twigs: Stems erect, often multi-stemmed unless manicured into a single trunk. As mule fat ages the stems tend to grow more horizontally; 45^o angles.

Foliage: Evergreen, dark green and sticky, lanceolate leaf blades up to 6 inches long (15 cm) with winged petioles; entire to toothed margins. See remarks below for foliage variation.

Flowers: Flower head is a pyramid to rounded shaped panicle with white to pale pink flowers that bloom from May – July.

Fruit: The tiny seeds (0.8 – 1.3 mm) are glabrous, have 5 ribs, and a pappus (small hair that protrude from their end).

Site Ecology: Grows along streams, but is also very drought tolerant; also tolerates full sun and a variety of soil types.

Natural Significance: Provides habitat plant for many birds and mammals.

Ethnobotanical Use: Not researched

Commercial Use: Can used as a hedgerow, visual barrier, or windbreak; a very rapid grower.

Propagation: Mule fat can be propagated by both seeds and cuttings. It will send up new shoots from underground roots.

Remarks: Has two forms: summer form terminal inflorescences and toothed leaves and winter form has lateral inflorescences and toothless leaves. The one pictured above is the summer form.



***Betula occidentalis* – Water Birch**

Betula: pitch, bitumen is distilled from the bark. *Occidentalis* is western or occidental.

Plant Family: Betulaceae – The Birch Family

Geographical Distribution: Klamath Range, high Cascade Range and high Sierra Nevada, great basin, desert mountains and scattered throughout North America; 2,000 – 8,250 feet (600 – 2,500 meters)

Plant Communities: Grow in riparian zones in the yellow pine forests, montane chaparral, pinyon and northern juniper woodlands, and montane coniferous forests.

Habitat: Almost exclusively inhabits stream sides, springs, and other wet areas.

Size: Shrub to small tree less than 33 feet tall (10 meters); generally 10 – 25 feet tall (3 – 7.5 meters)

Trunk /Bark/Twigs: Bark is thin and smooth, but dotted with conspicuous lenticles, almost black when young, but turning reddish brown to copper-colored as it ages, older bark may loosen and curl but does not exfoliate. Twigs have large resin glands that make them sticky and they are hairy. Sometimes the twigs are described as warty.

Foliage: Deciduous alternate, simple, leaves 1 – 2 inches (2.5 – 5 cm), ovate to diamond shaped, thin with glands on upper surface, acute tip and doubly serrated, except near the base. Foliage is yellow-green above and initially sticky but becoming smooth, paler and glandular below.

Flowers: Monoecious with both flower sexes borne as catkins. Pistillate flowers usually solitary and 1 ¼ - 2 inches long (3 – 5 cm); staminate flowers clustered.

Fruit: A cylindrical papery cone that disintegrates at maturity, 1 inch long (2.5 cm), seeds are tiny winged nutlets.

Site Ecology: Roots need to be in continually wet or in damp soil.

Natural Significance: Important wildlife food and beaver use branches and twigs for dam building. Water birch is also a valuable shelter belt for bird and other species along stream sides.

Ethnobotanical Use: Not researched.

Commercial Use: Wood is unimportant, but its strength has made it useful for fence posts. Water birch is used in forested riparian buffers to help reduce stream bank erosion, protect aquatic environments, enhance wildlife, and increase biodiversity. Is a useful landscape plant on a well-drained and moderately moist site. Leaves produce a clear yellow fall color; quite striking in the right setting.

Propagation: Both seeds and cuttings are viable propagators of water birch.

Remarks: Buds at trunk bases sprout profusely resulting in dense thickets of water birch. These streamside thickets provide shaded water for trout and other species of fish as well as nesting sites for numerous bird species.



Calocedrus decurrens – Incense Cedar

Calo means beautiful and *cedrus* is the Greek name for juniper; so literally translated it means beautiful juniper. *Decurrens* means running down in reference to the bases of leaves down the stem.

Plant Family: Cupressaceae – The Cypress Family

Geographical Distribution: Western northern America from mid-Oregon to Baja California and Northern Mexico; grows between 150 to over 9,000 feet elevation (45 – 2,727 meters). Incense Cedar is a very common tree on the west slope of the Sierra Nevada.

Plant Communities: Grows in both the yellow pine forest and the montane coniferous forest.

Habitat: Occurs on both dry and wet sites, seldom in pure stands and often as an understory tree to large pines and firs.

Size: Incense cedar normally grows to 70 – 90 feet tall (21 – 27 meters), up to 150 feet (45.5 meters) with trunks from 3 – 6 feet (0.9 – 1.8 meters) in diameter. Trees have been aged up to 500 years.

Bark/Trunk/Twigs: A tall, single erect trunk with bark ranging from gray to exfoliating red brown and is thick, fibrous and furrowed on old trees. The branches are long and can sometimes be quite gnarled.

Foliage: Evergreen shiny mid green scale-like leaves are opposite in 4 rows and develop almost horizontally on flattened sprays; foliage and bark aromatic with “cedar chest” odor. The twigs are highly branched and tend to be flat.

Flowers: Gymnosperm, not a flowering plant; however around Christmas time the cedars shed immense quantities of pollen that cover their surroundings in a yellow tint.

Fruit: Pollen cone: about ¼ inch (5 – 7 mm), oblong, light yellow; seed cone: ¾ - 1 inch (1.8 – 2.5 cm) light red-brown cones that look like duck’s bill when open. The cones hang down at the end of branches.

Site Ecology: Incense Cedar tolerates intense summer heat and poor soils,

including serpentine soils. It can stand moist to dry conditions. It is shade tolerant and seems to be gaining a foothold in the understory of many of our fire suppressed forests. The young trees are sensitive to fire as it fibrous barks very easily and very hot.

Natural Significance: Overwintering habitat for chestnut-backed and mountain chickadees.

Ethnobotanical Use: Not researched

Commercial Use: Wood used for pencils, railroad ties, posts, shingles, siding, decking, and lining closets and chests, wood is extremely durable, as it resists rot and repels moths.

Propagation: Stratify seed for 30 – 60 days at 40° F in the fall.

Remarks: Only two other trees in the world in this genus: *C. macrolepis* of China and *C. formosana* from Taiwan.



Calycanthus occidentalis – Spice Bush

Calycanthus is from the Greek words kalyx, (today = calyx), and anthos, meaning flower, and referring to the similarity between the sepals and petals. *Occidentalis* means from the west.

Plant Family: Calycanthaceae – Sweet-shrub or Calycanthus Family

Geographical Distribution: Inner and outer North Coast Ranges, Cascade Range, Sierra Nevada foothills, and mid elevation Sierra Nevada mountains; from 600 - 4,950 feet (182 - 1,500 meters) elevation

Plant Communities: Grows in riparian (rivers & creeks), yellow pine forest and oak woodlands.

Habitat: Spice occupies moist shady places, shaded canyons, and stream sides.

Size: Matures as a rathered disheveled shrub from 3 – 10 feet (1 – 3 meters) tall, sprawling.

Bark/Trunk/Twigs: Bark is light gray-brown, lenticeled, becoming a bit scaly with age. Twigs are brown, swollen at opposite leaf scars, initially pubescent, fuzzy brown buds, aromatic when broken. The bark/twig smell is like camphor and is long lasting when the branches are stored in a dry environment.

Foliage: The petioled leaf blade is 1 ¼ - 6 inches (3 – 15 cm) long and ¾ - 1 ¼ inches (2 – 6 cm) broad; lanceolate to elliptic to oblong with an acute tip and upper surface rough (due to stiff hairs) and lower surface hairy. This deciduous plant's leaves turn yellow then brown in fall.

Flowers: Reddish maroon flower that has a fruity fragrance and blooms from April – August. Both petals and sepals are same color and sepals look like petals. The flowers look like small magnolia flowers. The flowers have a bubble gum like smell.

Fruit: Flowers are an oval hollow receptacle that are shaped like an urn and contain numerous seeds

Site Ecology: Sun to partial shade, moist environment, coarse to fine textured soils



Natural Significance: Spice bush provides excellent cover and habitat for a variety of birds and small animals. It adds shade to a site and can aid in controlling erosion on fragile locations.

Ethnobotanical Use: Some American Indians used scraped bark of Calycanthus medicinally in treating severe colds. Infusion of dried or fresh peeled bark used for gastrointestinal problems.

Commercial Use: Very desirable landscape plant to add color and/or a visual buffer to the setting. It is not drought tolerant, therefore needs to be in watered setting. The oils from the woody portion of the plant are used in fine perfumes.

Propagation: Easily grown by dividing and planting the root ball or by cuttings.

Remarks: Spice grows rapidly and is spread by rhizomes. Care must be taken to prevent it from becoming invasive. In the right location it will quickly become a shade producing, habitat enhancing thicket. The eastern relative is *C. floridus*.

Calyptridium umbellatum – Pussy Paws

Calyptridium means “with a cap over the seed” which is a characteristic that this particular species does not actually demonstrate. *Umbellatum* refers to the multi-flower cluster inflorescence

Plant Family: *Portulacaceae* – Purslane Family (*Montiaceae*- Miner’s Lettuce Family)

Geographical Distribution: Found throughout the Sierra Nevada, including the eastern slopes, north to the Cascade Range and into the northern and central Coast Range at 2,500 – 14,200 feet (760 – 4,300 meters) elevation, 300 – 660 feet (100 – 200 meters) in San Francisco bay area. Range extends north into British Columbia, south to Baja and east into Utah, Wyoming, and Montana.

Plant Communities: Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Subalpine Forest, Alpine Fell-fields

Habitat: Pussy paws are a tough plant that grows in sandy or rocky flats and slopes, open woods, and ridges. It seems to do well in disturbed areas.

Size: A low growing succulent that ranges from a few inches to maybe 1 foot tall with flower stalks; size is much reduced at higher elevations

Bark/Trunk/Twigs: Plants can form dense mats up to a half a foot (15 cm) across, on much branched prostrate stems, originating from deep taproots. As a herbaceous plant, it has no trunk or bark (but can hear it “meow” if you listen carefully).

Foliage: The 1 -3 inch (2.5 – 7.5 cm) long leathery feeling leaves are both basal and cauline (borne on a petiole), simple, oblanceolate to spoon-shaped; basal rosetted

Flowers: Flowers are borne on naked stalks that are usually red and rise 4 – 12 inches (10 – 30 cm) above the basal rosette. The tightly clustered, chaffy headed flowers have somewhat papery petals that range from white to a deep pink color. Pussy paws does have two sepals and 4 petals, but they are difficult to distinguish in the dense 1 inch (2.5 cm) flower heads. Bloom time is May – September. These are attractive flowers along gravelly roadside.

Fruit: Each flower head produces a multitude of tiny shiny or dull, smooth to sculptured, red to black seeds.

Site Ecology: Grows on dry gravelly to sandy soils in full sun

Natural Significance: Chipmunks gather and cache the tiny black seeds.

Ethnobotanical Use: Noting noted

Commercial Use: Noting noted

Propagation: Noting noted

Remarks: Pussy paws basal leaves and flower stalks will lie flat, but exposed to the sun’s warmth, the flower stalks become nearly up right. The CNPS places pussy paws in the purslane family while some federal data basis places it in the miner’s lettuce family (Old Jepson and new Jepson does the same flip flop.)



***Camissonia cheiranthifolia* - Beach Evening Primrose**

Camissonia is named for Ludolf Karl Adelbert von Chamisso (1781-1838), who was a botanist on the ship *Rurik* which visited California in 1816, and who named the California poppy for his friend Dr. Johann Friedrich Gustav von Eschscholtz. *Cheiranthifolia* is Greek and means flowers in the hand.

Plant Family: Onagraceae – Evening Primrose Family

Geographical Distribution: Grows primarily on the North Coast, Central Coast, South Coast, and Channel Islands into southwestern Oregon, and northern Baja California; less than 300 feet (100 meters) elevation

Plant Communities: Its native habitat is exclusively the coastal strand and coastal sage scrub.

Habitat: The habitat dictates that this primrose grows on sandy slopes, flats, and coastal dunes.

Size: Beach Evening Primrose is a short-lived perennial or subshrub, rosetted, densely strigose (stiff, straight hairs); forming mats about 18 inches (45 cm) high with stems usually less than 2 feet (60 cm) long. Mats may be up to 40 inches (1 meter) across.

Bark/Trunk/Twigs: Prostrate rosettes to trailing to ascending branches, peeling.

Foliage: The rosette leaves are ¼ - 2 inches (5 – 50 mm) long, narrowly ovate to obovate, minutely serrate; cauline petioles 0 – 2/3 inches (0 – 10 mm) long and silvery to grey green in color.

Flowers: The bright yellow flowers have four petals and some of the blossoms have 2 red dots at the base of each petal; the flowers fade to red with age. They are about 1 inch (2.5 cm) across and bloom from April to August.

Fruit: - Generally seed pods are 1 – 2-coiled and about ½ - 1 inch (1.0 – 2.5 cm) long, and less than 1/10 inch (2 – 2.5 mm) wide, 4-angled; seeds in 1 row per chamber, 1.2 – 1.3 mm, minutely pitted in rows, dull brownish black.

Site Ecology: Needs a very well-drained soil; actually prefer sand and full sun. Will tolerate partially shade and is drought tolerant.

Natural Significance: The Beach Evening Primrose seems to have a mutualistic relationship with bumble bees that pollinate its flowers. This plant also encourages butterflies.

Ethnobotanical Use: Nothing noted

Commercial Use: People have used the primrose in their landscapes to capture the striking flowers.

Propagation: Easy to propagate by seed or cuttings. It will root at each node.

Remarks: Limited to the coastal strand. When it gets too far inland frost will kill. It seems to need the ocean influence to thrive.

Carex praegracilis* – Clustered Field Sedge or Freeway Sedge or Black Creeper

Carex is: the classical Latin name and *praegracilis* means very thin and slender

Plant Family: Cyperaceae – Sedge Family

Geographical Distribution: Throughout California floristic province from sea level – 8,910 feet (0 – 2,700 meters) elevation

Plant Communities: Creosote bush scrub, coastal sage scrub, coastal strand, red fir forest, valley grassland, riparian (rivers & creeks), yellow pine forest and oak woodland

Habitat: Common in meadows, open, wet areas, marshes, seeps, seasonally wet edges of ponds, frequently alkaline soil, and wide distribution.

Size: Perennial shrub that grows to 2 ½ feet (75 cm) tall

Bark/Trunk/Twigs: Stems triangular,

Foliage: Very thin and narrow leaves are 1.5 – 3 mm wide and flat to vee shaped.

Flowers: The female flower is a spikelet from ½ - 2 inches (1 – 5 cm) long, dull to brown in color and the male flower is a very slender, almost not visible, filament; bloom time is May - August

Fruit: Very tiny dull dark brown seed 2 – 4 mm in size.

Site Ecology: Moist places that is often alkaline

Natural Significance: Field sedge is good forage for grazing animals, including livestock.

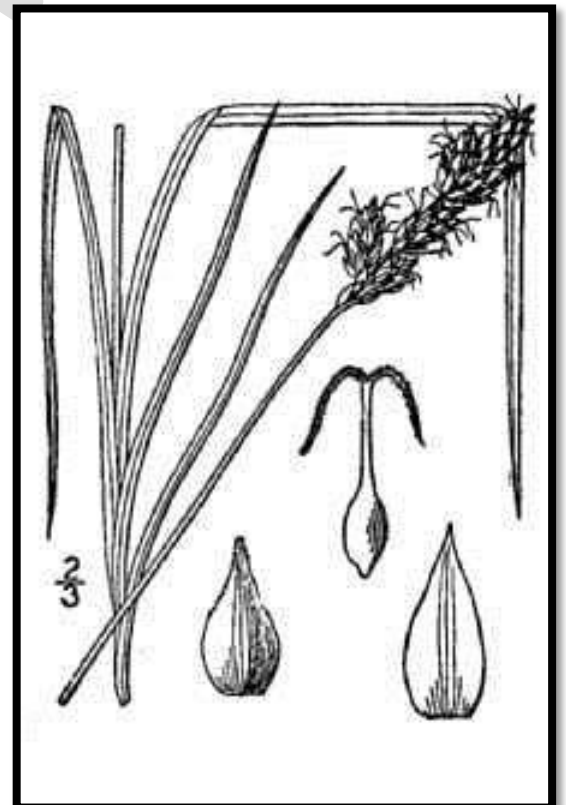
Ethnobotanical Use: Native Americans used sedge foliage to weave baskets and numerous other items.

Commercial Use: Especially good for stabilizing or restoring disturbed or degraded areas. This sedge could be a useful plant in a wetland garden. However, it has also been used as a lawn replacement as it spreads by runner. Apparently it will stand mowing and surprisingly requires less water than a regular lawn. Be aware that the rhizomes could become invasive.

Propagation: Can be propagated from seeds or from the rhizomes.

Remarks: This plant has been used to stabilize roadsides in the Midwestern part of the United States. Because these roads are often salted, the resulting saline soil condition has allowed “freeway sedge” to become well established and spread. I used this sedge for a description because it is quite common. There are a multitude of sedges and specific identification is difficult.

***note species name change**



Carpenteria californica – Bush or Tree Anemone

Carpenteria is after Professor William Marbury Carpenter (1811-1848), a Louisiana physician and botanist while *californica* means species is from California.

Plant Family: Philadelphaceae – Mock Orange Family

Geographical Distribution: Native to foothills of Fresno and Madera Counties, California, between the Kings and San Joaquin Rivers at an elevation of 1,485 – 3,300 feet (450 – 1,000 meters)

Plant Communities: Grows in chaparral, riparian (rivers & creeks), yellow pine forests and oak woodlands.

Habitat: Dry granitic ridges and slopes

Size: This evergreen shrub is 8 – 12 feet (2.5 – 3.5 meters) tall

Bark/Trunk/Twigs: Gray in color and peeling in thin, wide sheets

Foliage: Leathery lanceolate leaves on short petioles that are 1 ½ - 4 inches (4 – 10 cm) long and 1/3 – 1 inch (1 – 2.5 cm) wide. Leaves are glossy green above and a downy whitish green underneath.

Flowers: Glistening white flowers with golden color stamen (the center of the flower), that occur in April – July. Flowers have a pleasant fragrance and bloom time is May through August.

Fruit: The fruit is a seed filled leathery capsule.

Site Ecology: Tolerates sun to shade and is drought tolerant, but looks better with some water. I think it's kind of a tough plant to grow. Plant it on a mound to provide maximum drainage.

Natural Significance: Very rare, nothing noted

Ethnobotanical Use: Very rare, nothing noted.

Commercial Use: A popular garden ornamental.

The cultivar 'Bodnant' is cold-tolerant hardy to -15°C and developed for the British Isles. The cultivar 'Ladham's' has large flowers. 'Elizabeth' seems to be the most popular domestically cultivated cultivar.



Propagation: Natural reproduction is fire dependent. Can be propagated easily by seeds or hard wood cuttings.

Remarks: In the wild this is a rare plant, however, it has been planted extensively in landscapes and there are numerous cultivars. It is the only plant in the genus *Carpenteria*. The British probably use *Carpenteria* in landscapes more than we do.

***Carya illinoensis* – Pecan**

Carya: a name which derives from the Greek karyophyllon, in turn from karya or kaura, "walnut". *Illinoensis*: of or from Illinois. (non native)

Plant Family: Juglandaceae – The Walnut Family

Geographical Distribution: Native from Iowa to Indiana south to Alabama, Texas and Mexico; was planted extensively in California, but not naturalized.

Plant Communities: Temperate deciduous forests

Habitat: Grows naturally in damp soils associated with water ways; principally found along the Mississippi River and its tributaries.

Size: Slow grower; 35 feet (10.5 meters) in 20 years to 140 feet maximum (42 meters), long lived tree.

Bark/Trunk: The bark is gray to light brown in color, flat ridged and shallowly furrowed.

Foliage: Deciduous yellow, green leaves; pinnately compound leaflets; 9 -11 per stalk; leaflet 6 inches long (15 cm), serrated margins, with a midrib of the leaflet off center with the wider part of the blade toward the leaf tip. Leaves turn a butter yellow in fall.

Flowers: Flowers inconspicuous Male are yellow-green catkins small yellow flowers March to May

Fruit: The nut is oblong in a brown colored husk and is 1 – 2 inches (2.5 – 5 cm) long and ¾ - 1 inch (2 – 2.5 cm) wide.

Site Ecology: Adapted to all soil types; ph 4.5-7.5; high moisture use therefore requires regular water. Will produce a light crop without cross pollination, but is much more productive with multiple varieties.

Natural Significance: Many birds and mammals used the nuts as a food source. White tail deer browse pecan vegetation. The tree also provided habitat for wildlife. Pecan is the larval host for the Gray hairstreak butterfly.

Ethnobotanical Use: An important food source for Native Americans where pecans grow naturally. The Comanche used pecan leaves to treat ringworm; while the Kiowa used a bark concoction for tuberculosis. In California, there are naturalized pecan trees that were planted by the early pioneers.

Commercial Use: A tree that has great commercial value for its delicious nuts. There are large agricultural planting in south and southwest. There are orchards that 60 – 70 years old still in commercial production. The wood is used for furniture, flooring, veneer, and charcoal for smoking meats.

Propagation: Propagated from seed after cold stratification for 60 to 90 days.

Remarks: Included in this listing because of extensive planting that occurred in California more than 100 years ago. There has been much manipulation of pecans to improve productivity for commercial purposes. Thomas Jefferson obtained seeds and gave some to George Washington. Pecans are the oldest trees at Mt. Vernon.

***Castilleja latifolia* - Monterey Indian Paint Brush/Seaside Painted Cup**

Castilleja: named for Professor Domingo Castillejo (1744-1793), a Spanish botanist. *Latifolia* means with flowers on the side.

Plant Family: Scrophulariaceae – The Figwort Family

Geographical Distribution: This paint brush grows on the Central California coast less than 300 feet (100 meters) elevation

Plant Communities: Grows in coastal strand and northern coastal scrub

Habitat: In its natural state seaside painted cup occupies coastal dunes and ridges

Size: 1 – 2 feet (30 – 60 cm) tall and becoming shrubby with age

Bark/Trunk/Twigs: Gray-green in color, becoming purplish with age, bristly stems

Foliage: Fleshy leaves (5 – 20 mm), oblong to rounded with up to 3 lobes and truncate rounded

Flowers: Flowers are in layers of green bract and range from bright red to orange to yellow in color with total inflorescence up to 8 inches (20 cm) long and blooming from February – December or almost all year long.

Fruit: Very small seeds with deeply netted coat

Site Ecology: Grows on rather coarse well drained soils and on cliffs facing the shore.

Natural Significance: Monterey paint brush is the non-specific host to the following two

butterflies: Leanira Checkerspot (*Chlosyne leanira*) and the Chalcedon Checkerspot (*Euphydryas chalcedona*).

Ethnobotanical Use: Nothing noted

Commercial Use: Probably has garden potential in right setting. It would be difficult species to maintain in a central valley landscape.

Propagation: Seaside painted cup is most easily grown from seed.

Remarks: Identifying a “paint brush” is fairly easy; however, identifying the species is a bit more challenging as over 200 species and subspecies have been described.



Ceanothus cordulatus – Mountain Whitethorn *Ceanothus*

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *cordulatus* is Greek from the word cordul is a club or swelling. There is nothing on this plant that appears to be swollen.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution: Found in Klamath, North Coast ranges, Sierra Nevada foothills, and high Sierra Nevada mountains, also grows in Oregon, Nevada, and Baja; between 3,000 – 9,500 feet (900 – 3,000 meters).

Plant Communities: Mountain whitethorn grows in montane, subalpine forests, woodlands, and chaparral.

Habitat: Found in a variety of habitats including, rocky ridges and open pine forests.

Size: A shrub that grows 2 to 5 feet tall (0.6 - 1.5 meters) and 3 – 9 feet wide (0.9 – 2.7 meters)

Bark/Trunk/Twigs: Shrub tends to be round to flat topped with many spiny gray-white rigid branches, twigs are yellowish green with a covering of fine hairs and become gray with age. Branches possess 1 – 2 inch (2.5 – 5 cm) spines.

Foliage: Evergreen leaves, alternate thin and grayish-green above and light green below; less than 1 ¼ inches long (3 cm); blades elliptical with scattered hairs. Shows three prominent pinnate mid-veins on underside of leaf, margins entire.

Flowers: White flowers are in small panicle-like clusters less than 1 ½ inches long (4 cm), 5 petals and 5 sepals, quite strongly scented and bloom from May through July.

Fruit: Small, less than 5 mm, rough surface capsule with a crest and three valves inside each containing a seed, sticky.

Requirements: Does best in full sun, does not tolerate frequent watering in the landscape, and must have a well drained soil.

Natural Significance: *Ceanothus* species serve as a browse for wildlife and livestock.

Ceanothus cordulatus is a larval host and/or nectar source for: Pacuvius Duskywing butterfly (*Erynnis pacuvius*).

Ethnobotanical Use: Native Americans used the dried leaves of this plant as a herbal tea, and

early pioneers used the plant as a substitute for black tea. Although Native Americans use *Ceanothus* branches to make baskets, reference to use of *C. cordulatus* is not made probably due to the thorny nature of the plant.

Commercial Use: All *ceanothus* have value for ornamental use, both the native plants and the many cultivars that have been developed from them. Mt. Whitethorn would probably be more appropriate in a high elevation landscape.

Propagation: Propagated by seeds or cuttings.

Remarks: Whitethorn is the common *ceanothus* of the mountains. It rapidly establishes itself in a habitat following logging or a fire.



***Ceanothus cuneatus* var. *cuneatus* – Wedgeleaf Ceanothus**

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *cuneatus* means wedge shaped.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution: Grows throughout California, southern Oregon, and Baja at elevations between 300 - 6,000 feet (90 - 1,800 meters); however, does **not** grow in California deserts.

Plant Communities: Grows in chaparral and foothill woodlands.

Habitat: Found on dry slopes and ridges in chaparral, woodlands, and forests.

Size: Prostrate to erect shrub that can reach 8 feet in height (2.5 meters).

Bark/Trunk/Twigs: Multi-stems with branches off the stems opposite and twigs gray to brown and hairless.

Foliage: Evergreen leaves, opposite and dull to shiny green above and 1 prominent mid vein with a covering of fine hair; less than 1 ¼ inches long (3 cm); blades are wedge-shaped (broad at tip and narrow at base).

Flowers: Flowers are set on plummy spikes 1 inch long (2.5 cm) clusters and usually white but may blue or lavender, spicy scented and bloom from March to May.

Fruit: Small fruit 4 – 6 mm with horns.

Site Ecology: Wedgeleaf will grow on serpentine soil but needs good drainage. This tough plant withstands very dry conditions in full sun.

Natural Significance: Ceanothus species serve as a browse for wildlife and livestock and an excellent cover shrub for many bird and wildlife species.

Ethnobotanical Use: Native American had many uses: seed as food, blossoms produce a fine lather when rubbed on skin; leaves used a tobacco, bark and roots used as astringent and tonic, and red roots also used as a dye.

Commercial Use: Protects slopes from erosion. All ceanothus have value for ornamental use, both the native plants and the many cultivars that have been developed from them.

Propagation: Reproduced by either seeds, cuttings, or grafting; seeds must be stratified.

Remarks: Commonly referred as buck brush. There are three varieties of *C. cuneatus*. *C. c. var fascicularis* is found on the south central and southern coast. *C. c. var rigidus* grows from San Francisco Bay area to San Luis Obispo County, but is rare.



Ceanothus griseus var. 'Ray Hartman' – 'Ray Hartman' Ceanothus

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *griseus* means bluish or pearl gray.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution:

Plant Communities: Its parents are native to the chaparral community

Habitat: Dry, shrubby slopes

Size: A fairly fast growing shrub or small tree that ranges from 10 – 20 feet (3 – 6 meters) tall and about as wide.

Bark/Trunk/Twigs: Twigs are round, hairy, brown and become gray with age.

Foliage: Alternate, shiny green leaves look more like *C. arboreus* in shape and size being widely ovate to elliptic in shape and 2 – 4 inches (5 – 10 cm) long and 1 – 2 inches (2.5 – 5 cm) wide. The evergreen leaves have a serrate margin, upper surface shiny green, lower a paler green, color.



Flowers: Ray Hartman has medium blue flowers that grow in 6 inch (15 cm) spikes in the early spring and a lesser bloom in the fall.

Fruit: A very small less than 8 mm capsule, rough, 3-lobed and usually crested.

Requirements: This ceanothus does well on both sandy and clay soils. It needs full sun and is drought tolerant, but will not mind an occasional watering.

Natural Significance: Even as a garden plant, native pollinators, as well as honey bees, flock to the blossoms.

Ethnobotanical Use: Nothing noted; it a hybrid

Commercial Use: An excellent choice for the garden and a rather long lived Ceanothus, up to 20 years under cultivation.

Propagation: Propagating by cutting will assure that you have consistent new plant material.

Remarks: A hybrid of *Ceanothus arboreus* and *Ceanothus thyrsiflorus* var. *griseus* that was introduced by Rancho Santa Ana Botanic Garden in 1948. This is the most commonly grow large size ceanothus.

***Ceanothus griseus* – Carmel Creeper**

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *griseus* means gray, which is probably in reference to the underside of the leaves that are gray-green.

Plant Family: Rhamnaceae – Buckthorn Family (The California Lilac Family)

Geographical Distribution: San Francisco Bay region, north, central, and outer coastal ranges,

Plant Communities: Coastal scrub, chaparral, closed-cone pine forest, mixed-evergreen forest and yellow pine forest; endemic to California

Habitat: Seems to grow better under coastal influence, but will grow in a variety of habitats; tends to favor drier conditions.

Size: A low growing shrub that is normally 2 – 3 feet (60 – 90 cm) tall by 10 feet (3 meters) wide. A little TLC and space could cause it to be much larger; ie the Beckwith property plant.

Bark/Trunk/Twigs: Kind of gnarled and convoluted as it meanders across the ground; greenish brown in color.

Foliage: Perennial, ovate alternate glossy green leaves that are less 2 ¼ inches (6 cm) long. Three ribbed from tip base, but not a super prominent rib, gray-green underneath, and a finely serrated and somewhat wavy margin.

Flowers: Brilliant blue flowers from March - May

Fruit: Small, 4 mm, sticky fruit that turns shiny black when mature.

Site Ecology: Tolerates seaside conditions, drought, but looks much better when given moderate water, and a wide variety of soil types; tolerates full sun to half shade. Like most *Ceanothus*, Carmel Creeper must have excellent drainage. A small amount of frost damage occurred on Central Valley plants in the high 20's, but it was a not-to-worry damage.

Natural Significance: The plant can obviously provide habitat for a variety of critters. Like all *ceanothus*, Carmel creeper is a nitrogen fixer than contributes positively to a systems nutrient balance.

Ethnobotanical Use: Flowers were used in wreaths at festivals and also steeped in water to use for washing one's body.

Commercial Use: A great ground cover or specimen plant in the garden and also useful for bank stabilization. If grown in the Central Valley, plant may need a little more water and some shade.

Propagation: Either by seed or cutting

Remarks: There are numerous Carmel Creeper cultivars and it seems that 'Yankee Point' is one of the most popular. I have a 'Diamond Heights' cultivar that has a variegated lime green-shiny green leaf – cool looking plant.



Ceanothus incanus – Coast Whitethorn Ceanothus

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *incanus* means quite gray or hoary white.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution: Found from southern Humboldt County, western Lake County to Santa Cruz County. Basically *C. incanus* is common to the redwood belt. This ceanothus is endemic to California and is found from 400 - 3,000 feet (125 - 900 meters).

Plant Communities: Grows in mixed evergreen forests, redwood forests, Douglas fir forests, chaparral, and valley and foothill woodlands.

Habitat: Found in valley flats, along streams, swales primarily along the outer coast range. Following logging or fire it is one the transitional plants that becomes established as the habitat evolves to a climax forest community.

Size: A shrub 4 – 8 feet (1.2 – 2.4 meters) tall by about the same width.

Bark/Trunk/Twigs: Branches may or may not possess 1 – 2 inch (2.5 – 5 cm) spines and are round. Twigs are a waxy gray color.

Foliage: Evergreen, alternate leaf blades are broadly ovate to elliptic and from 1 ¼ - 2 ½ inches (3 – 6.5 cm), strongly 3 ribbed from the base, glabrous and green above and whitish below. Leaf has 3 veins from the base and margins usually entire, sometimes serrate.

Flowers: Borne in large compound panicles with individual flowers from ½ - 1 ¾ inches (1 ¼ - 4 ½ cm) long, white, blooming in April and May.

Fruit: Fruits are less than ¼ inch (5 mm), triangular shaped and very rough textured.

Site Ecology: Does best in full sun, does not tolerate frequent watering in the landscape, and must have a excellent soil drainage.

Natural Significance: Ceanothus species serve as a browse for wildlife and livestock.

Ethnobotanical Use: No references are made of use *C. incanus* by Native Americans.

Commercial Use: All ceanothus have value for ornamental use, both the native plants and the many cultivars that have been developed from them. Mt. Whitethorn would probably be more appropriate in a high elevation landscape.

Propagation: Reproduced by either seeds, cuttings, or grafting; seeds must be stratified.

Remarks: This is the thorny, gray-green Ceanothus found near the coast.



Ceanothus integerrimus – Deerbrush

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *integerrimus* means undivided, entire, or intact.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution: Grows in most of California's mountains plus Washington, Oregon, Arizona, and New Mexico; between 500 – 7,000 feet (150 – 2,100 meters)

Plant Communities: Grows in chaparral, mixed evergreen forests, woodlands, and montane forests.

Habitat: Found on dry slopes, ridges, and flats at lower elevations and in clearings and open sites at upper elevations.

Size: An erect shrub that may grow to 3 - 13 feet tall (0.9 - 4 meters) and 4 – 15 feet across (1.2 – 4.5 meters)

Bark/Trunk/Twigs: Highly branched erect shrub with round flexible branches and pale green sometimes hairy twigs. Mature bark is a grayish brown color.

Foliage: Winter deciduous alternate leaves less than 3 inches (7.5 cm) long; elliptical to oblong with upper surface pale green and a few hair and lower surface paler green with 1 to 3 prominent veins. The two lateral veins are as long as or shorter than the central vein. Leaf tips are acute to obtuse, bases rounded and the margins entire.

Flowers: A 2 - 6 inch long (5 - 15 cm) elongated cluster (paniculate) of white, deep blue, lavender, or even pink flowers on the end of a stalk that are showy and fragrant and bloom from May through July.

Fruit: Small, less than ¼ inch (4 – 5 mm), round shaped with a distinct ridge, on the end of small stalk, and sticky.

Site Ecology: Can survive high summer heat, drought, and poor soils.

Natural Significance: Very important browse plant to wildlife and livestock. Birds and small mammals feed on seeds.

Ethnobotanical Use: The young shoots and seeds were eaten by Native Americans. A concoction from root bark was made to treat coughs, sore throats, malaria, and kidney ailments. Long shoots were used for basket material and a soap-like body cleaner was made from the blossoms.

Commercial Use: Planted for erosion control and revegetation of disturbed areas. All *Ceanothus* have value for ornamental use, both the native plants and the many cultivars that have been developed from them.

Propagation: Reproduce from seeds or basal shoots following fire.

Remarks: There are at least eight identified varieties of deerbrush, but it is difficult to distinguish amongst them. Deer brush is a transitional plant to a climax plant community following a fire. This is a very under used ornamental that may be more useful in hybridizing with other varieties to impart its survivability characteristics.



Ceanothus prostrates – Mahala Mat or Prostrate Ceanothus

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and *prostrates* means laying flat.

Plant Family: *Rhamnaceae* – Buckthorn Family

Geographical Distribution: Distributed in the Cascade Range, Klamath Mountains and Sierra Nevada from Yakima County, Washington, Adams County, Idaho, Alpine County, California, and Carson City, Nevada; between 2,600 – 9,000 feet (800 - 2,700 meters) elevation.

Plant Communities: Grows in yellow pine forest, red fir forests, lodgepole forests, and subalpine forests.

Habitat: Grows most often on both slopes and flats and open sites in coniferous forests.

Size: As the name suggests this is a prostrate, mat-like, sometimes mound like shrub that is usually less than 1 foot (30 cm) tall and 3 – 8 feet (1 – 2.5 meters) wide. Under the right conditions this plant has been seen up to 8 feet tall (2.4 meters), this is the upright form found in the Klamath and Cascade ranges (see remarks).

Bark/Trunk/Twigs: The spreading branches root at the nodes, the distal branches range from stiff to flexible and are a reddish brown. The bark is gray brown.

Foliage: The evergreen leaves are arranged opposite and elliptic to ovate, flat, stiff and thick with a single main vein. They are 1/3 – 1 1/4 inches (9 – 30 mm) long and 1/4 - 3/4 inches (5 – 16 mm) wide. The leaf surface is dark green and glabrous and the lower surface is pale green; tips are rounded and base tapered with the upper 2/3rds of the blade dentate to serrate.

Flowers: The inflorescence is in the upper branches and umbel shaped; blue to bluish lavender in color, rarely white.

Fruit: The globe shaped fruit are weakly lobed, dark brown, with small horns above the middle of the fruit. Small broadly ovoid, slightly compressed seeds are in these globes.

Site Ecology: Most often found on well-drained gravelly or rocky soils derived from igneous and metamorphic parent rocks. Prostrate ceanothus needs to be in full sun.

Natural Significance: When plants are dense and extensive, they provide excellent cover for birds and small mammals.

Ethnobotanical Use: Not researched.

Commercial Use: Nothing noted.

Propagation: Reproduces from seed that needs to stratified for 90 days at 40⁰ F, basal shoots following fire or sometimes by layering. Mahala mat will root at the nodes if conditions are favorable.

Remarks: *C. prostrates* hybridizes with other ceanothus species within its range. There are actually two forms of mahala mat. *C. p. var prostrates* is the more common form and *C. p. var laxus* is a more upright form found in the northern part of the species range.



Ceanothus thyrsiflorus – Blue Blossom Ceanothus

Ceanothus is from the Greek word keanothus, a name which was used for some spiny plants and thyrsi means panicle like.

Plant Family: Rhamnaceae – The Buckthorn Family

Geographical Distribution: Outer coast range from southern Oregon to Santa Barbara County; under 2,000 feet (600 meters).

Plant Communities: Grows in mixed evergreen forests, north coast coniferous forests, redwood forests, Douglas fir forests, and chaparral.

Habitat: Found on slopes, ridges and flats in the chaparral and in open sites in the forests.

Size: There seems to be two forms: a compact shrub of 4 - 5 feet tall (1.2 – 1.5 meters) and up to 7 feet across (2.1 meters) and an erect plant that grows up to 20 feet tall and wide (6 meters).

Bark/Trunk/Twigs: Stout stems but flexible, twigs green and ribbed. Bark is gray brown.

Foliage: Evergreen, alternate, elliptic to ovate, 1 - 2 (2.5 – 5 cm) inches long and ¼ - 1 inch (6 – 25 mm) wide, shiny green leaves with serrated margins; lower surface paler; 3 veined from base, veins prominent on underside of leaf.

Flowers: Dark blue flowers appear later most other ceanothus, mid to late spring, and are in 1 -3 inch long (2.5 – 7.5 cm) cylindrical clusters

Fruit: Very small, sticky, 3 lobed, round shaped.

Site Ecology: Most present on well-drained sandy to rocky soils from a variety of parent materials. Does well in full sun, but temperatures are moderated by the coastal influence.

Natural Significance: Provides habitat and seeds are food for birds and small mammals. Ceanothus species serve as a browse for wildlife and livestock.

Ethnobotanical Use: Dried leaves used to make tea and to treat inflammation and infection. The Miwok tribe used branches to make baskets.

Commercial Use: Blue blossom is used extensively as an ornamental and it tolerates pruning so this large rapid growing plant can be controlled in a garden.

Propagation: Reproduces from seed, basal shoots following fire or sometimes by layering.

Remarks: Numerous cultivars to *C. thyrsiflorus* have been developed. ‘Snow Flurry’ is a massive white flowered specimen. Blue blossom is a transitional plant to a climax plant community following a fire.



Ceanothus velutinus var. velutinus – Tobacco Brush

Ceanothus: from the Greek keanothus, a name which was used for some spiny plant, and *velutinus* means a soft, silky velvety covering. (The species name does not seem to describe the plant).

Plant Family: *Rhamnaceae* – *The Buckthorn Family (The California Lilac Family)*

Geographical Distribution: In California it grows in the Klamath, Outer North Coast, and High Cascade Ranges, High Sierra Nevada, north San Francisco Bay Area, Warner Mountains, and East of Sierra Nevada (except White and Inyo Mountains) from 50 – 9,800 feet (15 - 3,000 meters), it is found up to 13,000 feet (3,960 meters) in Utah.

Plant Communities: The higher elevation plants grow in chaparral, red fir forests, mixed-evergreen forests and yellow pine forests.

Habitat: It is found on ridges and slopes and open sites in forested areas. It is a pioneer plant following a disturbance such as fire or logging.

Size: This erect shrub ranges from 1 ½ - 20 feet (0.5 – 6 meters) tall and can form large, dense colonies. Thickets may be up to 33 feet (10 meters) wide and are often dense and impenetrable.

Bark/Trunk/Twigs: Branches are greenish to reddish brown with mature bark gray to gray brown.

Foliage: The shiny dark green evergreen leaves are alternately arranged and are 1 ½ - 3 ¼ inches (3.75 - 8 cm) long by ¾ - 2 inches (2 – 5 cm) wide. The leaves are elliptic to ovate-elliptic, highly aromatic and have three prominent veins on the lower leaf blade. The leaf underside is noticeably lighter green than the surface. The leaves are glabrous (hairless) but there are exceptions to this characteristic. Leaf odor descriptions include: spicy, walnut, cinnamon, and balsam – the point is that one can really smell them.

Flowers: The flowers are white and carried at the end of branches as a panicle and about 4 ¾ inches (12 cm) long. Bloom time is March to June.

Fruit: The fruit is a tiny, less than ¼ inch (0.3 – 0.5 cm), lobed, viscid (sticky) brown to dark brown structure. It contains even smaller ovoid brown to dark brown seeds.

Site Ecology: Tobacco brush prefers medium textured rocky soils, although it will grow on almost any soil texture as long as it is well-drained. The moisture regimes of Tobacco Brush sites range from dry to moderately moist; it is moderately drought tolerant. Root nodules are nitrogen fixing and are formed by actinomycetes.

Natural Significance: Deer and other ungulates will browse this plant, but it doesn't appear to be a preferred part of their diet. Predatory wasps, insects, and native bees use the flowers from Tobacco Brush as a pollen and nectary source. The plant is also a non-specific host to seven species of native butterflies.

Ethnobotanical Use: The leaves were used as a deodorant and a decoction of leaves taken for coughs and fever. A decoction of plant tops were used to prevent diaper rash, to treat skin conditions, and as a dandruff treatment. Various parts of the plant were used for other dermatological problems. Both rheumatism and arthritis were treated with parts from tobacco brush. Smoke from the leaves was used to get rid of bed bugs, but there was no record of the leaves being used as tobacco.

Commercial Use: Can be used for revegetation or landscaping in areas with less summer heat.

Propagation: Summer semi-hardwood stem cutting collected in late April to early June. Cuttings were treated with 2000 ppm liquid IBA, and struck in mist bed with bottom heat. Seed Collection: Because dry capsules disperse their seed abruptly with a sudden ejection, it may be necessary to tie cloth bags around the clusters of capsules to catch the seeds. Seeds require 3 months stratification after a 10 – 15 minute hot water treatment.

Remarks: *Ceanothus velutinus var. hookeri* grows on the west side of the Cascade Range from northern California to British Columbia.



***Cephalanthus occidentalis* var. *californicus* – California Button Willow**

Cephalanthus means having flowers in a large head and *occidentalis* from Latin means western or of the west.

Plant Family: Rubiaceae – The Madder Family

Geographical Distribution: Central valley and surrounding foothills below 3,300 feet (1,000 meters)

Plant Communities: Grows in riparian woodland, and fresh water marshes.

Habitat: Found along and in streams, rivers, and lakes. Often times found growing in water.

Size: A Shrub that grows between 6.5 – 33 feet tall (2 – 10 meters)

Bark/Trunk/Twigs: When older, bark is gray or brown and furrowed. Leaf stalks are often red.

Foliage: Deciduous leaves, opposite to whorled, usually have 3 leaves at each node, but can have 2, 4, or 5; broadly elliptical to egg shaped and 3 – 8 inches long (7.5 – 20 cm)

Flowers: Almost perfectly spherical dense clusters of many tiny flowers at the end of stalks. Projecting stigmas create the illusion of pin cushion like button; about 1 ¼ inches in diameter (3 cm). Range from white to yellowish hues and persist from May through August.

Fruit: Brown, hard dry capsules that break apart into 2 – 4 nutlets.

Site Ecology: This is a wetland shrub. It grows in or adjacent to water and/or areas that are periodically flooded.

Natural Significance: Waterfowl and other birds eat the seeds. Wood Ducks utilize the plant as nest protection. Deer browse the foliage. Insects and hummingbirds take the nectar, with bees using it to make honey. It also probably helps to stabilize moving waterway's banks.

Ethnobotanical Use: Decoction of bark used as a bath for sore eyes and a wide variety of other ailments. Bark chewed for toothache. Root and bark used as a tonic.

Commercial Use: None known.

Propagation: Probably will regenerate itself with seeds.

Remarks: Of the 17, or so, species found worldwide, this variety is exclusive to California. *C. occidentalis* grows throughout the eastern U. S. Button willow is in the same family as coffee and quinine and is also referred to as buttonbush.



Cercis occidentalis – Western Redbud

Cercis from Greek meaning a weaver's shuttle and *occidentalis* from Latin meaning western or of the west.

Plant Family: Leguminosae - The legume Family

Geographical Distribution: Species is widely distributed in California, and is found in the Peninsular Ranges, extending east to Southern Utah and south to Southern Arizona, at elevations below 6,000 feet (1,800 meters)

Plant Communities: Grows in a wide range of communities including, oak woodland, valley grasslands,

Habitat: Occurs in many plant communities, often on dry slopes, in canyons, and near stream banks.

Size: 6 – 25 feet in height (1.8 – 7.5 meters) and as wide in shrub or tree form.

Trunk /Bark/Twigs: Bark is smooth as gray when young, becoming fissured at maturity. Young twigs are reddish and mature to gray. Naturally grows as a multi-trunked small tree unless pruned to a single trunk.

Foliage: Nearly round leaves are 1 ½ - 3 ½ inches long (3.75 – 8.75 cm) and wide and mostly hairless. Margins are entire, notched at the tip and heart-shaped at the basal end. 7-9 veins spread fan-like from the base. Upper surfaces are bluish green above and paler below. The deciduous leaves turn yellow or red in the fall, but are not really showy.

Flowers: Bright magenta, pea-like flowers with 5 petals each are ½ inch long (1.25 cm) and appear in clusters of 2-3 on slender stalks before leaf-out in spring. This can be quite a spectacular display.

Fruit: 1 ½ - 3 inches long (3.75 – 7.5 cm), ½ inch wide (1.25 cm), purplish-red to brown pods are flat and thin and contain several bean-like seeds. Seed matures in late summer but pods, in clusters along branches, often remain on plant through the winter and add another texture and color element to Western Redbud's display.



Site Ecology: Produces more flowers when grown in full sun with winter chill, requires dry conditions in heavy soils.

Natural Significance: Western Redbud has nitrogen fixing capabilities. Winter time temperatures need to drop below 28 degrees Fahrenheit (-2 degrees Celsius) in order to flower profusely.

Ethnobotanical Use: Native Americans fashioned bows and wove baskets from the wood. Bark may be used to treat diarrhea and was used as a dye. Flowers are good in salads. The flower buds may be pickled. The buds, flowers, and pods are like fritters when fried in butter.

Commercial Use: In my opinion the species is a handsome ornamental, its colorful flowers brighten the spring landscape and the dark seed pods add a different display in the fall and winter.

Propagation: The plant can be regenerated from cutting or by planting its seeds. It will reseed naturally even under garden conditions.

Remarks: Species is resistant to Oak Root Fungus. The eastern redbud *Cercis canadensis* makes a more attractive landscape plant, does well on the west coast but requires more water.

***Cercocarpus betuloides* - Western or Birchleaf Mountain Mahogany**

NOTE: plant undergoing a name change to *Cercocarpus montanus* var. *glaber*

Cercocarpus from the Greek *kerkos*, "tail," and *karpos*, "fruit," an allusion to the tail-shaped achene and *montanus* means of the mountains or mountain dweller.

Plant Family: Rosaceae—Rose family

Geographical Distribution: In the United States, it is centrally located in Colorado, Utah, and Wyoming and to lesser degrees in South Dakota, Nebraska, Kansas, Oklahoma, Texas, New Mexico, Arizona, Nevada, California, Oregon, Idaho and Montana. Within its range it grows at elevations of 3,300 – 10,000 feet (1,000 and 3,000 meters)

Plant Communities: Sagebrush, mountain shrub lands and pinyon juniper woodlands also found in ponderosa pine, and mixed conifer forests

Habitat: True mountain-mahogany, like other members of the genus, is endemic to dry coastal and interior foothills and mountains of the Western United States and Mexico

Size: 5 – 12 feet (1.5 – 3.5 meters) as a shrub and to 25 feet (7.5 meters) as a tree

Bark/Trunk/Twigs: Mature bark is smooth and light gray in color

Foliage: Semi-evergreen to evergreen leaves are clustered near tip of branches, ½ - 1 inch (1.25 – 2.5 cm) long by less than ½ - 1 inch (1 – 2.5 cm) wide, elliptic, tapered toward base, finely toothed near tip, darker green above and pale to a woolly whitish below.

Flowers: Whitish yellow flowers without petals, less than ½ - ¾ inches long (10 - 17 mm) long, occur singularly or in small clusters arising from axiles or on short spur. Bloom time is April – May.

Fruit: Hard, pale green to light brown fruits are pubescent, cylindrical achenes, very narrow approximately (1 - 2 mm wide) and ½ - ¾ inches (8 to 15 mm) long with a persistent twisted or spiraled style or tail 1 ¼ - 4 inches (3 to 10 cm) in length. The numerous 1 to 2 mm long hairs that present on the tail facilitate wind dispersal.

Site Ecology: Prefers full sun and well drained soils and is quite drought tolerant. Nitrogen fixation in root nodules and ectomycorrhizal facilitation of phosphorus uptake are probably critical for the success of this species on infertile soils

Natural Significance: Often grazed on heavily by wildlife probably because it is a good source of protein.

Ethnobotanical Use: The hard light wood was used to make arrows, spears, and digging sticks. Bark and leaves used to make a tea that was a treatment for tuberculosis.

Commercial Use: Used to stabilize and prevent erosion of highly disturbed sites such as those that have been clear cut or mined. Also is used to enhance wildlife habitat both for the cover and food.

Propagation: Regenerates after a fire however, normal establishment is by seed. Seeds must have a 2 -12 week moist chilling treatment to best germination viability. Stored seeds have remained viable after 7 years.

Remarks: Because of the reflective nature of the hairs on fruit, abundant seed crops give plants a frosted look in sunlight.



***Cercocarpus ledifolius* – Curl Leaf or Desert Mountain Mahogany**

Cercocarpus from the Greek *kerkos*, "tail," and *karpos*, "fruit," an allusion to the tail-shaped achene and *ledifolius*: with leaves like *Ledum* or Labrador tea

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Found on Eastern slopes of the Sierra Nevada and Cascades and eastward at elevations between 3,300 and 9,000 feet (1,000 – 2,730 meters).

Plant Communities: Grows in a variety of communities including: bristle-cone pine, red fir forests, northern juniper woodlands, pinyon-juniper woodlands, sagebrush scrub, sub-alpine forests and yellow pine forests.

Habitat: Dry mountain slopes, grassland, and coniferous forests

Size: Small tree to large shrub from 3 ½ - 25 feet in height (1.1 – 7.6 meters) with a 5 – 12 feet spread (1.5 – 3.6 meters).

Bark/Trunk/Twigs: Gray bark has a pattern of roughly square-shaped segments. Twigs and young branches are reddish and pubescent.

Foliage: The evergreen leaves are somewhat leathery, dark green, elliptical, ½ - 1 inch long (1.25 – 2.5 cm) leaves have a rolled under characteristic their entire margin. Upper surfaces are sticky while lower are covered with white hairs.

Flowers: Inflorescences have 1 - 8 cup-shaped flowers that are covered with white hairs.

Fruit: 2 – 3 inch (5 – 7.5 cm) achene. Each seed is topped with a 1 – 2 inch (2.5 – 5 cm) twisted, feathery white-haired style.

Site Ecology: Drought and full sun tolerant; able to withstand cold temperatures and the soil must be absolutely well drained. The plant will not survive a shaded environment.

Natural Significance: Deer and other wildlife browse the evergreen foliage year round.

Ethnobotanical Use: Stems have been used as arrow shafts, digging tools, and spears. Medicinally the plant had a variety of uses including: for burns, earaches, venereal diseases, diarrhea, stomach aches, ulcers, heart disorders to high light a few.

Commercial Use: This is an underutilized plant for revegetation and erosion control.

Propagation: Seed - sow spring in a greenhouse. When they are large enough to handle, prick the seedlings out into individual pots and grow them on in a greenhouse for at least their first winter. Plant them out into their permanent positions in late spring or early summer, after the last expected frosts. Make cuttings from half-ripe wood in July to August and place in a cold frame.

Remarks: Very slow growing and can be dwarfed in cold areas; nitrogen fixing. There are 4 species of *Cercocarpus* and two varieties of *C. ledifolius* all found in California.



***Chamaebatia foliolosa* – Sierra Mountain Misery (Kitkitdizze)**

Chamae means on the ground, low growing or prostrate and *foliolosa* mean leafy.

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Limited to the Western slopes of the Sierra Nevada between Sierra and Kern Counties and the Cascades, between 1,900 – 7,200 feet in elevation (575 – 2,200 meters)

Plant Communities: Grows in yellow pine forests and lower edge of montane coniferous forests.

Habitat: Mountain misery forms extensive carpets under mixed conifer forests.

Size: A low much-branched shrub from 6 inches to 3 feet (15 – 90 cm) in height, spreading.

Bark/Trunk/Twigs : The profuse branching sits atop a smooth gray brown bark. The lower portion of the plant is virtually unnoticed due to the heavy evergreen foliage.

Foliage: Evergreen leaves, pinnately compound and divided numerous times to give a fern-like appearance, alternate in arrangement and light green in color. Leaves are up to 4 inches long (10 cm), hairy, sticky, and have an aromatic resin-like odor.

Flowers: ½ inch (1.25 cm) five petaled white flowers on terminal 1 ½ - 4 inch long (3.75 – 10 cm) loose inflorescences. When blooming the plant is quite showy.

Fruit: Single achene per flower that stay attached to the flower.

Site Ecology: Typically mountain misery is in a dry, well-drained setting. It can be in full sun or as an understory plant in a coniferous forest.

Natural Significance: Mountain Misery stabilizes erosive slopes and provided cover and habitat for numerous birds and small mammal species.

Ethnobotanical Use: Native Americans made a tea from Mountain Misery. The Miwuks steeped its leaves in hot water and drank the tea as a cure for a variety of diseases. It is quite bitter so it must have medicinal value!

Commercial Use: Nothing noted

Propagation: Not researched.

Remarks: Some find the foliage scent unpleasant; it is especially fragrant on warm days. Mountain misery was called Kitkitdizze, the name given to the plant by the Miwuk Indians. When you walk through an area of mountain misery, your socks or pant legs will be covered with a sticky resin.



Chamaecyparis lawsoniana – Port Orford Cedar

Chamae means on the ground, low growing or prostrate; I don't know what cyparis means. Lawsoniana is after Charles Lawson (1794 – 1873), head of the Peter Lawson nursery in Edinbrough, Scotland and the first to cultivate the Port Orford Cedar (Lawson Cypress) in 1854.

Plant Family: *Chamaecyparis* – False Cypress or White Cedar Family

Geographical Distribution: In California found mainly in Humboldt and Del Norte Counties – the Klamath River drainage. An inland population occurs where Shasta, Trinity and Siskiyou Counties meet – upper Trinity and Sacramento river systems; from sea level to 5,000 feet (1,515 meters). It also grows in Southwestern Oregon.

Plant Communities: Grow in north coastal coniferous forests, redwood forests, Douglas fir forests, and mixed evergreen forests.

Habitat: The coastal populations are on moist lower slopes and river terraces; while the inland population is on drier sites that include serpentine based soils.

Size: Trees are typically 125 – 180 feet (38 – 54.5 meters) tall with trunk diameters ranging between 3 – 6 feet (90 – 180 cm). These cedars can live to be over 500 years old.

Bark/Trunk/Twigs: These cedars have a single tall trunk with mature trees having flaring bases and typically drooping branches. Bark is grayish brown, ridged, furrowed and 6 – 8 inches (15 – 20 cm) thick at base. Twigs are flattened, thin, and brown.

Foliage: The scales like leaves are a tiny 1/16 – 1/8 inches long (1.5 – 3 mm), arranged flat in opposite pairs and blue green in color. The stomatal bloom appears as a X on underside of foliage sprays. Glands on the facial scales are translucent when held up to light.

Flowers: Gymnosperm, not a flowering plant. The male “flowers” (catkins) are red.

Fruit: The tiny cones are ¼ inch (6 mm) in diameter, almost round, and very hard and woody when mature. The mature cones have small prickles on their scales. When immature, the cones are green and look like a soccer ball.

Site Ecology: Port Orford cedar is shade tolerant (it grows under redwood trees) and is fire resistant, remember it has bark over 6 inches 15 cm) thick.

Natural Significance: It part of the landscape in the plant communities noted above that provide shelter and habitat for a wide variety of birds and animals.

Ethnobotanical Use: Not researched.

Commercial Use: Port Orford cedar wood is valuable to boat builders and other wood workers. Caskets in Asia are made of this cedar wood because it resists rotting (does a corpse really care?) and it ginger aroma. The Japanese counterpart to our cedar, the hinoki cypress (*C obtusa*), has long ago been harvested. It is widely planted as a landscape tree.

Propagation: Stratify seed for 30 – 60 days at 40⁰ F. Take straight cuttings from a twig tip in the fall or winter, treat with IBA#3, place in vermiculite under a plastic cover.

Remarks: Over 250 cultivars of Port Orford cedar have been developed, the vast majority of them ornamental. In Britain and the Netherlands over 200 cultivars of this cedar adorn parks and gardens. *Phytophthora lateralis*, a parasitic root rotting fungus kill Port Orford cedar.

Chilopsis linearis - Desert Willow

Name is derived from the Greek words *cheilos*, meaning "lip," and *opsis*, meaning "resembling," referring to the flowers; *linearis* refers to the long narrow leaves

Plant Family: Bignoniaceae - Trumpet Creeper Family

Geographical Distribution: Grows from Southern California to Southern Texas into northern Mexico; from sea level to 5,000 feet (1,500 meters)

Plant communities: Grows in sagebrush scrub, Joshua tree woodlands, and creosote bush scrub.

Habitat: Along desert washes, streams, and roadsides where water collects.

Size: Shrub to small tree 4 - 30 feet tall (1.2 – 9 meters) and 10 - 20 foot spread (3 – 6 meters)

Bark/Trunk/Twigs: Multi stemmed with a trunk that twists and a bark that gets shaggy with age.

Foliage: Deciduous long thin willow like leaves 4 - 10 inches long (10 – 25 cm) by 1 - 2 inches wide (2.5 – 5 cm), usually opposite but can have opposite and whorled on same plant. Light green in color.

Flowers: In panicle head with $\frac{3}{4}$ - 1 $\frac{1}{2}$ inch (2 – 3.75 cm) bilateral flowers that vary from white to pink to lavender; bloom from April to September and are fragrant.

Fruit: Produces a long slender pod 6 - 12 inches long (15 – 30 cm) containing numerous flat seeds with white membranous margins

Site Ecology: Needs full sun and only little to moderate water and does not like cold, heavy wet soils.

Natural Significance: Hummingbirds and insect pollinators are attracted to the flowers. This willow-like plant typically is a natural protector against flood and erosion damage.

Ethnobotanical Use: Historically the desert willow has been used by the Pima to thatch roofs and for the enjoyment of the pleasant fragrance produced by the plant. The desert willows flowers, leaves, or bark can be used as a hot poultice or a soothing tea for coughing. Other treatments guard against yeast infections, athlete's foot and a first-aid technique for scrapes and scratches. The plant carries an additional use as an anti-fungal and anti-candida product (yeast). The tea (from the flowers) produces a natural anti-oxidant, which promotes cardiovascular health and regulates glucose metabolism.

Commercial Use: Plant is very rapid growing and can be used as windbreak or a hedge row. Desert willow does well in CA Central Valley landscapes but needs space in a yard. This may be one of the best blooming summer trees one can plant in a xeriscape.

Propagation: not researched

Remarks: Not related to willows; common name is a result of leaf shape. The large flowers throughout its long blooming season attract hummingbirds; is extremely drought tolerant. Rather large family, with 110 genera and over 800 subspecies. Numerous landscaping cultivars with distinctive flower color and shape have been developed. *Chilopsis* is closely related to the genus *Catalpa* and hybrids can be made between the two genera. The nothogeneric hybrid between *Chilopsis linearis* and *Catalpa bignonioides* has been named *Chitalpa tashkentensis*; as the name suggests, this hybrid was first raised in a botanic garden at Tashkent in Uzbekistan.



***Chrysolepis chrysophylla* – Giant Chinquapin (or Golden Chinquapin)**

Chrysolepis: Greek for "golden-scaled," from the lower leaf surface. *Chrysophylla*: golden-leaved.

Plant Family: Fagaceae - The Beech Family

Geographical Distribution: Giant chinquapin is restricted to the Pacific Coast region, occurring from the Santa Lucia Mountains in Monterey County to west-central Washington. Disjunct populations of both trees and shrubs grow the west slope of the Sierra Nevada in central California. It grows from near sea level to over 5,000 feet (1,500 meters) elevation.

Plant Communities: Occurs in coastal redwood forests, mixed evergreen, woodland, and chaparral communities.

Habitat: Giant chinquapin appears on a variety of sites with tree and shrub forms occupying distinctly different habitats

Size: Giant chinquapin usually grows as a single-stemmed tree or arborescent shrub with trees ranging from 20 to 120 feet (6 - 36 meters) tall and 5 feet (1.5 meters) in diameter and may live to be 400 to 500 years old on favorable sites.

Bark/Trunk/Twigs: Giant chinquapin bark is thin, smooth, and dark gray when young. As it ages, the bark becomes thick and fissured, with wide, reddish-brown plates. The wood is light brown with a pinkish tinge and is moderately heavy, hard, and strong.

Foliage: The narrow, leathery evergreen leaves are dark green on the upper surface and are commonly folded upward along the midrib, revealing yellow-green to golden undersides.

Flowers: Giant chinquapin is monocious. Chestnuts like spikes of creamy-white male flowers are borne in the leaf axils and are 1- 3 inches (2.5-7.6 cm) long catkins. Female flowers usually occur in a cluster at the base of male spikes. Flowering occurs from April to July.

Fruit: Giant chinquapin produces a distinctive, spine-covered bur which encloses from one to three sweet-tasting nuts. The bur typically ranges from 0.6 - 1.0 inches (1.5 - 2.5 cm) across, but may be as large as 2 inches (5 cm).

Site Ecology: Develops mostly on ridges and slopes with deeper soils, ample winter rainfall, and frequent summer fog. Since it is able to tolerate drought, giant chinquapin also inhabits relatively xeric sites with poor soils where it grows as a shrub. In a forested community it is typically an understory tree to the conifers, however, it appears to be only moderately shade tolerant.

Natural Significance: When available, nuts are eaten by numerous small mammals. Giant Chinquapin understories provide good mule deer escape cover. Mature stands of the white fir/Shasta red fir/giant chinquapin-boxwood/prince's pine plant associations are utilized as elk-calving and deer-fawning areas. Such stands also provide feeding and nesting habitat for the spotted owl, goshawk, and pileated Woodpecker. Giant chinquapin shrubs are rarely browsed by livestock.

Ethnobotanical Use: Historically, giant chinquapin nuts were roasted and eaten by indigenous people. Nuts are similar in taste and appearance to filberts or hazelnuts. During settlement times, giant chinquapin was used locally to make agricultural tools and other items requiring a strong hardwood.

Commercial Use: Although often of horticultural interest due to its graceful beauty and evergreen nature, giant chinquapin is notoriously prone to transplant failure.

Propagation: Propagation by seed is more reliable than by vegetative means. Nuts mature in the fall of the second year. After being spread out and dried, the burred fruits may open spontaneously. Otherwise spread the burs between thick canvas sheets and trample.

Remarks: The shrub Sierra chinquapin (*C. sempervirens*) hybridizes with shrubby ecotypes of *C. chrysophylla* in areas where their ranges overlap. Differences in form are currently thought to reflect site conditions rather than genetic differences. Consequently, the shrubby variety (var. minor), commonly known as golden or shrub chinquapin, is no longer recognized as a separate entity.

***Chrysolepis sempervirens* – Bush Chinquapin (syn: *Castanopsis*)**

Chrysolepis: Greek for "golden-scaled," from the lower leaf surface. *Sempervirens*: evergreen.

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Bush Chinquapin grows from southern Oregon into the Cascade and Klamath Ranges, Modoc Plateau, northern Coast Range, high Sierra Nevada down to the transverse ranges; from 2,000 – 12,000 feet elevation (600 – 3,600 meters) but mostly between 1,500 to 6,000 feet (460 -1,830 meters).

Plant Communities: Grows mostly in the yellow pine forest.

Habitat: Typically occupies exposed rocky slopes in chaparral and coniferous forests.

Coniferous forests may also contain scattered thickets of bush chinquapin on sites unfavorable to conifer growth, such as rocky outcrops or dry ridges. On the eastern slope of the Sierra Nevada and Cascade Range, bush chinquapin is associated with the western juniper and big sagebrush.

Size: A spreading prostrate shrub that has multiple stems that range from 1 – 5 feet tall (0.3 – 1.5 meters); can reach up to 8 feet tall (2.5 meters).

Bark/Trunk/Twigs: Mature plants have thin, smooth brownish gray bark.

Foliage: The evergreen leaves are simple, alternate, flat, leathery, and elliptical. They range 1 – 3 inches (2.5 – 7.5 cm) long with entire margins. The leaf tips are rounded and somewhat broad and the bases are tapered. The upper leaf surface is a dull green and the lower surface is a golden to rusty color and slightly hairy.

Flowers: Male catkins are produced from the tips of terminal and side branches. One to three female flowers grow at the base of the male catkins or on short separate catkins.

Fruit: The fruit is a spiny nut with a woody seed coat. Nuts are $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 4 cm) in diameter and contain from one to three seeds.

Site Ecology: A tough plant that grows in exposed sandy, rocky, gravelly slopes, hillsides, nooks, and crannies. Likes full sun and is drought tolerant.

Natural Significance: The seeds of bush chinquapin are a staple diet item of various birds and rodents. Twigs and leaves are rarely browsed by either livestock or big game animals. Large numbers of bush chinquapin in rangelands are considered indicators of overgrazing.

Ethnobotanical Use: The seeds are palatable to humans, either raw or roasted. They were a common diet item of Native Americans.

Commercial Use: The species is difficult to cultivate. The golden sheen of the lower leaf epidermis, showy cream-white male catkins, and attractive burred fruits makes bush chinquapin of interest as an ornamental, but commercial cultivation of the species has not been successful.

Propagation: Mostly by seeds, not much has been done to propagate as it is a tough plant to grow.

Remarks: Bush chinquapin hybridizes with giant chinquapin (*C. chrysophylla*) in western Siskiyou County, where distributions of the two species overlap. Giant chinquapin has a shrub form that is difficult to distinguish from bush chinquapin, and there is some confusion as to the exact distribution of each.



Cichorium intybus – Chicory

Cichorium is the Latinized version of an Arabic name for one species of this genus from the Greek word kichore, which usually carries a common name of chicory or endive. *Intybus* is derived from Egyptian word tybi, which means January, the month that this species was customarily eaten.

Plant Family: Asteraceae – Aster Family

Geographical Distribution: California Floristic Province and less than 4,950 feet (1,500 meters) elevation.

Chicory is naturalized throughout the entire United States.

Plant Communities: All below about 5,000 feet (1,500 meters)

Habitat: Roadsides and other waste places, very common

Size: 10 – 40 inches (25 - 100 cm) tall.

Bark/Trunk/Twigs: Grows from a deep woody taproot and produces erect, stout branches that are grooved and hairy. Most leaves are on lower portion of plant. Chicory has a milky sap.

Foliage: Lower leaves have petioles are oblanceolate shaped, pinnately veined, and toothed, 2 ½ - 10 inches (6 - 25 cm) long and ½ - 2 ¾ inches (1 - 7 cm) wide. The upper leaves are smaller, sessile and have entire margins. Most of the foliage is basal.

Flowers: 12 – 15 petals radiate into a conspicuous blue flowers that bloom from July – October. In the center of this flower ray are a like number of white tipped (the anthers) blue stamen.

Fruit: Small, 1.5 – 2.5 mm, conical shaped seeds that have crown short pappi (bristly hairs) on the broad end.

Site Ecology: Dry, disturbed sites that are about any soil type; full sun.

Natural Significance: Nothing noted

Ethnobotanical Use: Decoction of roots used as a wash and poultice applied to chancres and fever sores and also as a tonic for nerves.

Commercial Use: Roasted roots used as coffee flavoring if from *C. intybus* var. *sativum*. Chicory is well known for its toxicity to internal parasites. Studies indicate that ingestion of chicory by farm animals results in reduction of worm burdens which has prompted its widespread use as a forage supplement. Most research on this topic is taking place in New Zealand. Chicory produces a large volume of foliage with a high protein and mineral content and is suitable for grazing of sheep and cattle.

Propagation: Chicory can be started easily from seed.

Remarks: Native to Europe but naturalized in North America and introduced into the United States during colonial times. Endive is a close relative and cultivated as a salad plant.



***Cirsium andersonii* – Anderson Thistle and Rose Thistle**

Cirsium is derived from the Greek word kirsion, which is a kind of thistle, in turn from kirsos, which means a swollen vein or welt, because thistles were often used as a remedy against such things. *Andersonii* is after Dr. Charles Lewis Anderson (1827-1910), physician and naturalist of western Nevada and California. (This dude was an amazing man, a physician, whose “hobbies” were civic duties and botany.)

Plant Family: Asteraceae – Aster Family

Geographical Distribution: Klamath Range, Cascade Range, and Sierra Nevada from 4,620 – 10,300 feet (1,400 – 3,150 meters) elevation. It is also native to Nevada and described in Idaho.

Plant Communities: Grows in yellow pine forests, red fir forests, lodge pole forests, and subalpine forests

Habitat: Open places, woodlands, and forests.

Size: An erect perennial that grows to 40 inches (1 meter) tall.

Bark/Trunk/Twigs: May be a single stem or several, branching, may be hairy or smooth,

Foliage: The lanceolate leaves are deeply lobed green above and gray-green below and covered with matted hairs and spined. They range in size from 3 – 14 inches (8 – 35 cm) long with lower leaves larger than upper. The large leaves clasp directly to the main stem.

Flowers: The heads are comprised of spiny bracts that surround the small, numerous reddish-purple flowers, quite striking in color. The flowers heads are 2 inches (5 cm) long by 1 ½ inches (4 cm) wide. The flowers extend out of the heads another 2 inches (5 cm).

Fruit: The seeds are brown, conical shaped, 6 – 7 mm long, and topped by hairy pappus that facilitates wind dispersal.

Site Ecology: Withstands a variety of harsh environmental conditions and soil types, the plant exists right to the tree line.

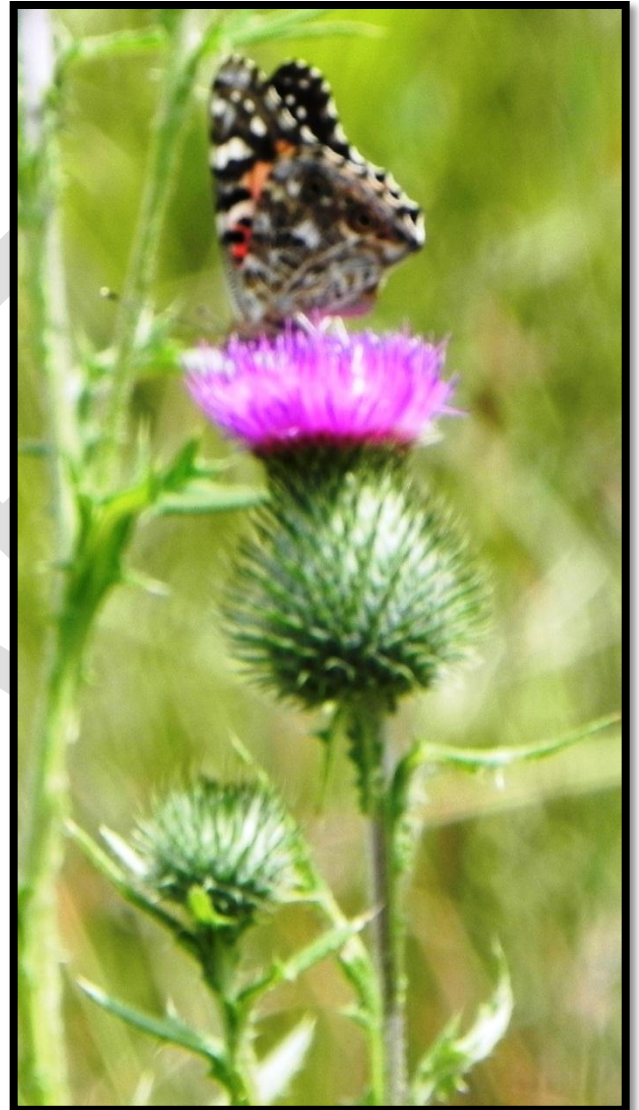
Natural Significance: The flowers attract humming birds and butterflies, as noted by the picture above right.

Ethnobotanical Use: Nothing noted.

Commercial Use: None, considered a noxious weed in some states.

Propagation: Quite easily by seed.

Remarks: In the Sierra alone there are 11 species of thistle with four of them considered noxious weeds.



***Cornus glabrata* – Brown Dogwood**

Cornus is a Latin name for dogwood and *glabrata* means somewhat glabrous.

Plant Family: Cornaceae – Dogwood Family

Geographical Distribution: California Floristic Province below 5,000 feet (1,500 meters), but uncommon in southern California.

Plant Communities: Grows in chaparral, mixed-evergreen forests, northern oak woodlands, riparian (rivers & creeks) and southern oak woodlands.

Habitat: Most commonly found in woodland moist flats, stream sides, and bogs.

Size: A shrub to small tree that ranges between 4 – 15 feet (1.25 – 4.5 meters) tall

Bark/Trunk/Twigs: An erect or spreading multi-stemmed shrub with stems that is brownish to reddish purple and twigs that are yellowish -brown. Brown dogwood commonly forms a small thicket.

Foliage: The simple, opposite deciduous leaves are 1 – 2 inches (2.5 – 5 cm) long with a broad elliptical shape and entire wavy margins; gray-green on both sides with 3 – 4 veins. Leaves turn bright red in the fall.

Flowers: The creamy white flower clusters are borne at the end of stems and are a somewhat flattened array.

Bloom time is from March – May and each flower has 4 petals and 4 white stamen that have anthers about ½ as long as the petals.

Fruit: The spherical fruits are bluish white, set on red stalks and about ¼ inch (6 mm) in diameter.

Site Ecology: Prefers moist sites, heavy textured soil, tolerates sun to part shade to full shade.

Natural Significance: This is a really good bird plant as many species feed on both the fruits and flowers. The flowers also attract pollinating insects. Thickets of brown dogwood provide much habitat for a variety of species.

Ethnobotanical Use: Branches and shoots used for making baskets.

Commercial Use: Brown Dogwood is a very attractive landscape plant that can be used in association with a pond, water garden, or even a moderately watered site.

Propagation: Propagation is easy from seed, cuttings or rooted stems at ground level.

Remarks: Brown dogwood is uncommon in Southern California, the warm deserts, and the great basin.



***Cornus nuttallii* – Western Dogwood (Mountain or Pacific)**

Cornus is a Latin name for dogwood and *Nuttallii* is after Englishman Thomas Nuttall (1786 – 1859), a botanist, ornithologist and curator of the Harvard Botanic Gardens.

Plant Family: *Cornaceae* – Dogwood Family

Geographical Distribution: British Columbia to southern California into western Idaho at elevations below 6,500 feet (2,000 meters).

Plant communities: Mixed-evergreen Forest and Yellow Pine Forest.

Habitat: Open or fairly dense forest; and itself can become dense along forest edges.

Size: An erect, single stem small tree or larger from 6 - 65 feet tall (1.8 – 19.7 meters) with 6 – 12 inch (15 – 30 cm) diameter trunks.

Trunk /Bark/Twigs: Young bark is thin and smooth, but ridges develop later making the trunk appear scale like. The twigs are initially green but turn red with age.

Foliage: Deciduous, oppositely arranged lanceolate leaves are from 2 - 5 inches (5 – 13 cm) long and 1 ½ - 3 inches (3.75 – 7.5 cm) wide. They have green fine hair upper leaf surfaces and pale green and hairy lower surfaces. Leaf venation is pinnate with prominent veins. Leaf margins are entire and wavy. The leaves put a showy red display during the fall.

Flowers: Mountain dogwood is a dramatic spring bloomer with large appearing white flowers that are actually small greenish flowers surrounded by 4 - 7 large ovate white bracts. Each inflorescence is 1 ½ - 2 ¾ inches (4 – 7 cm) wide and bloom time is from April to June. The flowers appear before the leaves.

Fruit: Red drupes that are about ½ inch (1.25 cm) long that mature into tight green clusters.

Site Ecology: Typical habitat for Pacific dogwood includes sites with moist but well-drained soils; on gentle slopes; it is also common along stream banks. It also does well as shaded under story tree but exists in more open environments. A surprising characteristic of Pacific Dogwood is that it can be drought tolerant.

Natural Significance: Mule and Black Tail deer and elk will browse western dogwood, however, it is usually not consumed in large quantities. Band tail pigeons and pileated woodpeckers feed on the fruit. There is some cover value to birds and small mammals from these trees. Larger mammals may use the trees for shade.

Ethnobotanical Use: Pacific dogwood bark was used by indigenous people of the Pacific Northwest Coast, to make brown dye. Bark has also been prepared and used as a blood purifier, lung strengthener, and stomach treatment. It has also been suggested that the bark of *Cornus* spp. was used to cure malaria and when boiled had laxative properties. Young shoots of *Cornus* spp. were used by indigenous people of central and south Sierra Nevada for basket making

Commercial Use: The Pacific Dogwood can be difficult to grow successfully in the garden. Careful attention should be paid to ensure the soil is rich, deep, and well-drained. New trees should be planted amongst shrubs so that the trunk is shaded, while upper branches receive light. The wood of Pacific dogwood has several uses. It has been used to make bows, arrows, thread spindles, cabinets, piano keys, mallet handles, golf club heads and other tools.

Propagation: Pacific dogwood is easily grown from seed and various seed treatments have been described to overcome dormancy. Seed collected in the fall can be sown directly into mineral soil to attain the long cool stratification required to overcome seed dormancy. Seed collected in the summer can be dried and refrigerated until fall. Seeds have been soaked in concentrated sulfuric acid to overcome seed dormancy.

Remarks: One of the few western trees with red foliage



Cornus sericea var. *stolonifera* – Red Twig Dogwood

Cornus: a Latin name for dogwood; *sericea*: silky; *stolonifera*: bearing stolons or runners

Plant Family: *Cornaceae* - The Dogwood Family

Geographical Distribution: Occurs throughout much of North America. In California it is found at elevations below 9,000 feet (2,730 meters).

Plant Communities: Grows in Douglas fir forests, red fir forests, riparian (rivers & creeks) and yellow pine forests.

Habitat: Found on stream banks and in moist, shady areas in forests, woodlands, wet meadows, swamps, and riparian zones as understory.

Size: Thicket forming shrub commonly reaches 3 – 10 feet (0.9 – 3 meters), more rarely a tree form to 15 feet (4 ½ meters).

Trunk /Bark/Twigs: Mature bark is gray or brown and smooth or lightly furrowed. Young twigs are bright to purplish-red and may have a coating of hair.

Foliage: Deciduous leaves are oppositely arranged, elliptical to ovate and from 1 ½ - 3 ½ inch long (3 ¾ - 8 ¾ cm) and 5/8 – 2 inches wide (1 ½ - 5 cm), with 5 - 7 prominent, curved veins. Upper surfaces are dull green and mostly hairless, lower are whitish and hairy. Margins are entire and wavy with the leaves turning various shades of red in autumn.

Flowers: Flat-topped, 2 – 3 inch (5 – 7 ½ cm) wide clusters hold ¼ inch (6 ¼ mm) white flowers, each with 4 spreading petals and appear in spring simultaneously with or after leaf out.

Fruit: Berry-like, ¼ inch (6 ¼ mm) fruits in clusters are whitish to blue & mature late summer.

Site Ecology: Tolerates many soil types, including wet or dry sites and acidic to neutral pH. Needs some frost to develop full fall color; does well in sun to partial shade.

Natural Significance: Wildlife browse the twigs, foliage, and fruits. A large number of bird species are known to eat the fruit. The shrubs provide excellent nesting habitat for songbirds. Mammals that eat the fruit and foliage include black bear, beaver, mountain beaver, cottontail rabbits, raccoons, eastern skunks, squirrels, chipmunks, mice, and rats. Deer, elk, Mountain goat, and moose browse the twigs and foliage.

Ethnobotanical Use: Native Americans used a decoction of the bark for colds, coughs, and fevers. Bark was also smoked during various ceremonies. Dream catchers, originating with the Potawatomi, are made with the stems of the sacred red osier dogwood. Some tribes ate the white, sour berries, while others used the branches for arrow-making, stakes, or other tools. A peeled twigs were used as toothbrushes for their whitening effect on teeth. Bows and arrows were made from *Cornus* shoots. The inner bark is used for tanning or drying animal hides.

Commercial Use: Useful for erosion control on stream banks and prized as an ornamental for the red color of the young shoots. In California's Central Valley red twig dogwood would probably do better with some afternoon shade in summer. Sends out underground stems and can become invasive.

Propagation:

Remarks: Confusion exists surrounding the species as there is conflicting information given about its botanical name, sometimes noted as *Cornus stolonifera*, and common names for the plant are numerous (Creek Dogwood, American Dogwood, Red Osier Dogwood, Colorado Dogwood, Red-Stem Dogwood, and Red-Twig Dogwood all commonly refer to the same species). Additionally, there are 2 recognized subspecies, *C.s.* ssp. *sericea* has hairy leaves while the leaves of *C.s.* ssp. *occidentalis* are hairless.



***Cornus sericea* – Red Osier**

Cornus: a Latin name for dogwood; *sericea* means silky

Plant Family: Cornaceae - The Dogwood Family

Geographical Distribution: Occurs throughout much of North America. In California it is found at elevations below 9,000 feet (2,730 meters).

Plant Communities: Grows in all plant communities except those that are desert-like and the very highest elevations.

Habitat: Found on stream banks and in moist, shady areas in forests, woodlands, wet meadows, swamps, and riparian zones as understory.

Size: Thicket forming shrub commonly reaches 3 – 10 feet (0.9 – 3 meters), more rarely a tree form to 15 feet (4 ½ meters).

Trunk /Bark/Twigs: Mature bark is gray or brown and smooth or lightly furrowed. Young twigs are bright to purplish-red and may have a coating of hair. The whip-like branches are quite dramatic in the winter as they are bright red in color.

Foliage: Oppositely arranged, elliptical to ovate leaves are 1 ½ - 3 ½ inch long (3 ¾ - 8 ¾ cm) and 5/8 – 2 inches wide (1 ½ - 5 cm), and have 5 - 7 prominent, curved veins. The outside veins toward the upper portion of the leaf curve toward leaf tip. Upper surfaces are dull green and mostly hairless, lower are whitish and hairy. Margins are entire and wavy. The deciduous leaves turn various shades of red in autumn.

Flowers: Flat-topped, 2 – 3 inch (5 – 7 ½ cm) wide clusters hold ¼ inch (6 ¼ mm) white flowers, each with 4 spreading petals and appear in spring simultaneously with or after leaf out.

Fruit: Berry-like, ¼ inch (6 ¼ mm) fruits in clusters are whitish to blue and mature in late summer.

Site Ecology: Tolerates many soil types, including wet or dry sites and acidic to neutral pH. Needs some frost to develop full fall colors. Red twig dogwood does well in sun to partial shade.

Natural Significance: Wildlife browse the twigs, foliage, and fruits. A large number of bird species are known to eat the fruit. The shrubs provide excellent nesting habitat for songbirds. Mammals that eat the fruit and foliage include black bear, beaver, mountain beaver, cottontail rabbits, raccoons, eastern skunks, squirrels, chipmunks, mice, and rats. Deer, elk, Mountain goat, and moose browse the twigs and foliage.

Ethnobotanical Use: Native Americans used a decoction of the bark for colds, coughs, and fevers. Bark was also smoked during various ceremonies. The stems were used to make baskets.

Commercial Use: Useful for erosion control on stream banks and prized as an ornamental for the red color of the young shoots and the colors produce in the fall by the leaves.

Propagation: Red twig dogwood can easily be propagated by cutting as it sends out underground rhizomes and can become invasive.

Remarks: Confusion exists surrounding the species as there is conflicting information given about its botanical name, sometimes noted as *Cornus stolonifera*, and common names for the plant are numerous (Creek Dogwood, American Dogwood, Red Osier Dogwood, Colorado Dogwood, Reg-Stem Dogwood, and Red-Twig Dogwood all commonly refer to the same species). Additionally, there are 2 recognized subspecies, *C.s.* ssp. *sericea* has hairy leaves while the leaves of *C.s.* ssp. *occidentalis* are hairless.

***Corylus rostrata* var. *Californica* – California Hazelnut**
Species name change (*cornuta*)

Corylus is the Latin name for the hazel and means helmet and *cornuta* means horned or horn shaped.

Plant Family: Betulaceae - The Birch Family

Geographical Distribution: Distributed in both coastal areas and mountain ranges in California, Oregon, Washington, and British Columbia ranging in elevation from sea level to 7,500 feet (2,300 meters). In California, California Hazelnut occurs from Del Norte to Santa Cruz County in the Coast Range and from Siskiyou to Tulare County in the Sierra Nevada.

Plant Communities: Grow in closed cone pine forests, northern coastal coniferous forests, redwood forests, Douglas fir forests, valley and foothill woodlands, and yellow pine forests.

Habitat: CA hazelnut commonly grows in cool, moist, shady sites, often near streams

Size: Typically is a multi-stemmed shrub 5 - 12 feet in height (1.5 – 4 meters), but can develop into a small single stemmed tree up to 20 feet tall (6 meters), trunk is normally about 12 inches in diameter (30 cm).

Trunk/Bark/Twigs: Dark brown to black bark is smooth. Twigs are hairy and grow in a zigzag pattern.

Foliage: Ovoid to round, hairy leaves have dark green upper surfaces and light green lower and are 2 – 4 inches long (5 – 10 cm) and 1 ½ - 3 inches wide (3.75 – 7.5 cm). Margins are coarsely doubly serrated, petioles pubescent; deciduous.

Flowers: Pollen bearing catkins, usually in clusters of 2 - 3, are 1 ½ - 3 inches in length (3.75 – 7.5 cm), seed bearing catkins have red stigmas and appear among a cluster of small, scaly buds.

Fruit: A very hard spherical nut in papery husk that protrudes beyond the nut like a beak, often in clusters of 2 - 4 borne at the end of current year's twigs; typically a reddish-brown color.

Site Ecology: California hazelnut is typically found on moist and well-drained sites. It occurs on cool shaded sites on north-facing slopes, along stream banks, in moist wooded canyons and slopes, in the understory of oak and conifer forests, and in open, burned or cut-over lands. It can resprout from the crown after fire or cutting.

Natural Significance: In some localities, California hazelnut is browsed extensively by livestock and wildlife; in others it is scarcely used. Utilization depends on the relative palatability and abundance of associated vegetation in a given area. In California, it is considered of slight importance as browse for mule deer. Birds consume the buds and catkins. Nuts of California hazelnut are a staple food of the Steller's Jay, chickaree, Townsend's chipmunk, Allen's chipmunk, golden-mantled squirrel, and digger squirrel.

Ethnobotanical Use: The edible nuts of California hazelnut have a sweet flavor and are commonly collected. The glandular hairs on the nut husk have been used as a remedy for parasitic intestinal worms. Native peoples used the slender 1- and 2-year-old twigs for basket making.

Commercial Use: California hazelnut is valuable as a soil binder on steep slopes.

Propagation: Often developed into new stock by layering.

Remarks: The largest specimen, at 50 feet tall (15 meters), grows in Lincoln County, Oregon. Though treated as a variety of *C. cornuta*, the two are quite distinct and may not be as closely related as previously thought. Of the 15 world wide species of *Corylus*, only *C. cornuta* is native to the United States.



***Croton setigens* – Turkey Mullein or Dove Weed**Formerly *Eremocarpus setigens*

Croton is the native name and means tender, evergreen shrub. *Setigerus* is from *seti*, which means bristle, and *-gero*, which means bearing, thus bearing bristles, referring to the hairy stems, sepals, ovaries and styles.

Plant Family: Euphorbiaceae – Spurge Family

Geographical Distribution: California Floristic Province, western deserts, to Washington; under 3,300 feet (1,000 meters) elevation.

Plant Communities: Coastal Sage Scrub, Foothill Woodland, Valley Grassland, Northern Oak Woodland, and Southern Oak Woodland

Habitat: Dry open disturbed areas; especially along roadsides.

Size: About 8 inches (20 cm) tall and 30 inches (80 cm) wide

Bark/Trunk/Twigs: A herbaceous plant that forms a mound-like dome of leaves over laying of many hair covered branches.

Foliage: Deciduous gray-green leaves 1/3 – 2 1/3 inches (1 – 6 cm) long, ovate shaped, densely hairy with 3 raised veins.

Flowers: Pale yellowish that almost blend in with foliage; bloom from May – November. There are staminate flowers in terminal cymes, each of which has a calyx of 5-6 sepals, no petals and six to ten exerted, free stamens. The pistillate flowers are sessile in the axils of branches below the staminate inflorescences and they have no calyx or corolla, a slender style and a 1-chambered ovary.

Fruit: Seeds 3 – 4 mm beans shaped, gray colored with dark spots.

Site Ecology: Variable soils, full sun, drought tolerant; often times in disturbed places like road sides.

Natural Significance: Dove and wild turkey eat the seeds.

Ethnobotanical Use: Plant used to stupefy fish and make them easier to catch; medicinal uses include: for internal pains, for chills and fevers, a bath for typhoid and other fevers, and roots used for dysentery.

Commercial Use: Probably not used commercially

Propagation: By seed

Remarks: The hairy covering on stems and leaves can be as irritating to some people as poison oak. In most instances it is considered a weed.



Cupressus abramsiana – Santa Cruz Cypress

Cupressus is in reference to symmetry, conical shape. In mythology Apollo turned Kypressos into an evergreen tree. *Abramsiana* is after Leroy Abrams(1874 – 1956), professor of botany at Stanford and discoverer of this tree in 1915.

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: There are five small populations on the western slopes of the Santa Cruz Mountains northwest of Santa Cruz in Santa Cruz and San Mateo Counties; naturally occurs at elevations between 925 – 2,650 feet (280 – 800 meters).

Plant Communities: Grows in yellow pine forests, closed cone pine forests and chaparral.

Habitat: All naturally occurring Santa Cruz cypress grows in chaparral on sandy soils; none are found on serpentine soils, so they are not associated with McNab cypress (*Cupressus macnabiana*)

Size: Varies depending on the site in which it is found; 3 feet (0.9 meters) tall on nutrient poor soils and up to 50 feet (15 meters) tall on ideal sites.

Bark/Trunk/Twigs: Bark grayish-brown, thin fibrous and broken in thick vertical strips or plates and shedding on old trees; young shoots are cylindrical.

Foliage: Evergreen very small (1 mm) overlapping scale-like leaves green to light green to yellow green in color. Santa Cruz cypress leaves do not have resin glands so it is not sticky like many of the other cypresses.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Small 3 – 4 mm long by 2 mm diameter pollen cones, cone shaped, yellow and at the end of branches; seed cone ½ - 1 ¼ inches spherical (1.5 – 3 cm), brown in color and warty. Cones remained closed until fire opens the cones. Seed are 3 – 5 mm, generally glaucous, dull brown with conspicuous attachment scar.

Site Ecology: Fire dependent, as its serotinous cones need fire to cause them to open and prepare a seedbed for the seeds. Fires too often kill trees before they are cone bearing (usually take 10 – 11 years). Infrequent fires prevent cones from opening and do not remove enough competition for trees to prosper.

Natural Significance: Population too small to be particularly important at this time.

Ethnobotanical Use: Unsure because of small population.

Commercial Use: Cypresses are widely used for ornamental planting and in wind breaks. Tree can be grown from seed and this should be a consideration to help preserve this species.

Propagation: Not researched

Remarks: Santa Cruz cypress is listed as endangered under the federal endangered species act. There are approximately 25 cypresses world wide and, although taxonomists do not agree, there are probably 8 - 10 native to California, depending on the reference used to corroborate this fact. Some taxonomists classify Santa Cruz cypress as a natural hybrid between *Cupressus goveniana* (Gowen cypress) and *Cupressus sargentii* (Sargent cypress). Jepson lists all three as separate species. The five know populations of Santa Cruz Cypress include the following numbers: (1) Bonny Doon with over 3,000 plants with about half of these are managed by the California Department of Fish and Game as part of the Bonny Doon Ecological Reserve; (2) Eagle Rock with 700 plants located within Big Basin Redwoods State Park; (3) Bracken Brae with over 200 plants on private land; (4) Butano Ridge with over 200 plants located within Pescadero Creek County Park; and (5) Majors Creek with over 1,000 plants on private land.

Cupressus goveniana* ssp. *goveniana* – Gowen Cypress**Cupressus goveniana* ssp. *pigmaea* – Pigmy Cypress**

Cupressus is in reference to symmetry, conical shape. In mythology Apollo turned Kypressos into an evergreen tree. The species was named by George Gordon in honor of James Robert Gowen, Secretary of the Horticultural Society of London and thus Gordon's boss.

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: Sub species *goveniana* is found in two populations near Monterey and sub species *pigmaea* is found in Mendocino and Sonoma Counties. The Monterey population is between 100 – 1000 feet (30 - 300 meters) elevation. The northern populations are between 100 – 1,650 feet (30 – 500 meters) elevation.

Plant Communities: Grows in coastal closed pine forests and chaparral.

Habitat: Gowen cypress can occur in dense thickets as well as in open groves on slopes with poor soils within a few miles of the ocean.

Size: Because there are two sub species, size varies considerably. Trees near Monterey are 20 – 25 feet (6 – 7.5 meters) tall. Trees near Fort Bragg are 3 ¼ - 6 ½ feet (1 – 2 meters) tall on poor soil and up 150 feet (46 meters) tall on fertile soil.

Bark/Trunk/Twigs: Bark smooth or rough, ranges from brown to gray and fibrous. Branchlets dense and crossing each other.

Foliage: Evergreen small (3 mm) scale-like leaves, light yellow-green near Monterey and dark green near Fort Bragg and not glaucous.

Flowers: Gymnosperm, not a flowering plant.

Fruit: The seed cones are globose to oblong, ½ - ¾ inches (12 - 22 mm) long, with 6 to 10 scales, green at first, maturing to brown or gray-brown about 20 - 24 months after pollination. Seed cones do not open until exposed to a fire. The dark brown seeds are tiny and triangular shaped.



Requirements: Full sun, apparently needs a coastal influence, and survives on very very poor soil. The soils can be poorly drained and it will survive. This is a tough plant that survives where nothing else grows.

Natural Significance: Gowen Cypress is on the endangered species list. There are about 50 trees of *C. goveniana* ssp. *goveniana*. Rodents and deer consume cypress seedlings.

Ethnobotanical Use: No citations found.

Commercial Use: (This if for Cypresses in general) Cypress (*Cupressus* spp.) wood is generally durable and stable. It is suitable for a wide range of exterior uses including joinery, shingles, and boats. Possible interior uses include moulding and panelling. Cypress shelterbelts provide good firewood. Most cypress species develop a large proportion of heartwood, which splits well, dries quickly, and is clean burning. Cypress wood is moderately fast burning because of its medium density. As cypress woods are prone to sparking, they are recommended only for enclosed fires.

Propagation: Gowen cypress reproduces exclusively from seed.

Remarks: There are two sup species of Gowen Cypress: *C. g.* ssp. *goveniana*, Gowen Cypress, and *C. g.* ssp. *pigmaea*, Pigmy Cypress. They are considered rare. Some botanists consider Santa Cruz Cypress (*Cupressus abramsiana*) a sub species of Gowen Cypress. There are approximately 25 cypresses worldwide and, although taxonomists do not agree, there are probably 8 - 10 native to California, depending on the reference used to corroborate this fact.

Cupressus macnabiana – McNab Cypress

Cupressus is in reference to symmetry, conical shape. In mythology Apollo turned Kypressos into an evergreen tree. *Macnabiana* is after William R. McNab (1844 – 1889), professor of botany at University College, Dublin.

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: Most widely distributed of all California cypresses; grow on the west side in Sierra Nevada foothill, inner north Coast Range, and high Cascade Range; 1,000 – 2,800 feet (300 – 850 meters)

Plant Communities: Grows in chaparral, oak woodlands and coniferous woodlands

Habitat: Dry slopes and flats of pine-oak woodlands and chaparral. It grows mainly on poor soils derived from serpentine. There are often times pockets of McNab cypress growing on one of these lesser soil sites where nothing else will grow.

Size: Usually a shrub 10 – 33 feet (3 – 10 meters) and rarely a tree 33 – 60 feet (10 – 18 meters). Often its crown is broader than its height.

Bark/Trunk/Twigs: Multiple stems with gray fibrous bark; bark on old trees has furrows separated by deep diamond shape furrows. Young shoots four-sided and arranged in flat sprays, which is unique to McNab cypress. This cypress may grow as either a multi-branched shrub or a single trunk tree, depending on the site conditions.

Foliage: Evergreen very small (1 mm) scale-like leaves with gland in center of each, blue to dull gray-green to gray in color, pungent scented and covered with sticky resin when fresh. Young seedlings produce needle-like leaves up to 1/3 inch (10 mm) long in their first year.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Small 2 – 3 mm pollen cones and seed cone ½ - 1 inch slightly oblong (1.5 – 2.5 cm), gray to red-brown with two prominent projections that look horns of the devil! Seeds are 2 – 5 mm, and glaucous brown. Seed cones do not open until exposed to a fire.

Site Ecology: Grows on serpentine soils. Shade intolerant and fire dependent, as its serotinous cones need fire to cause them to open.

Natural Significance: Protects watersheds from erosion and landslides.

Ethnobotanical Use: Not researched

Commercial Use: Livestock ranchers use trunks for fence posts. Also used for firewood. Cypresses are widely used for ornamental planting and in wind breaks.

Propagation: Not researched

Remarks: McNab and Sargent cypress ranges overlap. When found together, McNab is usually on more exposed slopes. There are approximately 25 cypresses world wide and, although taxonomists do not agree, there are probably 8 - 10 native to California, depending on the reference used to corroborate this fact.

Cupressus macrocarpa - Monterey Cypress

Cupressus is in reference to symmetry, conical shape. In mythology Apollo turned Kypressos into an evergreen tree. *Macrocarpa* means large seeded

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: Monterey Cypress grows only in two limited localities, Cypress Point and Point Lobos—the two headlands of the ocean shore at the mouth of the Carmel River near Monterey; between 30 – 100 feet (10 – 30 meters) elevation.

Plant Communities: Grows in closed cone pine forests and northern coastal scrub

Habitat: Monterey Cypress occurs on exposed rocky headlands on the coast near Monterey.

Size: Mature trees 15 to 80 feet tall (4.5 – 24 meters) and about 2 feet in diameter (60 cm). They have a highly branched, and irregular, flattened crown due to the influences of the ocean and wind.

Bark/Trunk/Twigs: Bark is a fibrous, rich brown that ages to an ashy grey. Twigs are Stout (for cypress), square, covered in scale-like leaves, overall a thick, coarse texture. Mature trees tend to be flat topped due the windy conditions adjacent to the ocean.

Foliage: Evergreen, scale-like, blunt tipped, tight and crowded on the twig in opposite pairs resulting in a square twig, mostly lacking glands; bright green; not glaucous

Flowers: Gymnosperm, not a flowering plant. However, monoecious; Pollen cones (males) are small, pale yellow-green at ends of branch tips, often in abundance; Seed cones (females) small light green near branch tips.

Fruit: Cones 1 to 1.5 inches in diameter (2.5 – 3.5 cm), slightly ovate, initially glaucous and green but turning dull brown when mature; 8 to 12 hard woody cone scales with a strong spine; , serotinous (open with fire) cones; mature in two growing seasons and remain on branches for several years.

Monterey cypress cones are the largest of all the cypresses.

Site Ecology: Very shade intolerant and competes most effectively on rocky, acidic soils, however, it is cultivated in a wide variety of habitats and thrives. Tolerates both dry and moist conditions

Natural Significance: It obviously provides habitat for wildlife and acts and soil stabilizer and buffer against the wind.

Ethnobotanical Use: A decoction of foliage was used for rheumatism.

Commercial Use: It is widely cultivated in California as an ornamental, for wind-breaks and for hedges. While long-lived in coast gardens, trees planted in the dry interior valleys rarely live more than twenty-five years. It has also been planted extensively in Europe, Australia, and New Zealand is probably the second most popular conifer worldwide following the Monterey Pine.

Propagation: Typically by seed but they are slow to germinate. Stratify the seeds for 60 days at 40⁰ F before planting. It can also be started from cuttings in peat moss.

Remarks: The age of mature Monterey Cypress is about 50 to 300 years, despite speculation that these trees are ancient due to some of the contorted specimens affected by the climatic circumstances of their location. DNA dated is suggesting that Monterey Cypress be reclassified into a new genus and renamed *Callitropis macrocarpa*. There are just a few thousands native trees in the two populations. Monterey Cypress is on the endangered species list.



Cupressus sargentii – Sargent Cypress

Cupressus is in reference to symmetry, conical shape. In mythology Apollo turned Kypressos into an evergreen tree. *Sargentii* is after Charles S. Sargent (1841 – 1927), A prominent member of the Massachusetts Horticultural Society and first director the of Arnold Arboreteum. He held this position for 54 years and developed the arboreteum from essentially nothing to over 250 acres.

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: Range extends from Mendocino to Santa Barbara; between 660 – 3,300 feet (200 – 1,000 meters) elevation. It is the most widely distributed species in its genus in California.

Plant Communities: Sargent cypress is usually found growing in chaparral, foothill woodlands and lower montane forests.

Habitat: Sargent Cypress is usually restricted to serpentine soils, usually growing on exposed rocky areas. Sargent cypress is commonly found on dry slopes, exposed hillsides, and ridge tops, but also grows along stream banks, creek bottoms, and lower canyon slopes.

Size: Typically a small single stemmed tree between 33 – 66 feet tall (10 – 20 meters), but varies from a scrubby shrub to a tree 90 feet tall (27 meters) with a 3 foot diameter (0.9 meters) trunk.

Bark/Trunk: Gray to dark brown to black fibrous bark, thick with young shoots cylindrical to four-sided.

Foliage: Evergreen very small (1 mm) scale-like leaves with gland at base of each resulting is much resin, dusty green to gray-green in color; may or may not be glaucous. Sargent cypress foliage **does not** have an odor.

Flowers: Plant is a gymnosperm, not a flowering plant.

Fruit: Small 3 – 4 mm pollen cones, 4-sided to cylindric and seed cone ½ - 1 ¼ inches spherical (1.5 – 3 cm), dull brown to gray, rough surface with projections inconspicuous. Seed are 5 – 6 mm, generally glaucous, and dark brown.

Requirements: Sargent is pretty much resisted to growing on serpentine soils, and is shade intolerant but drought tolerant. Fire dependent, as its serotinous cones need fire to cause them to open and prepare a seedbed for the seeds. If no fire for long time, cones will open, but seedlings will not survive due competition and shade.

Natural Significance: Deer and rodents will eat the seedlings. The tree offer shelter and habitat for a variety of wildlife.

Ethnobotanical Use: Nothing noted

Commercial Use: Cupresses are widely used for ornamental planting and in wind breaks. The wood is also a good fuel source.

Propagation: Sargent cypress reproduces exclusively from seed.

Remarks: Sargent and McNab cypress ranges overlap in the north coast range and as a result they hybridize.. When found together, McNab is usually on more exposed slopes. There are approximately 25 cupresses worldwide and, although taxonomists do not agree, there are probably 8 - 10 native to California, depending on the reference used to corroborate this fact. Gowen cypress may be confused with Sargent Cypress. The leaves of Sargent Cypress are typically longer than 1/16 inch in length and the color is dull green. In contrast the leaves of Gowen Cypress are less than 1/16 in length and the color is bright green.

Cyperus esculentus – Yellow Nutsedge

Cyperinus resulted when Linnaeus described this taxon as having the overall appearance of a *Cyperus*, but spikelets like a *Scirpus*. *Esculentus* is translated to esculent, edible.

Plant Family: Acanteraceae – Acanthus Family

Geographical Distribution: Grows throughout the United States; not listed in Jepson, therefore, not considered native but definitely naturalized as it is common.

Plant Communities: Valley grassland, woodland grass, and riparian.

Habitat: Moist to wet places like ponds, waterway edges, drain ditches, bogs, wetlands, etc.

Size: Grows to 2 ½ feet (75 cm) tall

Bark/Trunk/Twigs: Stems are triangular in cross section

Foliage: The shiny green leaves are narrow, vee shaped and from (3 – 10 mm) wide

Flowers: Spikelets alternate in a rather rigid panicle head.

Fruit: A loose spikelet that is green when young and turns brown with maturity. Seed formation occurs from June - October.

Site Ecology: Sun to part shade, heavy textured soils, can survived in water. Plant has enough adaptations to grow in a drier environment.

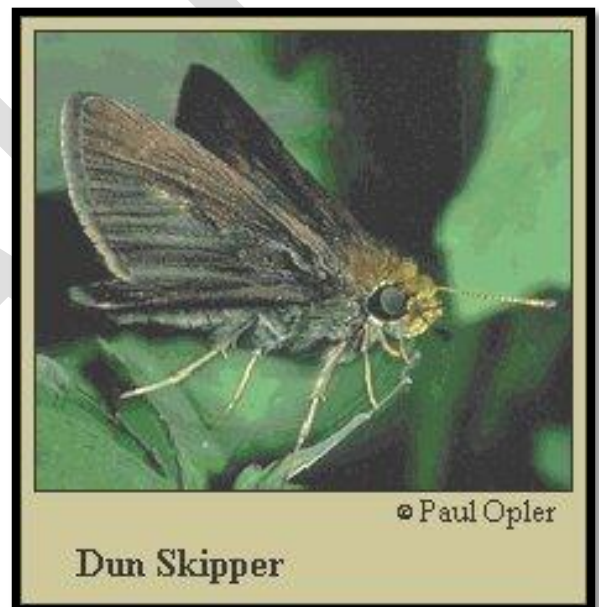
Natural Significance: Yellow nutsedge is the larval host for the Dunn Skipper, (*Euphyes vestris*)

Ethnobotanical Use: Roots were chewed for coughs and colds. Root tubers were eaten. Poultice of chewed root applied to snakebites. The plant was used as a ceremonial emetic (Something to cause a person to vomit).

Commercial Use: Often cultivated elsewhere in the world for its edible roots. However, the plant is an invasive weed whose root system make it very difficult to control.

Propagation: Most common by root rhizomes although can also reproduce by seed.

Remarks: The Purple Nutsedge, *Cyperus rotundus*, has a bitter tasting root. Tubers contain from 20 – 36% oil and have been suggested as a potential biodiesel crop. There are five varieties of yellow nutsedge.



Datura wrightii* – Sacred Datura or Jimson Weed

Datura is from the Hindu vernacular name and *wrightii* commemorates the botanist Charles Wright.

Plant Family: Solanaceae – Nightshade Family

Geographical Distribution: Native to California's inner north coast ranges, Sierra Nevada foothills, the central valley, the Tehachapi mountains; and Utah, Texas, and Mexico; grows from sea level to 7,300 feet (2,200 meters). (This elevation is according to Jepson and may be a little high, but of course, consuming the plant makes you high!)

Plant Communities: Valley grassland, Joshua tree woodland, and Pinyon-Juniper woodland

Habitat: Typically in sandy to gravelly soils and washes but will grow just about anywhere.

Size: This annual or perennial plant is usually about 18 – 24 inches (30 cm – 1.5 meters) tall and wide

Bark/Trunk/Twigs: The grayish stems are covered with white hairs

Foliage: The leaves are a large ovate shape and may be entire to deeply toothed and are 2 – 5 inches (6 – 12 cm) long by 1 ½ - 4 inches (4 – 10 cm wide). The petioled leaves are pinnately veined with the lateral veins alternating off of the main vein. The vegetation has a strong distinct pungent odor.

Flowers: The very large, up 6 inches (15 cm) across by 8 inches (20 cm) long, trumpet shaped flowers are white with purple to lavender tints that can be in throat or around margin of corolla. The flower is comprised of 5 fused petals and flowering time is from April – October.

Fruit: A 1 – 2 inch (2.5 – 5 cm) spiny ball that is green, turning brown at maturity. When fruit ruptures numerous wrinkled kidney shaped seeds that are black when ripe are released.

Site Ecology: Plant in full sun with only infrequent to no water. If you are cultivating it, occasional water might make it look better.

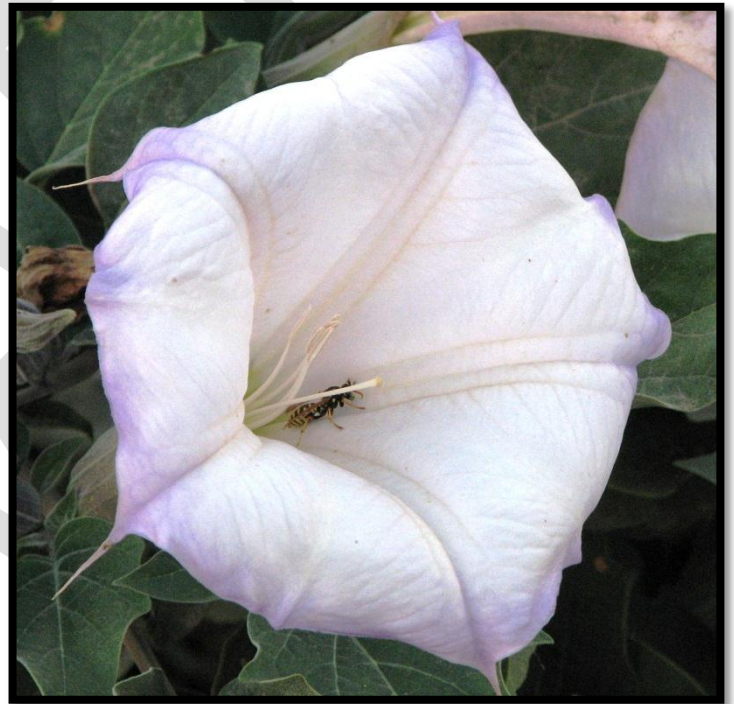
Natural Significance: Insects visit the flowers.

Ethnobotanical Use: Infusion of leaves taken to ease childbirth pains; poultice of pounded leaves applied to sores or to draw pus from a boil; poultice of heated flowers applied to ears for earaches; and plant juice used as a wash for sore eyes. Powdered leaf ointment used to ease pain from setting a bone or other body pain areas. An infusion of leaves and mescal was used as a dangerously intoxicating brew (to get high). *Datura wrightii* is a sacred plant that has been used in sacred ceremonies and rites of passage by Chumash, Tongva, and other tribes.

Commercial Use: A few gardeners plant Jimson weed as an ornamental. If one has a non-responsive soil site this plant might do well.

Propagation: Reseeds rather easily from the tremendous number of seeds dispersed by the spiny fruiting balls

Remarks: All parts of the plant contain a mix of alkaloids and that are potentially lethal when enough is ingested.



*Technically, *Datura stramonium* is Jimson Weed, but its leaves are greener and more coarsely lobed with points at the lobe ends.

Dendromecon rigida – Bush Poppy

Dendron is Greek and means tree and *mekon* means poppy, thus literally tree poppy. *Rigida* is in reference to stiff leaves.

Plant Family: *Papaveraceae* - Poppy Family

Geographical Distribution: Found in both the Coast Range and Sierra Nevada below 5,500 feet (1,666 meters).

Plant Communities: Grows in chaparral, foothill woodlands, closed cone pine forests, and yellow pine forests.

Habitat: Dry slopes and stony washes

Size: Normally attains heights between 2 to 10 feet (0.6 – 3 meters) tall

Bark/Trunk/Twigs: Open branched shrub with yellowish gray shreddy bark.

Foliage: Evergreen, alternate, simple, leathery; lanceolate to oblong, 1 - 4 inches (2.5 – 10 cm) long, grayish-green, margins have fine teeth.

Flowers: Individual flowers borne at the end of branches are 1 - 3 inches (2.5 – 7.75 cm) broad, 4 petals, showy, bright yellow, and bloom April to June.

Fruit: The 2 – 4 inch (5 – 10 cm) oblong capsules filled with many seeds

Site Ecology: Very drought tolerant, irrigate only until established; needs full sun.

Natural Significance: Nothing noted

Ethnobotanical Use: Not researched

Commercial Use: Attractive landscape plant but must be integrated into a xeriscape garden.

Propagation: Stratify seeds for 60 days at 40⁰ F before planting.

Remarks: Flowers resemble small California poppy flowers; remember they are in the same family. The island bush poppy, *D. harfordii*, is a more popular landscape choice.



Distichlis spicata – Saltgrass

Distichlis is from the Greek *distichos* which means two ranked in reference to leaf arrangement. *Spicata* means with flowers in spikes.

Plant Family: Poaceae – The Grass Family

Geographical Distribution: Widely distributed in California, Canada, and throughout the United States at less than 3,300 feet (1,000 meters) elevation.

Plant Communities: Grows in valley grassland, alkali sink scrub, and shad scale scrub.

Habitat: Moist areas whose soils have a high salt content including: salt marshes, alkalai flats, other saline-alkaline soils with high water tables.

Size: Densely clumped perennial 20 – 60 inches tall (50 -150 cm)

Bark/Trunk: Herbaceous perennial whose stems arise from scaly rhizomes; stolons sometimes present.

Foliage: Perennial, stiff leaf blades $\frac{3}{4}$ - 4 inches long (2 – 10 cm) and narrow (1 – 4 mm wide). Blade shape is long, narrow and sharply pointed like many grass species.

Flowers: Dense spike-like panicles 2 – 2 $\frac{3}{4}$ inches long (5 – 7 cm), spikelets are 3 -10 flowered and flattened; flowers June to October, yellow colored and turning straw brown as they dry.

Fruit: The seeds are tiny and minutely hairy without awns.

Site Ecology: High and salt content habitats.

Natural Significance: Saltgrass stabilizes erosion waterways and provides food and habitat for waterfowl, songbirds, insects, and fish.

Ethnobotanical Use: Native Americans in California used ground saltgrass as a seasoning.

Commercial Use: : In California, a cultivar, LK517f, is used in reestablishing native grassland and bank and shore stabilization. Saltgrass is an allergenic respiratory plant used by Miles Pharmaceuticals.

Propagation: Most often cuttings or layered rhizomes are used to establish, but it can also be grown from seed.

Remarks: Plant can become invasive in certain situations, be careful if using this plant in the landscape. Plant may show salt crystals on its foliage. There are four varieties of saltgrass.



Dudleya capitosa – Sea Lettuce

Dudleya is named for William Russel Dudley (1849-1911), first professor of botany and head of the Botany Department at Stanford University. *Capitosa* means dense.

Plant Family: Crassulaceae – Stonecrop Family

Geographical Distribution: Endemic to California between Mendocino to San Diego Counties, between 0 - 328 feet (100 meters) elevation. (There is conflicting data on the range of *Dudleya capitosa*, some sources state that it is found between Monterey and Los Angeles Counties)

Plant Communities: Natural plant communities include coastal sage scrub and northern coastal scrub.

Habitat: Grows exclusively on Sea bluffs and/or areas that have a strong marine influence.

Size: Individual plants will grow to 12 inches (30 cm) wide and tall with a flowering head 6 – 12 inches (15 – 30 cm) above the plant.

Bark/Trunk/Twigs: Grows in clumping rosettes up to 12 inches (30 cm) in diameter, but is a fleshy plant without bark, trunk, and twigs.

Foliage: Sea lettuce has grey-green fleshy glabrous (smooth) leaves that are cone shaped to oblong and ½ - 1 inch (1.25 – 2.5 cm) wide

Flowers: The inflorescence is a stem that grows for the basal rosette up 8 inches (20 cm) tall that varies from green to red to yellow. This stem branches and produces 10 -15 yellow flowers per branch from mid spring into early summer.

Fruit: Sea lettuce produces many tiny, less the 1 mm brown seeds that are narrowly ovoid.

Requirements: Full sun to light shade, needs good drainage and keep it dry in summer.

Natural Significance: Sea lettuce is a hummingbird attracting plant.

Ethnobotanical Use: Nothing noted

Commercial Use: This is a very useful and attractive plant in a low water use succulent landscape.

Propagation: Probably reproduces by seeds for if you have a garden planting over time you will new plants growing next to the original planting.

Remarks: If planted in the garden, plant them on an angle so water will drain from the rosette and prevent bacterial decay.



Dudleya farinosa – Bluff Lettuce

Dudleya is named for William Russel Dudley (1849-1911), first professor of botany and head of the Botany Department at Stanford University. *Farinosa* means mealy, powdery.

Plant Family: Crassulaceae – Stonecrop Family

Geographical Distribution: Bluff lettuce populates a coastal strip stretching from Southern Oregon to southern California at less than 500 feet (150 meters) elevation.

Plant Communities: Coastal strand, coastal sage scrub, and northern coastal scrub

Habitat: Grows on bluffs near the Pacific Ocean.

Size: total plant height is 4 – 14 inches (10 – 35 cm) tall and often grows in mat like clusters

Bark/Trunk/Twigs: A succulent that has none of these plant parts; it all leaves.

Foliage: Plant base is a rosette of succulent spade-shaped leaves that are a powdery gray white in color; leaves are 1 – 2 ½ inches (2.5 – 6.3 cm) long.

Flowers: Whitish colored stalks grow from plant base a support 3/8 inch (9 mm) yellow flowers with 5 sepals and 5 short triangular petals; bloom time is May - September

Fruit: A many seeded follicle with very tiny, less than 1 mm, brown seeds

Site Ecology: Grows in full or part shade and needs moderate summer moisture and a well-drained environment.

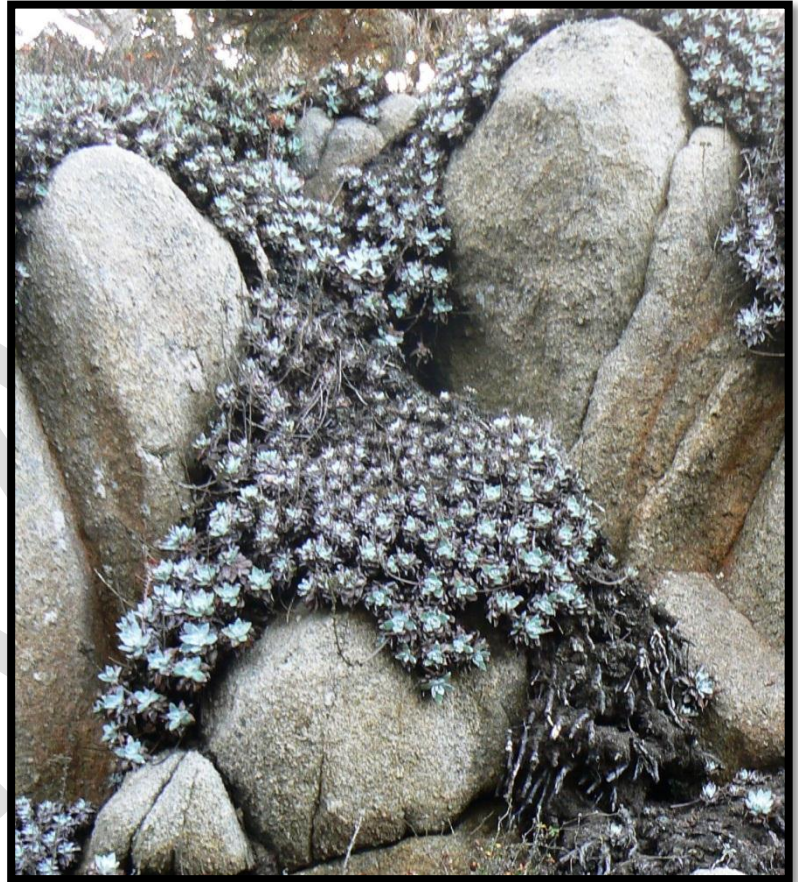
Natural Significance: Bluff lettuce is a hummingbird attracting plant.

Ethnobotanical Use: Nothing noted

Commercial Use: Would be fantastic plant in a rock garden but the environment would have to be right. *Dudleyas* grow well in pots and make excellent outdoor specimens in Mediterranean climates.

Propagation: Seeds

Remarks: Plant in this family have a specialized form of photosynthesizing – Crassulacean Acid Metabolism (CAM), a photosynthetic adaptation to high light, low moisture environments. The stomata (pores) on the leaves open at night to allow the accumulation of carbon dioxide in the form of an organic acid. The stomata then close during the day when the stored carbon dioxide is used for photosynthesis. This type of photosynthesis is typical of desert plants.



Ephedra californica – California Ephedra or Desert Tea

Ephedra is from the Greek name ephedra used by Pliny for the common mare's tail which it somewhat resembles. *Californica* means species is from California.

Plant Family: Ephedraceae – Ephedra Family

Geographical Distribution: Sierra Nevada Foothills, Tehachapi Mountains, San Joaquin Valley, South Coast Range, South Western California, the desert, to Western Arizona; below 2,970 feet (900 meters) elevation.

Plant Communities: Scattered in arid valley grasslands, creosote –bush scrub, oak and pinyon-juniper woodlands, shad scale scrub and chaparral.

Habitat: Dry open places, often times disturbed.

Size: 3 - 6 ½ feet (1 – 2 meters) tall and about as wide.

Bark/Trunk/Twigs: Twigs yellow green when young and aging to gray-brown; this is an equisetum like shrub.

Foliage: There are 3 leaves per node, very small, less than ¼ inch (6 mm); that wither away to leave brown ridges at the node.

Flowers: California ephedra is a gymnosperm and therefore not a flowering plant, however, cones are produced between March and April.

Fruit: Plants are dioecious with male plants producing a clump of male cones at the nodes. Male cones change from yellow to brown and eventually have stamen protruding. Female plants produce oval cones at nodes that have scales, green in color, and have seeds inside. The seeds are very small, round, and brown.

Site Ecology: Tolerates sand, full sun to partial shade, and drought conditions. It grows on a variety of soil types, but prefers coarse to medium textured soils. All soils must be well drained. California ephedra is often found growing on disturbed sites.

Natural Significance: Deer and livestock eat this plant in the winter

Ethnobotanical Use: Seeds used for food. Stems used to make tea. Infusion of branches used to purify blood, improve appetite, for the kidneys, and other unspecified uses. Wood provided the best charcoal for tattooing.

Commercial Use: Probably none cuz you can buy tea a really cheap prices. Seriously, there is a use for this plant in a xeriscape garden.

Propagation: Reproduces primarily by seed, but in the wild the plant is an erratic seed producer based on rainfall. In continued drought situations, it may not produce seeds for years.

Remarks: I guess this is an “unremarkable” plant.



Ephedra viridis – Green Ephedra

Ephedra is from the Greek name ephedra used by Pliny for the common mare's tail which it somewhat resembles. *Viridis* mean fresh, green; youthful.

Plant Family: Ephedraceae – Ephedra Family

Geographical Distribution: Fairly common in woodlands east of the Cascades and Sierra Nevada and west through the transverse ranges to the coast; also grows in Arizona, Colorado, New Mexico, Nevada, Utah, and Wyoming; between 3,000 – 7,500 feet (900 – 2,300 meters) elevation in California.

Plant Communities: Grows in sage brush scrub, creosote scrub, pinyon/juniper woodland and the Mojave desert;

Habitat: Green ephedra is usually growing on dry, rocky slopes and canyon walls.

Size: A small to medium sized shrub that may grow up to 5 feet tall (1.5 meters)

Bark/Trunk: Bark gray, cracked and irregularly fissured. Branches alternate or whorled, rigid; twigs are mass of bright green to yellow-green, becoming yellow with age and look like a dissheveled broom.

Foliage: Appear to be leafless but leaves are a pair of deciduous scales at each swollen node. These scales are deciduous.

Flowers: Plant is dioecious. Both male and female cones appear at nodes. On male plants there are 2 – 5 pollen cones per node, each is spherical and have a protruding stamen-like structure. When pollen cones are shedding, the plant takes on a golden “glow”. This usually occurs in late winter and early spring. On female plants there are 2 – 6 seed cones per node, obovoid and may be sessile or stalked.

Fruit: The small seeds are 3 sided, smooth and brown.

Requirements: Prefers medium to coarse or even rocky soils. Very drought tolerant, thus needs little water, in fact will not survive under moist regimes.

Natural Significance: Deer, antelope, and cattle will browse the plant, although it is of low nutritional value. Quail also eat the seeds.

Ethnobotanical Use: Green ephedra seeds and slender twigs were made into a tea that was used as a beverage and medicine.

Commercial Use: Used in landscaping and in range restoration. See remarks below.

Propagation: Not researched

Remarks: Also called mormon tea. This is the only genus in the Ephedraceae family and there are 7 species native to California. *E. viridis* is greener in color while all the other species are gray. Ephedrine is the drug manufactured from *Ephedra viridis*. This drug is a bronchodilator, decongestant, and a weight loss stimulator. Ephedrine dilates the bronchial muscles, contracts the nasal mucosa, raises blood pressure, and is a cardiac stimulant. Unfortunately, some people's systems cannot handle the stimulatory effects of the drug, and numerous deaths have resulted. It cannot be included in drugs in California.

***Epilobium canum* – California Fuchsia** (formerly *Zauschneria californica*)*Epilobium*: open pod; *canum*: straight rod**Plant Family:** Onagraceae – Evening Primrose Family**Geographical Distribution:** All of California plus Oregon, Wyoming, New Mexico, and northern Mexico below 10,000 feet (3,300 meters).**Plant Communities:** All**Habitat:** Found on dry stony, gravelly slopes; on rock ledges and around boulders.**Size:** A small herbaceous plant from 6 – 24 inches tall, but are quite variable; the smallest is 2 inches (5 cm) and the largest is 5 feet (1.5 meters); plant is a subshrub. California fuchsia can spread to many feet (meters) across.**Bark/Trunk/Twigs:** flowering herbaceous plant, with multiple stems**Foliage:** Hairy grayish green leaves $\frac{3}{4}$ - 1 $\frac{3}{4}$ inch long (2 – 4.5 cm) by approx. $\frac{1}{2}$ inch wide (1.5 cm); ovate to elliptic. Leaf color can range from silver to gray, to blue-gray, to pale green, to medium green, to dark green.**Flowers:** The tubular flowers are 1 - 1.5 inches (2.5 – 3.75 cm) long with red sepals and petals, two cleft stamen and style project beyond corolla (petals), blooms from August - October – a fall bloomer. Flower colors vary from white to pink to salmon to red-orange. The stigma and anthers protrude outside the corolla. In the picture to the left, the longer one is the stigma and the two shorter ones are the anthers.**Fruit:** Each flower produces four seeds in capsule with tuft of hair on one end.**Site Ecology:** Grows on well-drained soils in full sun; very drought tolerant but will do well with occasional water.**Natural Significance:** Fuchsia probably co-evolved with hummingbirds; they are sometimes called hummingbird trumpet. Numerous other insect pollinators visit these late season bloomers.**Ethnobotanical Use:** Leaves used as a detergent in washing, and as dusting powder for cuts, wounds and sores on horses. Decoction (extract obtained from boiling) of leaves used for tuberculosis, kidney and bladder problems, and as a cathartic.**Commercial Use:** Adaptable species, best as a ground cover in dry places. Fuchsia adds brilliant red color when most plants are going dormant. Great hummingbird feeding station plant as the birds migrate south. Flower shape evolved as a result of hummingbird feeding. Vigorous growth could cause plant to dominate a small garden.**Propagation:** Fuchsia can be reproduced from fall harvested seeds and semi-hard cuttings taken in the summer.**Remarks :** One tough plant, grows in dry, disturbed sites to manicured gardens. Can be invasive if in good soil and treated well. They propagate by rhizomes. Over 50 cultivars of California Fuchsia have been developed.

***Equisetum arvense* – Common or Field Horsetail**

Equisetum is Latin for horsetail from equus, horse, and seta, bristle and *arvense* means of the fields.

Plant Family: *Equisetaceae* – Horsetail Family

Geographical Distribution: Field horsetail is cosmopolitan in distribution; occurring in 47 of the fifty states. In North America it occurs from Newfoundland west to Ak & south to GA, AL, TX, and CA.

Plant Communities: Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Subalpine Forest, Foothill Woodland, Chaparral, Valley Grassland, (many plant communities), wetland-riparian

Habitat: Field horsetail occurs in woods, fields, meadows and swamps, and moist soils alongside streams, rivers, and lakes, and in disturbed areas. Field horsetail usually occurs on moist sites but can also be found on dry and barren sites such as roadsides and railway embankments.

Size: They are usually from 2 - 24 inches (5 - 60 cm) tall, rarely to 40 inches (1 meter) tall.

Bark/Trunk/Twigs: A single, simple, cone-bearing stem grows in early spring. This followed by the sterile stems which are jointed, hollow, usually erect, and bear up to 20 whorls of slender branches. Roots are tuber-bearing and rhizomatous.

Foliage: The inconspicuous, scalelike leaves occur in whorls at the nodes and are connected at their bases.

Flowers: It lacks flowers, but has a single cone-like structure called a strobli that is $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 - 4 cm) long. These strobli are borne on the ends of fertile stems.

Fruit: Spores are produced in sporangia that comprise the strobli. The spores look like a light colored yellow powder.

Site Ecology: Tolerates shade to part shade, must have a moist to wet environment and isn't particular on the kind of soil it's in as long as there is moisture.

Natural Significance: Horsetail provides limited cover for wildlife and is consumed in small quantity by grizzly bear. Obviously equisetum in California is not threatened to be devoured by grizzlies.

Ethnobotanical Use: Native American used horsetail in a wide variety of applications, including: stem poultice used to treat under arm and groin rash, powdered stem placed in moccasins when traveling long distances, infusions of various plant parts used for headaches, pain, constipation, kidney problems, etc. Plant also used to treat various horse ailments. Plants used where abrasion was needed such a polishing and cleaning. Hollow stems used as straws, and in basketry.

Commercial Use: Silica extracted from field horsetail is utilized for manufacture of remineralizing and diuretic medicinal products. There is also value in pond or moss garden landscapes and as a containerized plant. In herbalism it is used to treat kidney and bladder problems, gastro-enteritis, and prostate and urinary infections, and is particularly indicated for enuresis in children. Externally it is used for chilblains and wounds.

Propagation: Divide rhizome clumps in late winter or early spring or collect mature spores from sporangia and germinate under moist conditions. A wet envelope is one suggestion to start the spores and then transfer them to an appropriate planting medium once germinated.

Remarks: Field horsetail is a weed in more than 25 crops of the world.

Equisetum hyemale – Scouring Rush (Horse Tail)

Equisetum: Latin for "horsetail" from **equus**, "horse," and **seta**, "bristle" and *hyemale*: of the winter, flowering in winter

Plant Family: *Equisetaceae* – Horsetail Family

Geographical Distribution: Throughout the United States, Alaska and Canada south to Mexico, and Guatemala; also Europe and temperate Asia. 'Horse Tail' grows as high as 8,250 feet (2,500 meters) elevation. *Equisetum laevigatum* is found at slightly higher elevations: 10,000 feet (3,000 meters)

Plant Communities: A wide variety

Habitat: Commonly found in low wet places in woods, moist shaded hillsides, watersides and shallows.

Size: Tall and slender, bamboo-like perennial with a height to 60 inches (1.5 meters) and a base diameter of ½ inch (1.25 cm).

Bark/Trunk/Twigs: The cylindrical stem is hollow, segmented, rough surfaced, and evergreen. Ashy grey bands mark segments. The Internodes are about 4" apart. Branching rare, often following injury.

Foliage: Leaves are inconsequential and easily overlooked. The vestigial leaves are at the nodes, dark brown to black, and a paper thin ring around the node. They do not look like any leaves you have observed.

Flowers: Not a flowering plant

Fruit: Although not a true cone, the fruit is called a cone, but it really a sporangia, and is usually 1 inch (2.5 cm) long with sharp pointed tips, borne on short stalks at the tips of fertile stems

Requirements: Grows in full sun or shade, cool, moist, even boggy woodland soils and will even do well in constantly moist soils to standing water to 4 inches (10 cm).

Natural Significance: Great wildlife habitat.

Ethnobotanical Use: Native Americans and Mexicans used the dried stems to scour cooking pots while early American carpenters and other craftsman used the dried stems to smooth and polish woods, ivory, and metals. Medicinally, Native Americans used it as a diuretic when there was difficulty expelling urine plus a multitude of other uses. It was also used as a horse medicine.

Commercial Use: Good for bog gardens, pond margins, and naturalizing low, wet areas. Spreads by underground rhizomes and can become invasive. As an indoor plant, grows well immersed in water.

Propagation: Division is most successful method.

Remarks: Distinguished from similar, unbranched Horsetails (Scouring Rushes) by its rough surfaced,

evergreen stems, and its ashy grey bands at the stem joints. Smooth Scouring Rush (*Equisetum laevigatum*) has smooth surfaced, annual stems, with dark bands at stem joints.

Variegated Scouring Rush (*Equisetum variegatum*), shows a distinct white margin at the stem joints, hence "variegated"



***Ericameria linearifolia* – Interior Goldenbush**

Ericameria is derived from two Greek words: Erica (Ereika), heath, and meris or meros for division or part, referring to the heath-like leaves. *Linearifolia* means long, narrow leaves.

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: California Central Valley, Sierra Nevada Foothills, Transverse Range, Mojave and Sonoran Deserts, Nevada, southern Utah, and western Arizona; from sea level to 6,500 feet (2,000 meters) elevation.

Plant Communities: Grows in central valley, foothill woodlands, chaparral, creosote bush scrub, pinyon juniper woodlands, and Joshua tree woodlands,

Habitat: Most often found in dry the dry rocky rather inhospitable conditions.

Size: A medium sized shrub that has many branches and can grow up to 5 feet (1.5 meters) tall.

Bark/Trunk/Twigs: Erect stems may be hairless or hairy; young twigs are round and green in color but turn light brown as they age. Bark is reddish to gray brown. There are typically many dead twigs associated with the plant.

Foliage: Leaves are drought deciduous and grayish-green in color. Leaf blades are very linear from ½ - 2 inches long (1.25 – 5 cm) and glabrous, resinous, and entire.

Flowers: The flowers grow on leafless stalks and look like small daisies about ½ inch across (1.25 m). They are a very showy yellow color. Many golden bush flowers, including *E. linearifolia*, are glandular and possess a strong lemony aroma. Bloom is from February to May.

Fruit: A small dry grey-brown achene that bear a single seed.

Site Ecology: Quite drought tolerant and does best in full sun.

Natural Significance: Goldenbush attracts many beneficial insects.

Ethnobotanical Use: Decoction of leaves and flowers applied to limbs for rheumatism; for soreness, bruises, and cuts; as a wash to make hair grow; and to wash tired feet. It also applied to the backs of horses for soreness.

Commercial Use: Could be a useful plant in a exerscape regime with the showy yellow flowers.

Propagation: Grown from seed that has received no special treatment.

Remarks: California has approximately 22 species and varieties of goldenbush. Many hybridize with each other making identification more difficult. Plant is also called narrow leaf golden bush.



***Ericameria nauseosa* – Rabbit Brush** (formerly *Chrysothamus*)

Ericameria is derived from two Greek words: *Erica* (*Ereika*), heath, and *meris* or *meros* for division or part, referring to the heath-like leaves. *Nauseosa* means nauseating, supposedly from the odor.

Plant Family: Asteraceae – Aster Family

Geographical Distribution: Cascade Range, Sierra Nevada, South Coast Range, Transverse Range, Peninsular Ranges, Great Basin Floristic Province, Mojave Desert, British Columbia, Baja, to Montana and Colorado; 165 – 10,890 feet (50 – 3,300 meters) elevation

Plant Communities: Given its geographic range rabbit brush can be found in almost all plant communities.

Habitat: Dry open places with sagebrush, or grassland or open woodland

Size: This shrub can get to 6 ½ feet (2 meters) tall

Bark/Trunk/Twigs: Rabbit brush has a main stem covered with a loose fibrous bark. Twigs are upright, much branched, and flexible and covered with a felt-like layer of white hair. However, the plant color varies from green to grey and has a very strong odor.

Foliage: A very narrow – linear – very wooly and 3/4 – 2 ¾ inches (2 – 7 cm) long by 5/8 inch (.17 mm) wide.

Flowers: Produces twenty to twenty-five yellow flower bracts in branched terminal heads on the upright twigs. The abundant flowers give the plant a mounded appearance and are often dense enough to mask the green-gray color of the vegetation; blooms from midsummer into the fall.

Fruit: The seeds are generally pubescent (hairy) and 3 – 8 mm in size. They have a pappus (awn-like structure) extending out of the top of the seed which enables them to become air borne.

Site Ecology: Arid to semi-arid with infertile soil and rather harsh growing conditions; tolerates alkaline soils. Rabbit brush is a common plant along roadways, especially in the mountains.

Natural Significance: Food and shelter for numerous birds, rodents, and reptiles. The yellow flowers are also attractive to bees, butterflies, and birds.

Ethnobotanical Use: This plant has an extensive list of medicinal uses. The flowers, twigs, and leaves were prepared and used for colds, tuberculosis, toothaches, diarrhea, smallpox, blisters, skin eruptions, stomach cramps, bladder trouble, venereal disease, and just about anything else you can think of. Other uses include leaves used as sanitary napkins, bark and roots used a chewing gum, bark used as a green dye, flowers used as a yellow dye and woven for use as a wedding belt. The use list is more extensive than what is noted above.

Commercial Use: Used in windbreaks. Plant has a potential as a source of latex rubber. It can be useful in a xeriscape planting.

Propagation: Probably by seeds since it produces so many and seems to exist in large populations.

Remarks: Jepson list eight subspecies for Rubber Rabbit Brush but there are at least 22 in the western United States (Flora of North America cites 21). Twelve of these species grow in California. There is an on-going effort to separate the green form from the gray form into two distinct classifications. I'm not sure of the status of that effort. Some people are allergic to the pollen as it is often identified as the cause of hay fever.



Erigeron glaucus – Seaside Daisy

Erigeron is from the Greek **eri**, "early," and **geron**, "old man," thus meaning "old man in the spring," referring to the fluffy, white seed heads and the early flowering and fruiting of many species and *glaucus* is Greek and means bluish-gray in reference to leaves.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: Grows near the coast including the California north and central coast, outer south coast ranges, channel islands, and Oregon at elevations of less than 70 feet (20 meters)

Plant Communities: The common name is indicative of specie growth in the coastal sage scrub, coastal strand, northern coastal sage scrub and coastal prairie.

Habitat: Coastal bluffs, dunes and beaches

Size: 4 – 20 inches (10 – 50 cm) tall and 1 – 3 feet (30 – 60 cm) wide

Bark/Trunk/Twigs: A herbaceous plant that has bristly, hairy sticky stems that grow from basal rosettes. Unlike most species in this genera, this daisy is a succulent probably due to its seaside proximity.

Foliage: Spoon-shaped leaves are $\frac{3}{4}$ - 11 inches (2 – 13 cm) long and pale green to blue green in color.

Flowers: The inflorescence is 1 – 15 flower heads which are variable in size from $\frac{1}{3}$ – 2 $\frac{1}{4}$ inches (1 – 3+ cm) wide. The centers contain golden yellow disc florets and the edges are fringed with ray florets that are shades of deep blue and purple to nearly white. Bloom time is April – August.

Fruit: Produces a seed like fruit with many fine bristles on top.

Site Ecology: Tolerates a wide variety of soils from sand to clay; if planted inland it must receive regular water and in full to part shade.

Natural Significance: Flowers are good nectar source for butterflies.

Ethnobotanical Use: nothing noted.

Commercial Use: A very attractive perennial for gardens; there are numerous cultivars; research and select the one that would suit your growing conditions.

Propagation: Propagate by divisions, cutting or seed. Seeds require light for germination.

Remarks: Cultivars include ‘bountiful’, ‘Arthur Menzies’, ‘Cape Sebastian’, ‘Wayne Roderick’, and ‘Sea Breeze’.



Eriodictyon californicum – Yerba Santa

Eriodictyon is from the Greek erion meaning wool and diktuon meaning net; in reference to the underside of the leaves.

Plant Family: Hydrophyllaceae – Waterleaf Family

Geographical Distribution: Cascade Ranges, Central Valley, Sierra Nevada, into Oregon; 200 - 6,300 feet (60 - 1,900 meters)

Plant Communities: Grows in valley woodlands, foothill woodlands, chaparral, yellow pine forest, and northern coastal scrub.

Habitat: Slopes in woodland and chaparral; often in disturbed areas especially roadsides and fields.

Size: A erect shrub that grows to 3 – 10 feet tall (1 - 3 Meters)

Bark/Trunk/Twigs: Twigs are sticky and hairless with the older stems having shedding bark.

Foliage: Leaves are strongly scented, sticky, and shiny; alternate, simple, evergreen, and somewhat leathery. Leaf blades are lanceolate to oblong and 2 – 4 inches long (5 – 10 cm), green on the upper surface and either entire or have fine teeth on their margins; margins rolled under.

Flowers: The white to purple funnel shaped flowers are in a loose compound cluster at the end of shoots. The corolla is funnel shaped with 5 petals and appears from May to July.

Fruit: Brown to black striated capsules

Site Ecology: Grows in full sun on very poor soils, including serpentine, and little or no water.

Natural Significance: Stabilize disturbed potentially erosive sites. *Eriodictyon californicum* is a specific *Papilio eurymedon* (Pale Swallowtail butterfly) food and habitat plant.

Ethnobotanical Use: The leaves have historically been used to treat asthma, upper respiratory infections and allergic rhinitis. Leaves were brewed as a syrupy remedy for colds and the miner's of yore dried the leaves for use as tobacco.

Commercial Use: Eriodictyol is one of the 4 flavanones identified in this plant by the Symrise Corporation as having taste-modifying properties, the other three being: homoeriodictyol, its sodium salt and sterubin. These compounds have potential uses in food and pharmaceutical industry to mask bitter taste.

Propagation: Yerba Santa can be grown from seeds and cuttings.

Remarks: There are six other species of Yerba Santa native to California, all of which are found from the south coast into southern California and Baja.



Eriogonum fasciculatum – California Buckwheat

Eriogonum is from the Greek word erion, which means wool, and gonu, which means joint or knee, in reference to the hairy or woolly joints of some species of the genus. *Fasciculatum* means bound together or bundled.

Plant Family: Polygonaceae – The Buckwheat Family

Geographical Distribution: Common throughout California floristic province; eastern Sierra Nevada, desert, Utah, Arizona, and northwest Mexico; less than 7,600 feet (2,300 meters)

Plant Communities: Grows in northern coastal scrub, chaparral, foothill woodlands, and yellow pine forests.

Habitat: Dry slopes, canyons, washes, and disturbed roadsides.

Size: Shrub from 12 – 80 inches tall (0.3 – 2 meters) and 28 – 120 inches wide (0.7 – 3 meters)

Bark/Trunk/Twigs: Branches are numerous, slender, flexible, spreading with thin exfoliating bark.

Foliage: Evergreen egg-shaped leaves clustered at nodes, 1 ½ - 4 inches long (3.75 – 10 cm) and less than ½ inch wide (1.25 cm), linear to oblanceolate; may be smooth or fuzzy above, but fuzzy beneath.

Flowers: Umbrel head of white to pink flowers on stalks above main plant that start in May and continue into October.

Fruit: Achenes with calyx attached is usually how seed is dispersed. As the seed heads mature, an extensive stretch covered by this buckwheat will be a russet brown color.

Site Ecology: Need a well-drained soil and full sun.

Natural Significance: Its long flowering period makes it an excellent insectary plant and provides pollen and nectar to beneficial insects. Bee keepers seek sites covered by California buckwheat, as the honey produced from its flowers is excellent quality.

Ethnobotanical Use: Leaves used to make teas to treat headache and stomach pain. Dried flowers and roots used to make tea to prevent heart problems. Roots boiled in tea to treat cold and laryngitis. Roots used in a poultice applied to wounds.

Commercial Use: Soil stabilization on critical areas and problem soils such as serpentine, decomposed granite, and high pH areas.

Propagation: It is a huge seed producer and easily propagated by seeds.

Remarks: Buckwheat can become invasive and weedy if not properly managed. There are at least 229 species of *Eriogonum*, so who knows what this species is truly? Additionally, there are 4 varieties of *E. fasciculatum*.



***Eriogonum giganteum* – St. Catherine’s Lace**

Eriogonum is from the Greek word erion, which means wool, and gonu, which means joint or knee, in reference to the hairy or woolly joints of some species of the genus. *Giganteum* means gigantic, oh really!

Plant Family: Polygonaceae – Buckwheat Family

Geographical Distribution: Channel Islands; below 1,485 feet (450 meters) elevation

Plant Communities: Coastal sage scrub and chaparral

Habitat: Dry slopes

Size: A shrub from 12 inches – 12 feet (30 – 350 cm) tall and 20 inches – 10 feet (50 – 300 cm) wide; the largest of all buckweats.

Bark/Trunk/Twigs: Main stem becomes woody and brittle with age; dark gray in color.

Foliage: Leaves $\frac{3}{4}$ - 4 inches (2 – 10 cm) long, narrowly elliptic to ovate, leathery and white woolly, especially below

Flowers: Immense flat-topped clusters of off-white flowers that fade to rust color with maturity. Bloom time is May - September

Fruit: Three-sided achene

Site Ecology: Well-drained soil in part shade (I have one on not so well drained soil but is shaded by a redwood and toyon) to full sun. Very drought tolerant and withstands salt spray.

Natural Significance: St. Catherine’s Lace is larval host and nectar source for Avalon Scrub-Hairstreak, *Strymon avalona*. Apparently other pollinators visit this plant.

Ethnobotanical Use: Nothing noted

Commercial Use: The flowers can be used in arrangements. Because of its size, it would also work well as a specimen plant in a xeriscape garden.

Propagation: Can be propagation by seed with no special treatment.

Remarks: There are three varieties each native to a different channel island. The buckweats are the most diverse genus of plants in California. There are about 250 species native to the United States with about $\frac{1}{2}$ found in California.



***Eriogonum latifolium* - Coast Buckwheat**

Eriogonum is from the Greek word erion, which means wool, and gonu, which means joint or knee, in reference to the hairy or woolly joints of some of the species of the genus. *Latifolia* means having wide leaves.

Plant Family: Polygonaceae – Buckwheat Family

Geographical Distribution: Coastal regions and intermediate valleys below 500 feet (150 meters) from San Luis Obispo County north to Washington.

Plant Communities: Coastal sage scrub and Coastal Strand

Habitat: Species is common on coastal bluffs, dunes and road banks.

Size: Forms low mounds 1 - 2 feet (30 – 60 cm) high and often wider.

Foliage: Soft oval leaves about 2 inches (5 cm) long that show green under a mat of white hairs on upper surface, and lower surface is always densely felted. The covering of white hairs give the foliage an overall grey-green appearance.

Flowers: Pubescent flower stalk that rise above the mounded foliage is topped with a tight, 1inch (2.5 cm) wide pompom of creamy white to light pink (occasionally rosy red) flowers.

Site Ecology: Drought tolerant; needs well drained soil, but will tolerate occasional water. Its natural coastal home probably makes this plant less successful for inland plantings.

Natural Significance: The flowers, leaves, and seeds are used by pollinators (bees and butterflies) and small birds. Buckwheat is the larval host for the Lupine Blue butterfly and the Electra Buckmoth. This is one of the more important honey producing plants, as both bees and beekeepers seek out extensive buckwheat sites.

Ethnobotanical Use: Many Native Americans utilized parts of this plant for a number of medicinal uses, including the treatment of stomach problems, headache, diarrhea, and wounds.

Commercial Use: Buckwheat has been utilized to stabilize dunes and banks. This is an excellent choice for a coastal garden landscape.

Propagation: Buckwheat can be propagated by seed that receives no special treatment.

Remarks: The buckweats are the most diverse genus of plants in California. There are about 250 species native to the United States with about ½ found in California. Partners well with seaside daisy, quail bush. At one time coast buckwheat and red flowered buckwheat (*E. grande* var. *rubescens*) were classified as the same species. However, coast buckwheat has hairier leaves and less rosy colored flowers.

Eriogonum nudum – Nude Buckwheat

Eriogonum is from the Greek word erion, which means wool, and gonu, which means joint or knee, in reference to the hairy or woolly joints of some species of the genus. *Nudum* means bare, naked.

Plant Family: Polygonaceae – Buckwheat Family

Geographical Distribution: Abundant, throughout California, except the Channel Islands, Washington, Oregon, Nevada, and northwestern Mexico; below 12,540 feet (3,800 meters) elevation.

Plant Communities: Grows in coastal strand, southern oak woodland, yellow pine forest, foothill woodland, chaparral, valley grassland, Joshua tree woodland, and pinyon-juniper woodland

Habitat: Sandy or rocky places from lowlands to subalpine forests.

Size: Small shrub to subshrub from 4 inches – 6 ½ feet (10 – 200 cm) tall

Bark/Trunk/Twigs: Few sparingly branches with stems that are hollow and leafless.

Foliage: Leaves generally basal or spaced on lower portion of plant. Shaped from oblanceolate to oblong and from 1/3 – 2 ¾ inches (1 – 7 cm) long; glabrous (hairless) above and tomentose (wooly) below. Basal leaves dry up leaving only stems and flowers.

Flowers: Inflorescence with leafy bracts at the first and second points of branching; involucre (a cluster of flowers and leaves) usually in capitate clusters; white, yellow, or red color flowers with bloom time is from June – September.

Fruit: Achenes light brown to brown, 1.5 - 3.5 mm, glabrous.

Site Ecology: Drought tolerant, full sun to partial shade, a really tough plant.

Natural Significance: *Eriogonum nudum* is a larval host and/or nectar source for **Acmon Blue butterfly**, (*Plebejus acmon*), the Bauer's dotted-blue butterfly (*Euphilotes baueri*), the Pacific dotted-blue (*E. enoptes*), the gorgon copper (*Gaeides gorgon*), and the Mormon metalmark (*Apodemia mormo*).

Ethnobotanical Use: Raw greens eaten, hollow stems used as drinking straws and smoking pipes, and roots used for abdominal ailments and coughs.

Commercial Use: Nothing noted, but has potential for the xeriscape garden.

Propagation: Probably by seed

Remarks: The buckwheats are the most diverse genus of plants in California. There are about 250 species native to the United States with about ½ found in California. There are 13 subspecies of Nude Buckwheat described in California.



Eriogonum parvifolium – Dune Buckwheat

Eriogonum: from the Greek **erion**, "wool," and **gonu**, "joint or knee," in reference to the hairy or woolly joints of some of the species of the genus. *Parvifolium*: small-leaved

Plant Family: *Polygonaceae* – Buckwheat Family

Geographical Distribution: Endemic to California's central and south coasts, from Monterey to San Diego Counties at elevations below 2,300 feet (700 meters).

Plant Communities: Dune or cliff buckwheat is found in chaparral, coastal sage scrub, coastal strand, coastal prairie and southern oak woodland communities.

Habitat: Most commonly found on dunes and sea bluffs.

Size: This shrub ranges between 1 – 3 feet (30 – 100 cm) in height and 1 ½ - 6 ½ feet (50 – 200 cm) in diameter.

Bark/Trunk/Twigs: Loose, slender spreading matted stems

Foliage: The leaf blade is ¼ - 1 ¼ (5 – 30 mm) long with a lanceolate to rounded shape. However, it is sometimes folded under and appears triangular in shape. Leaves are smooth on top and wooly below and a bright green color with sometimes a red tinge.

Flowers: The floral heads form ball clusters at the end of short stems and range from white to pink to red and then turn a russet brown at maturity.

Fruit: The fruit is a glabrous, ovoid-to-deltoid achene (single seed holding structure) about 1/8 inch (3 mm) long.

Requirements: Does well in full sun but must have a well-drained soil.

Natural Significance: The species is the food plant for two federally endangered butterflies, the El Segundo dotted-blue (*Euphilotes battoides allyni*), near Los Angeles, and Smith's dotted-blue (*Euphilotes enoptes smithi*), near Monterey. There at least 8 other species of lepidopteron (moths and butterflies) that feed on Dune buckwheat.

Ethnobotanical Use: None noted

Commercial Use: It is being used, with some objection, along highways in Santa Clara County

Propagation: Probably by seed

Remarks:



Eriogonum umbellatum – Sulfur Flower Buckwheat

Eriogonum is from the Greek word erion, which means wool, and gonu, which means joint or knee, in reference to the hairy or woolly joints of some of the species of the genus. *Umbellatum* refers to the arrangement of the flowers which arise in a head from a central point

Plant Family: *Polygonaceae* – Buckwheat Family

Geographical Distribution: This is the mountain buckwheat that is found in the northern Sierra Nevada, Klamath and Cascade Ranges, Modoc Plateau, and into Oregon, between 2,500 – 10,000 feet (760 – 3,030 meters) elevation.

Plant Communities: Sulfur flower buckwheat grows in red fir forests, sagebrush scrub and yellow pine forests.

Habitat: Sulfur flower buckwheat usually grows on dry rocky slopes but is also found in forest openings.

Size: There is a great deal of variability in size; from a mat a few inches high to shrubs over 3 feet (1 meter) tall, but most often low broad mats 1 foot (30 cm) high and 2 feet (60 cm) across.

Bark/Trunk/Twigs: The woody stems tend to be hidden by foliage. The plant develops a long tap root.

Foliage: Leaf sizes vary but are generally broadly oval to lance shaped, smooth and green to whitish and hairy above and very hairy, almost woolly beneath. The leaves are in whorled clusters at the tips of new shoots.

Flowers: Like plant and leaf size, the flowers also vary. Some are individual round heads and others are in compound clusters. They range in color from yellow to cream to red and bloom time is from June to August.

Fruit: Smooth, sharp 3 angled black achenes

Site Ecology: This buckwheat grows on diversity of soil textures, it is drought tolerant, and prefers full sun, but is the most shade tolerant of most buckwheat species.

Natural Significance: The seeds are an important food source for many species of birds and small mammals. Quail, grouse, deer and mountain sheep eat the leaves.

Ethnobotanical Use: Native American uses include: used an infusion of the flowers as an eyewash, as well as for cleaning out the intestines, and made an infusion of the whole plant to shrink the uterus and reduce dysmenorrhea. The tea was used to wash newborn babies. Others used *Eriogonum* for hip and back pain, especially during pregnancy, and it was known to expedite birthing.

Commercial Use: In spite of its higher elevation existence, sulfur flower buckwheat does well in low elevation gardens. The most commonly cultivated variety is *polyanthum*; with a mounding mat shape and compound clusters of brilliant yellow flowers. ‘Shasta Sulphur’ does well in most California gardens. ‘Sierra’ was collected from South Lake Tahoe and developed by the USDA’s Lockford, CA plant material center. Flowers from this cultivar do well in dry arrangements.

Propagation: Collect seed when seed heads dry up and turn russet red. Cold stratify seeds by placing them in a plastic bag with moist peat moss or sand in a refrigerator three months and then plant out directly in spring.

Remarks: There are 17 varieties of sulfur buckwheat listed in the Jepson manual, but more than 40 varieties have been cited in numerous sources.



***Eriophyllum staechadifolium* – Seaside Woolly Sunflower or Lizard Tail Yarrow**

Eriophylla is from the Greek **erion**, "wool," and **phyllon**, "leaf," referring to the matted white hairs that cover the plant when young and *staechaadifolium* means with leaves like lavender.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: Southern coast and north and central coast of California, including the Channel Islands, less than 330 feet (100 meters) elevation.

Plant Communities: Coastal Sage Scrub, Coastal Strand and Coastal Prairie

Habitat: Grows on bluffs near the Pacific Ocean

Size: A small subshrub 1 – 5 feet (30 – 150 cm) tall with a 2 – 3 foot (30 – 60 cm) spread

Bark/Trunk/Twigs: A much branched subshrub

Foliage: Leaf blades linear, lanceolate, or ovate, 1 ¼ - 2 ½ inches (3–7 cm) long, usually 1–2-pinnately lobed, ultimate margins entire or toothed, white-woolly on leaf surface and

Flowers: Yellow flowers and blooms May – September; the flowers are quite small but because they are comprised of 5 to 15 heads

Fruit: Linear and oblong

Site Ecology: Grows in full sun on coast and part shade inland on well-drained soil and is drought tolerant but will tolerate occasional to moderate watering.

Natural Significance: This yarrow is a great nectar plant for many pollinators and butterflies

Ethnobotanical Use: Nothing noted

Commercial Use: Has landscaping potential in right environment.

Propagation: by seed or separated parts of rhizome.

Remarks: The common name of this plant is somewhat misleading as it is NOT a true yarrow.



Eschscholzia californica – California Poppy

Eschscholzia is named after Dr. Johann Friedrich Gustav von Eschscholtz (1793-1831), a Latvian or Estonian surgeon, entomologist and botanist who came with the Russian expeditions to the Pacific coast in 1816 and 1824. *Californica* means species is from California.

Plant Family: Papaveraceae – Poppy Family

Geographical Distribution: California Floristic Province from sea level to 6,600 feet (0 – 2,000 meters) elevation.

Plant Communities: Just about any below 6,660 feet (2,000 meters)

Habitat: Open areas and common on grassy slopes

Size: Small plant 8 – 24 inches (20 – 60 cm) tall and about the same width.

Bark/Trunk/Twigs: A herbaceous bluish-green plant with several stems and fern-like leaves.

Foliage: Leaves are $\frac{3}{4}$ - 2 $\frac{1}{2}$ inches (2 – 6.3 cm) long and divided into narrow segments (fern-like) and on long stalks.

Flowers: Very conspicuous deep orange, yellow orange, sometimes yellow and even cream colored that are borne singly on long stalks. Flowers are 1 – 2 inches (2.5 – 5 cm) wide with 4 fan shaped petals. Flower from February – September. The flowers close at night or during cloudy or foggy days. Bloom time is from February through the summer.

Fruit: This is a long seed filled capsule slender, slightly curved and from 1 $\frac{1}{4}$ - 4 inches (3 – 10 cm) long. Seeds look like the little seeds you see on muffins and other pastries cuz they're poppy seeds!

Site Ecology: Quite variable but generally low water use, full sun, and well-drained soil. Poppies can be found in very tough, rocky and dry sites.

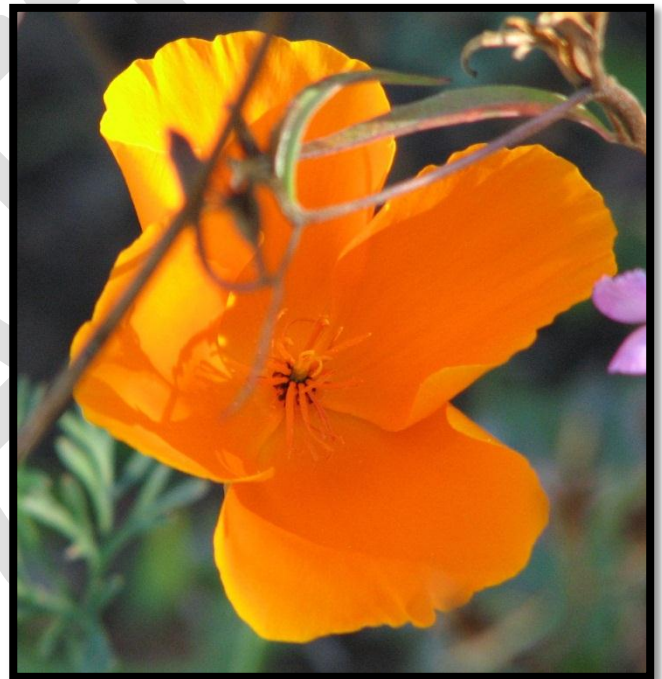
Natural Significance: Serves as pollen source for beetle species.

Ethnobotanical Use: Poppy leaves have been eaten as food and various parts of the plant have used to combat toothaches, stomachaches, to kill head lice, as a wash for body sores, and to dry up a nursing mother's milk.

Commercial Use: Poppy is being planted for horticultural, revegetation, and highway beautification purposes. Extract from the California poppy acts as a mild sedative when smoked. The poppy is also a valuable plant for the wild flower garden. It does readily reseed itself so you have to hoe some out as the years go by.

Propagation: It grows from seeds and easily reseeds itself. Seed pods are easy to collect in the fall. The poppy does not transplant well.

Remarks: The poppy is a high variable plant with more than 90 different taxa described. In 1903 the California Poppy was designated the state flower due it wide spread distribution, brilliantly colored flowers and long blooming period. Remember, April 6th is Poppy Day in California.



***Festuca idahoensis* ‘Stanislaus River’ – Stanislaus River Idaho Fescue**

Festuca is from the Latin *festuca*, which means a grass stalk or straw. *Idahoensis* means of or from the state of Idaho.

Plant Family: Poaceae – Grass Family

Geographical Distribution: Northern Pacific Border, Cascade Range, and Sierra Nevada Mountains; less than 5,940 feet (1,800 meters) elevation

Plant Communities: Found through grasslands, sagebrush, coniferous and alpine forests, and riparian ecosystems

Habitat: Dry, open, or shady places.

Size: Idaho fescue is a vigorous, native, long-lived, perennial, cool-season, bunchgrass that

Bark/Trunk/Twigs: It's a bunch grass and looks like a grass. Plants have a strong root system that can extend 16 inches (40 cm) deep in a 4-inch (10 cm) diameter plant.

Foliage: Leaves are fine, dense, and mostly basal, with sheaths remaining firm and entire. Culms are densely tufted in large bunches, with tuft 6 -10 inches (15 - 25 cm) high, usually more than 1/2 the length of culms. Culms are erect, from 1 - 3.3 feet (0.3 - 1 meters) tall

Flowers: Spikelets are 5- to 6-flowered and 2 ¾ - 6 ¾ inches (7 – 17 mm) tall, housing small, awned seeds.

Fruit: The seeds covered in an awned glume with the canoe shaped seed 1 mm wide and about 8 mm long and borne on spikelets.

Site Ecology: Idaho fescue survives in a wide variety of environments: precipitation regimes are as low as 7 inches (18 cm), site can be disturbed to undisturbed, full sun to shade, and also any soil type except those that are alkaline and serpentine.

Natural Significance: Idaho fescue provides important forage for many types of domestic livestock and several wildlife species including: mule deer, prong horn antelope, big horn sheep, elk, pocket gophers, and grizzly bear. It also provides food and habitat for grouse.

Ethnobotanical Use: Bunch about a foot long, tied with string or yucca fiber, used as a brush for cleaning.

Commercial Use: Idaho fescue is slow to establish, but once established, has abundant growth of fine leaves that provide effective ground cover, and high yields of tough, fine, fibrous roots that control erosion and improve soil structure.

Propagation: Idaho fescue reproduces from seeds and tillers.

Remarks:

***Frangula rubra ssp rubra*– Red Buckthorn**
Formerly *Rhamnus rubra* – Sierra Coffeeberry

Frangula means fragile in reference to brittle twigs and *rubra* means red.

Plant Family: Rhamnaceae- The Buckthorn Family

Geographical Distribution: Occurs extensively in the mountains of Northern California, extending into the northern and central High Sierra Nevada and east into Nevada at elevations from 3,000 - 7,000 feet (900 – 2,100 meters).

Plant Communities: Grows in montane chaparral and yellow pine forests.

Habitat: Sierra coffeeberry has a range of sites that it will occupy. It can be in open areas in coniferous forests or a understory plant in rather dense settings.

Size: A many branched shrub reaching heights of 6 ½ feet (2 meters).

Bark/Trunk/Twigs: An erect shrub with bark and twigs are red to light gray.

Terminal buds are not covered by scales.

Foliage: Narrowly elliptic to obovate leaves are alternately arranged and 1- 1 ½ inches (2.5 – 3.75 cm) in length. Blades are thin and green or gray and both surfaces may be hairless or finely hairy. Margins may be fine-toothed or entire. Deciduous.

Flowers: : Umbel shaped clusters of 1-15 small, inconspicuous 5-petalled flowers appearing in leaf axils are fragrant and produce large quantities of nectar. Bloom time is May – August.

Fruit: Black drupes measure ½” in diameter and carry two stones each. The berry-like fruit is green at first, turning to red and finally to black when mature.

Site Ecology: Requires soils with excellent drainage in dry settings. It is reputed to be shade intolerant, but I have seen it growing in very shady settings.

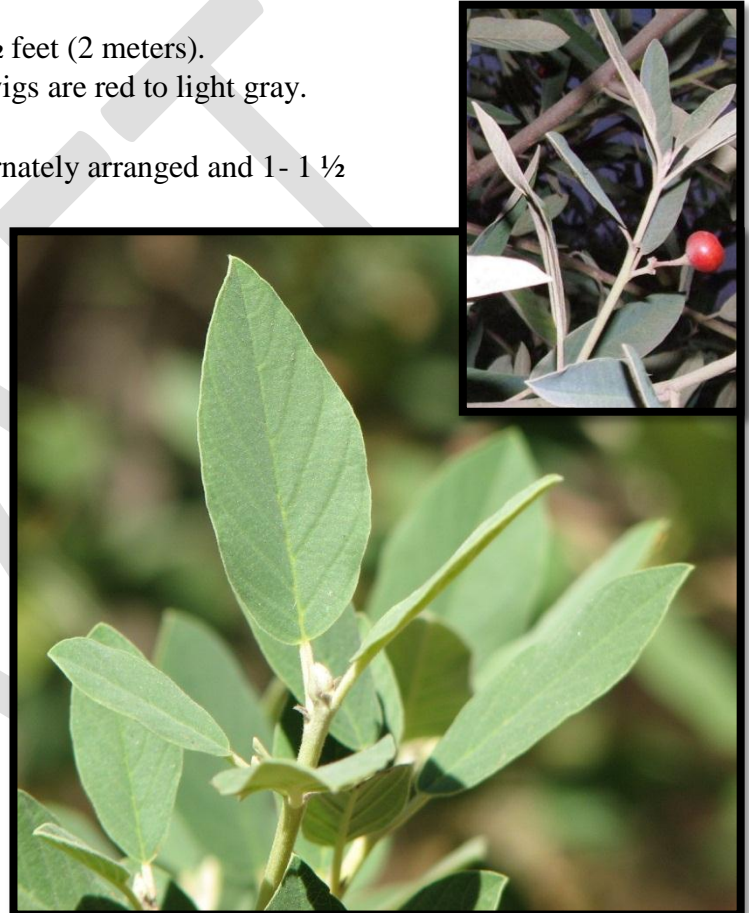
Natural Significance: Fruits provide a food source for wildlife, particularly birds. Nectar-laden flowers are attractive to butterflies.

Ethnobotanical Use: The bark has a puckery taste that has purgative qualities.

Commercial Use: Nothing noted

Propagation: Sierra coffeeberry is easily started from seed that have been stratified for 60 – 90 days at 40^o F. or from cuttings.

Remarks: Leaf color, shape, and size vary widely among habitats. Though not accepted thus far, as many of five varieties of Sierra Coffeeberry have been proposed.



***Fraxinus dipetala* – Foothill Ash**

Fraxinus: Ancient Latin name used by Virgil; dipetata means with two petals.

Plant Family: *Oleaceae* – Ash Family

Geographical Distribution: Concentrated on the northern coast range, Cascade Range foothills, northern Sierra Nevada foothills, central and southern Sierra Nevada, and the Transverse and Peninsular ranges from 330 – 4,300 feet (100 – 1,300 meters) elevation.

Plant Communities: Grows in chaparral, foothill woodlands, yellow pine forests, and mixed evergreen forests.

Habitat: Normally occupies dry canyon and slopes as well as stream banks.

Size: This large shrub or small tree ranges in size from 6 – 19 feet (1.8 – 5.75 meters) tall with trunks from 4 – 8 inches (10 – 20 cm) in diameter.

Bark/Trunk/Twigs: Trunk is single and erect with gray bark; twigs are smooth with 4 angles in cross section.

Foliage: The deciduous leaves are opposite and pinnately compound with usually 5 – 7 leaflets. Leaflets are ovate to round and ½ - 1 ½ inches (1.25 – 3.75 cm) long, margins serrated and the upper surface dark green and lower surfaces light green and both hairless. The lateral leaflets have a short stalk and the terminal leaflet has longer stalk. The leaves take on a coppery orange and plumb hues before falling in the fall.

Flowers: The panicle inflorescence form large showy clusters that are 1 ¼ - 3 ¾ inches (3 – 12 cm) long. They are comprised of white flowers that have 2 petals each that are about ¼ inch (6 mm) long and resemble lilac flowers.

Fruit: The seeds are single wing samaras about 1 inch (2.5 cm) long.

Site Ecology: Prefers growing on rocky or gravelly soil in full sun to partial shade. The tree is quite drought tolerant but will take occasional water.

Natural Significance: Birds visit the tree in the fall to harvest its seeds.

Ethnobotanical Use: Not researched

Commercial Use: Foothill ash is an under-utilized landscape tree/shrub. Its creamy white blossoms and fall colored leaves add variety to a landscape.

Propagation: Stratify seed for 60 – 90 days at a warm 68^o F

Remarks: Draw backs to this tree in the landscape are: its slow growth, a long dormant period and the lack of availability.

***Fraxinus latifolia* – Oregon Ash**

Fraxinus: Ancient Latin name used by Virgil; *latifolia*: on the side, laterally

Plant Family: Oleaceae – The Olive Family

Geographical Distribution: West side of Cascade Range from British Columbia to Central California from sea level to 3,000 feet (900 meters) and to up to 5,600 feet (1,700 meters) in California.

Plant Communities: Grows in north coastal coniferous forests, redwood forests, Douglas fir forests, valley woodlands, foothill woodlands, and yellow pine forests.

Habitat: Almost always along streams, rivers, seeps, canyons, and other wet environs.

Size: 35 - 80 feet (10.5 – 24 meters) tall with trunks 1 - 2 feet (30 – 60 cm) in diameter; growth is quite rapid during the first third of the trees life; may live to 250 years.

Trunk /Bark/Twigs: Smooth, thin, and grey-green when young but eventually becoming up to 1 ½ inch thick, furrowed and gray; twigs cylindrical.

Foliage: Deciduous, opposite, pinnately compound (usually 5-7 leaflets); leaflets are elliptical to egg shaped and 3-7 inches (7 – 18 cm) in length; mostly serrated but can be entire; upper surfaces dark green, lower surfaces light green, and hairless. Leaves often show signs of a brown blotching disease that is fungal caused.

Flowers: Appear with leaves in April - May, no petals, in small clusters; small, inconspicuous male and female flowers on separate trees, dioecious; male flowers yellow and female flowers greenish colored.

Fruit: Samaras (winged) in clusters 1.5 – 2 inches (3 – 5 cm) in length and paddle shaped with a single wing; seeds mature in August – September.

Site Ecology: Tolerates a wide range of climates, but usually mild winter temperatures. Oregon ash prefers heavier textured, less well drained soils that have high humus content.

Natural Significance: The seeds are eaten by birds and squirrels and the vegetation is browsed by deer and elk

Ethnobotanical Use: Wood used for baskets, tobacco pipes, canes, canoe paddles, and harpoons; leaves in sandals as a snake repellent; cold infusions of twigs for fever; infusion of bark taken for worms; mashed roots used for wounds

Commercial Use: The wood has no timber value but may serve as fuel wood as it has a very high heat value. Oregon Ash is planted as an ornamental and street in its native range and in the eastern U.S. and Europe. The wood has been used for tool handles, sports equipment, cooperage (barrels), boxes and furniture.

Propagation: Stratify seeds for 60 – 90 days at 40⁰ F before planting.

Remarks: There are three ashes occurring in the Sierra Nevada; Oregon Ash is the tallest. Velvet Ash, *Fraxinus velutina*, replaces Oregon ash south of the Kings river. The California Ash, *Fraxinus dipetala*, is little more than a large shrub and occurs in the foothill of the western Sierra Nevada.



***Fremontodendron californicum* – Flannel Bush**

Fremontii is named for John Charles Fremont (1813-1890), "the Pathfinder," Army officer and presidential candidate who collected plants on four hazardous journeys exploring the western United States. *Californica* means species is from California

Plant Family: Malvaceae – Mallow Family

Geographical Distribution: California Floristic Province, Arizona, and Baja, California; 1,320 – 6,600 feet (400 – 2,000 meters) elevation

Plant Communities: Chaparral, oak woodland, and yellow pine woodland.

Habitat: Rocky ridges

Size: Shrub to small tree from 10 – 26 ½ feet (3 – 8 meters) tall

Bark/Trunk/Twigs: Highly branched with branchlets that are long, flexible, and tough with many short hairy spurs on leaves and flowers.

Foliage: The evergreen leaves are a palmately veined, 3 lobed ovate shaped, and 1/3 – 2 inches (1 – 5 cm) long, olive green upper surface and paler lower surfaces that are covered with felted hairs. These hairs are very irritating to the skin. The leaves have a tough, rough feel to them.

Flowers: Large flowers 1 ½ - 2 1/3 inches (3.5 – 6 cm) wide, 5 sepals range from yellow to bronze to red in color, bloom in May – June, very dramatic bloom. There no petals on the flower.

Fruit: Spherical capsules from ½ - 1 ½ inches (1.2 – 4 cm) long and are hairy.

Site Ecology: Tolerates full sun to partial shade, drought tolerant, needs good drainage.

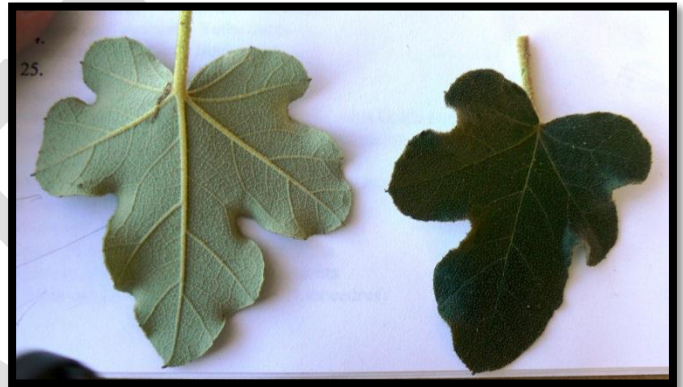
Natural Significance: Pollinators gather nectar and pollen from flowers.

Ethnobotanical Use: Native American natives made bark into cordage, branches substituted for willow and made into baby cradles, and infusion of inner bark taken as a physic. The blossoms were used to make a tea that was used for stomach ulcers and sore throats.

Commercial Use: A great landscape plant, but should not be overwatered. Provide good drainage, establish plant with occasional water and then wean from irrigation. Too much water results in early death due to rot root and root fungal diseases. The cultivar 'Pacific Sunset' seems to be the most garden tolerant.

Propagation: Either by softwood cuttings or seed. Seeds require scarification in hot water followed by cold-moist stratification at 35 degrees for 12-16 weeks to obtain germination.

Remarks: There are two subspecies: *F. californicum* ssp. *californicum* (pretty much what is described above) and *F. californicum* ssp. *decumbens*, a nearly prostrate form. Numerous cultivars have been developed and discovered from these two subspecies. Study the cultivars before making any selection for your garden.



Garrya elliptica – Coast Silk Tassel

Garrya is named for Nicholas Garry (1782-1856) of the Hudson's Bay Company who was an assistant of David Douglas in his explorations of the Pacific Northwest. *Elliptica* means about twice as long as wide.

Plant Family: Garryaceae – Silk Tassel Family

Geographical Distribution: Native to the Coast Range and near the Pacific Ocean from southwest Oregon to southern California; at elevation from sea level to 2,624 feet (800 meters)

Plant Communities: Grows in Chaparral, Mixed-evergreen Forest and Northern Coastal Sage Scrub.

Habitat: Can be a dominant species on coastal bluffs, but more commonly silk tassel is scattered among the coastal forests and chaparral of the communities it inhabits.

Size: Evergreen shrub, erect, dense, to 8 feet (2.5 meters) high and wide, may be a small tree 20 - 30 feet (6 - 9 meters).

Bark/Trunk/Twigs: Moderate to stout, new growth is green and covered in pale pubescence, becoming brown, twigs may be 4-angled. Bark: Gray-brown and initially smooth, becoming irregularly rough.

Foliage: Evergreen, leaves opposite, simple, elliptical to oval, 1 ½ - 3 ½ inches long (4 - 9 cm), leathery, margins entire and slightly wavy and irregularly turned under (revolute), glossy, essentially smooth and dark green above, paler and woolly below; petiole stout, to about ½ inch long (13 mm), grooved and flattened above.

Flowers: Flowers appear in winter, male and female flowers on separate plants (dioecious), male catkin-like clusters are yellowish to greenish then gray, 3 – 8 inches (8 - 20 cm) long ("silk tassels"), female flower clusters are shorter, 2 – 3 ½ inches (5 - 9 cm) long. Bloom time is December – February.

Fruit: Fruit is round, about ¼ inch wide (6 mm), covered with a purplish-gray pubescence, may be present through the summer if not eaten by birds. Several round berry-like drupes borne in pairs on 1 ½ - 3 inch long tassels (3.75 – 7.5 cm), individual berries ¼ inch (6.25 mm), purple-blue but covered in silky white pubescence, somewhat persistent.

Site Ecology: Sun or part shade. Not fussy about soil type, if well-drained

Natural Significance: Nothing noted

Ethnobotanical Use: Infusion of leaves taken to bring on a woman's period. Wood hardened by fire and used for mussel bars to pry the mussels off the rocks.

Commercial Use: Considered a good foliage plant, can be grown as a hedge, moderate irrigation needed. Probably would not do too well in Central Valley. Try on north side of structure with good drainage and adequate water.

Propagation: Can be propagated by cuttings done during cool time of year or by seeds that have been cold stratified for 30 – 120 days.

Remarks: A few male cultivars with especially long "tassels" are available, 'James Roof' (30 cm), 'Evie' (25 cm).



***Grindelia camporum* – Foothill Gum Plant**

Grindelia is named for David Hieronymus Grindel (1776-1836), a German pharmacologist; while *camporum* means relating to or having the odor of camphor.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: Throughout most of California to Baja, California, except Modoc Plateau and White Mountains; from sea level to 4,620 feet (0 – 1,400 meters) elevation.

Plant Communities: Grows in alkali sink, valley grassland, central oak woodlands and yellow pine forests.

Habitat: Sandy or saline bottom lands, fields, roadsides and other disturbed places.

Size: Height ranges from 2+ - 3+ feet (70 – 100 cm) tall and width from 20 – 40 inches (50 – 100 cm).

Bark/Trunk/Twigs: Erect stems appearing white varnished in color. It is a herbaceous plant and has no trunk or bark.

Foliage: Leaves range from ¾ - 1 ¼ inches (2 – 3 cm) long, cauline, (borne on a stem), lanceolate to ovate, entire to serrate, stiff, light yellow to gray-green in color.

Flowers: The attractive daisy-like yellow flowers that bloom from May – October. The flower head is a combination of ray and disk flowers.

Fruit: Small, 2 – 5 mm, white to golden brown seeds that are awned.

Site Ecology: Grows in sandy to clay soils and is salt and drought tolerant; enjoys full sun.

Natural Significance: Gum plant attracts numerous pollinating insects.

Ethnobotanical Use: Decoction of plant used for dermatitis, poison oak, boils and wounds.

Commercial Use: Gum plant is great for the front of a dry border of a California garden with Penstemons, Nassella and, Hazardia species. Gum weed was used clinically from the 1880s until 1960 in the United States and the United Kingdom for the treatment of asthma, bronchitis, and poison ivy rash. Gum weed use in clinics was discontinued in 1960 when law required medicines to have proven efficacy in clinical trials.



Propagation: Couldn't find anything but assume that the flying seeds enable the plant to regenerate itself by reseeding.

Remarks: This plant's common name is such because it covered with a sticky substance

Helianthus annuus – Common Sunflower

Helianthus: derived from two Greek words helios, "sun," and anthos, "flower," in reference to the sunflower's supposed tendency to always turn toward the sun. *Annuus*: annual.

Plant Family: Asteraceae – The Sunflower Family

Geographical Distribution: Throughout most of United States/North America from 0 – 6,234 feet (0 – 1,890 meters) elevation. Sunflower grows throughout California except for the northwestern coast.

Plant Communities: Grows in a wide variety of habitats.

Habitat: Dry open plains and foothill; especially common along roadsides, field edges and other disturbed areas.

Size: An erect, branching subshrub that is 2 - 13 feet (0.6 – 4 meters) tall

Bark/Trunk/Twigs: Commonly branching in the upper half, common sunflower, has a coarse hairy stems. It is a herbaceous plant and has not trunk or bark.

Foliage: Lower leaves are ovate to heart shaped usually with irregular teeth; the upper leaves are smaller and narrower. The leaves are pinnately veined and green in color.

Flowers: Showy 3- 5 inch (7 ½ – 12 ¾ cm) flower heads with a maroon center surrounded by yellow rays; bloom time is June to September (or until the first frost). The flowers are daisy-like.

Fruit: Seeds somewhat flattened but still have some plumpness.

Site Ecology: A drought tolerant plant that grows in full sun along roadsides and other disturbed areas; will grow larger and with showy flowers if moisture is available. It may need some moisture at first, but once established needs very little water.

Natural Significance: Serves as a source of pollen and nectar for numerous insects. Birds feed on the seeds.

Ethnobotanical Use: Yellow dye from flowers and blue dye from seeds used in Native American basketry. Sunflower medicinal uses include: poultice to snakebites, decoction of flower heads taken for pulmonary troubles, infusion of flowers used for chest pains, juice applied to cuts, and decoction of root used as a rheumatism wash to name a few. There were a multitude of other uses for this all-American native.

Commercial Use: Cultivated strains have been developed from the wild plants and these are used for snack food, livestock feed, and cooking oils. The wild plants make good cut flowers or will add color to any garden.

Propagation: Sunflowers are easily propagated by seeds if given proper treatment. Seeds need to be stratified before planting. This can be done by soaking them for 18 hours or lightly scarring them.

Remarks: Sunflower is the state flower of Kansas; cultivated in the Americas before Columbus arrived. The sunflower is so named because its flower head rotates so that it always faces the sun.



Heracleum lanatum – Cow Parsnip

Heracleum is named for Hercules, either because he was supposed to have used it first for medicine, or because he was a mortal of great size and strength, which relates to the large stature of some of its species. *Lanatum* means covered with long, woolly hair.

Plant Family: Apiaceae – Carrot Family

Geographical Distribution: California Floristic Province, Great Basin to Alaska, Eastern U.S. and Arizona; less than 8,500 feet (2,600 meters) elevation.

Plant Communities: Cow parsnip occurs in a wide variety of forested habitat types, as well as grassland, shrub lands, meadows, alpine, and riparian zones.

Habitat: Wooded or open moist places, often in or at stream edge.

Size: 40 inches – 10 feet (1 – 3 meters) tall

Bark/Trunk/Twigs: Very stout strong scented stems that are hollow, tomentose, (covered with matted hairs) and slightly ridged. Cow parsnip grows from a tap or clustered roots.

Foliage: Oblong to round palmately compound leaves, Large, 8 – 20 inches (20 – 50 cm) across blades, with three leaflets 4 – 16 inches (10 – 40 cm) across, deeply lobed and serrated.

Flowers: White flowers look like carrot flowers, a flattened compound umbel; peduncle (plant stalk) 2 – 10 inches (5 – 20 cm) long. Individual flowers have five petals; bloom from April – July.

Fruit: Obovate, hairy seeds that are 8 – 12 mm in size.

Site Ecology: Full sun on coast and partial shade inland but always associated with a moist to wet site.

Natural Significance: Flowers are very effective at attracting beneficial insects and is larval food source for anise swallowtail butterfly. Cow parsnip is a valuable forage species for livestock, deer, elk, moose, and bear.

Ethnobotanical Use: Native Americans of Alaska, British Columbia, the Great Plains, and

Arizona used cow parsnip for medicinal and nutritional purposes. Native Americans in Alaska ate the inside of stems raw and boiled the roots to extract sugar. In Arizona, the Apache ate young leaves and stems and used the roots to treat epilepsy.

Commercial Use: Cow parsnip is planted as an ornamental in water gardens.

Propagation: Regenerates by seed with no special treatment.

Remarks: There are 80 species worldwide, but only one in the United States



Heteromeles arbutifolia – Toyon

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Common throughout California into Baja; below 4,300 ft (1,300 m)

Plant Communities: Grows in chaparral, oak woodlands, and mixed evergreen forests.

Habitat: Toyon grows in the foothill surrounding the central valley in both the Coast Range and Sierra Nevada.

Size: Shrub or small tree that grows to about 15 feet tall (4.5 meters)

Bark/Trunk: Twigs are gray with fine hairs; truck bark is also gray.

Foliage: Evergreen, alternate, glossy green, and leathery leaves are elliptical to oblong and 2 – 4 inches long (5 – 10 cm) with a toothed margin.

Flowers: White flowers are in flattened clusters on terminal shoots up to 6 inches across (15 cm) that appear in June and July

Fruit: Bright red oval pome with mealy pulp about 1/3 inches across (8 mm)

Site Ecology: Drought tolerant, but will accept moderate periodic water. Toyon accepts a variety of soil textures, but the soil must be well drained. It will also withstand full sun and high heat.

Natural Significance: Attracts butterflies and bees when in bloom and birds feast on the fruit throughout the fall and winter.

Ethnobotanical Use: The berries provided food for local Native American tribes, such as Chumash, Tongva, and Tataviam. The berries also can be made into a jelly. Most were dried and stored, then later cooked into porridge or pancakes. Later settlers added sugar to make custard and wine. Toyon berries are acidic and astringent, and contain a small amount of cyanogenic glycosides, which break down into hydrocyanic acid on digestion. This is removed by mild cooking. Some berries, though mealy, astringent and acid when raw, were eaten fresh, or mashed into water to make a beverage. Native Americans also made a tea from the leaves as a stomach remedy.

Commercial Use: Alternative to holly for Christmas decorations, hence the “other” common name, Christmas berry.

Propagation: Toyon can be propagated by seed, cuttings, grafting, budding and layering. To grow by cuttings collect half ripe wood in summer, dip in IBA#2, place in well-drained vermiculite under mist. To grow by seeds collect in the fall and stratify for 30 days at 40⁰ F then plant.

Remarks: There a cultivar called ‘Davis Gold’ that has golden yellow fruit. Other common names include Christmas berry (as noted) and California holly. I have a toyon tree planted on 18 inch (45 cm) deep soil on the north side of two redwoods (*Sequoia sempervirens*) that is in excess of 25 feet tall (7.5 meters); pictured above.



Holodiscus discolor – Cream Bush or Oceanspray

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Growth range extends throughout Western United States. In California, it is found in the north and central west, Sierra Nevada high country, Sacramento Valley Sutter Buttes, Channel Islands, and southern California mountains at elevations below 6,000 feet (1,818 meters).

Plant Communities: Grows in north coastal coniferous forests, yellow pine forests, mixed evergreen forests and valley and foothill woodlands.

Habitat: Northern Slopes of coastal ranges, often found on cliffs overlooking the ocean; moist woodland edges and rocky slopes, a variety of habitats.

Size: A shrub that ranges from 5 – 20 feet (1.5 – 6 meters) tall and up to 4 - 15 feet (1.2 – 4.5 meters) wide; larger in moist sites and smaller in dry, sunny sites.

Bark/Trunk/Twigs: Older branches have peeling bark, twigs are brown and hairy.

Foliage: Deciduous, alternate leaves that are triangular ½ - 3 inches (1.25 – 3.75 cm) long; leaves are dull green above and whitish (and occasionally hairy) below, with coarsely toothed margins. Parallel veins have the appearance of chevrons.

Flowers: White flowers in terminal, cone-shaped, 4 – 12 inch long (10 – 30 cm) clusters located well above the foliage. Blooms are fragrant, occur in early to mid-summer and are quite showy.

Fruit: small brown achene

Site Ecology: Will be more common and larger where summer moisture is available. Grows in partly shaded areas.

Natural Significance: Not researched

Ethnobotanical Use: Straight branches from the plant have been used to make arrow shafts.

Commercial Use: Flowers are edible and used in arrangements.

Propagation: Creambush can be grown from seed with no special treatment.

Remarks: The presence and coloration of hair on foliage is regionally variable.

Iris douglasiana - Douglas Iris

Iris is named for the Greek goddess of the rainbow and *douglasiana* is named for David Douglas (1798-1834), Scottish collector who was sent to North America first in 1823 and then two more times by the Horticultural Society of London to collect plants that could grow in English gardens.

Plant Family: Iridaceae – Iris Family

Geographical Distribution: Most extensive of all California irises; growing in coastal areas extending 700 (1,100 km) miles between Santa Barbara, California and central Oregon.

Plant Communities: Most commonly found in the coastal prairie, but may also occur on the coastal strand and in the coastal scrub.

Habitat: Grows naturally along coastal zones, usually within sight of the ocean; it is common on bluffs and treeless grassy hillsides. It sometimes extends farther inland in areas where human activity has opened forests to abundant sunlight.

Size: Grows in 2 - 4 feet (60 – 120 cm) wide clumps to between 1 – 1 ½ feet (30 – 45 cm) high with flowers on stems from 1 – 2 feet (30 - 60 cm)tall

Bark/Trunk/Twigs: This herbaceous plant has leathery, dark green, grass-like leaves that sprout from a snake-like root called a rhizome. Stems often branched, each branch bearing 2-3 flowers

Foliage: Leaves shiny green above, dull green below, ¼ to 1 inch wide and 1 – 3 feet (30 – 90 cm) long. Leaf margin is entire and leaf shape sword like.

Flowers: This native perennial species has dark lavender to deep reddish purple flowers. The flowers have three sepals, three petals and three stamens. Usually shades of light blue-violet to dark purple; occasionally white, rarely yellow. Blooms March to July.

Fruit: seed capsule triangular in cross section, with a nipple-like projection at end near flower tube.

Site Ecology: In the Central Valley it would work best in a shade garden, in fact it can be planted in a total shade environment. It needs moisture and the better the soil, the better it does.

Natural Significance: *Iris* is a nectar source for hummingbirds and other pollinators. Mountain beaver feed on the iris where is available near their habitat.

Ethnobotanical Use: Douglas Iris is known to be one of the most important sources of rope and basket-making fiber in northern California for a large number of tribes. Coast Miwok have used Douglas Iris to make a tea that induces vomiting. The Pomo and the Klamath have used fibers from the edges of leaves to make a strong rope. The strands on the edges have been removed and cleaned with a sharp oblong tool made from abalone shell fastened to the thumb. This process was extremely time-consuming: a twelve foot long rope took nearly six weeks to make. The flowers were used in ceremonial headdresses. Iris seeds were ground into flour for food. A tea made from the roots was used to treat wounds, kidney disease, and colds.

Commercial Use: The iris is a very attractive in almost any garden. It can be used in a border garden, as a ground cover, and around ponds and streams. In a garden planting try it so it's subjected to the rain runoff from buildings (Bert Wilson - RIP)

Propagation: Easily propagated by seed or its clumping rhizome can be divided and planted. There are many cultivars and hybrids available through nurseries.

Remarks: Douglas Iris was discovered in about 1830 in the Monterey region of the central coast of California by David Douglas.

***Juglans californica* var. *hindsii* – Northern California (Black) Walnut**

Juglans is in reference to Jupiter's nut – in Pliny and, of course, *californica* means from the good old golden state.

Plant Family: Juglandaceae – The Walnut Family

Geographical Distribution: Native to three scattered spots in northern California (Present day range is now limited due to hybridization with the eastern variety, *J nigra*). This walnut variety has become naturalized in the interior Coast Range, the southern Sacramento and northern San Joaquin Valleys and the San Francisco Bay region and grows between 165 – 650 feet (50 – 200 meters).

Plant communities: Foothill Woodland and wetland-riparian

Habitat: Riparian to chaparral canyons and valleys

Size: 50 – 85 feet (15 - 25 meters) tall by 40 feet wide; usually a single trunk up to 3+ feet (1 meter) in diameter.

Bark/Trunk/Twigs Twigs are brown and hairy and bark is dark brown to black and deeply furrowed; furrows separated by broad irregular ridges.

Foliage: Deciduous green foliage; 11-15 pinnately compound leaflets that are lance to egg shaped and 2 – 4 inches long (5 – 10 cm).

Flowers: female and male flowers separate but on same tree; females inconspicuous; male flowers elongated catkins

Fruit: Hard round brown nuts in green husk that turn black when mature 1 ¼ - 1 ½ inches in diameter (3 – 3.5 cm).

Site Ecology: Medium to fine textured soils; pH 6-8; 15-85 inches of precipitation; withstands direct sunlight and high heat.

Natural Significance: Spreading trees like *J. hindsii* are excellent nesting sites for raptors. It is an important habitat plant for many birds and mammals.

Ethnobotanical Use: Probably planted by Native Americans near their encampments, as they used the nuts for food. A black dye is obtained from the seed husks

Commercial Use: Shade tree (but does drop nuts); specimen tree; source of nuts, but hard to crack. Cultivated as a rootstock for English walnuts and is also the parent to the *J. hindsii* x *J. regia* 'Paradox' hybrid that is also used as a rootstock for English walnuts. Wood is heavy, hard, and rather coarse grained. A valuable timber, the tree is occasionally cultivated for its wood.

Propagation: Easily propagated by seed or can be budded or grafted.

Remarks: This variety is rare due to early harvesting and hybridization. There is a *J. nigra* native to the eastern part of the US that is “the” black walnut. The southern California variety, *J. californica*, is more shrub-like and grows to about 25 feet. Strongly allelopathic plant; difficult to garden under



Juniperus californica – California Juniper

Juniperus is the Latin name the means juniper like and *californica* means it's a California special.

Plant Family: Cupressaceae - Cypress Family

Geographical Distribution: This shrubby plant's range extends from the inner Coast Range, Sierra Nevada Foothills, Transverse Range, Peninsular Range, Desert Mountains, southern Nevada, northwestern Arizona, and Baja; 165 – 5,000 feet (50 – 1,500 meters)

Plant Communities: Grows in Chaparral, lower elevations of montane forest, pinyon-juniper woodland, Joshua tree woodland, and coastal sage scrub.

Habitat: Dry slopes and flats of pinyon-juniper woodlands, desert scrub, chaparral, and montane coniferous woodlands.

Size: Shrub or infrequently a small tree from 3 – 33 feet tall (1 – 10 meters) with a 1 – 2 foot diameter trunks (30 – 60 cm). The national record tree that was submitted in 1973 is 3.1 feet in diameter (1 meter) and 23 feet tall (7 meters). There is a taller tree in Colusa County, 33 feet (10 meters) tall. This Shrub can live up to 250 years of age.

Bark/Trunk/Twigs: Usually have 14 – 24 small crooked trunks at base with gray, thin bark with reddish brown furrows and long, scaly, irregular ridges. Its thin bark makes easily killed by fire.

Foliage: Scale-like leaves with gland at base of each leaf, yellowish-green. These are in whorls of three. They are more awl like when young.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Dioecious, male and female cones on different trees. Pollen cone 2 – 3 mm, oblong are small, pale yellow, in large clusters at ends of twigs; seed cone ¼ - ½ diameter (7 - 12 mm), spherical to ovoid, bluish color maturing to reddish-brown when dry; looks like a berry, 1 – 3 seeds per cone.

Site Ecology: Seedlings need shade to become established, but the mature shrub/trees are shade intolerant. Normally found on shallow, coarse textured, rocky, infertile soils. Very drought tolerant

Natural Significance: Provides important habitat for birds and small mammals. The California Quail seems to favor this cover. The berries are also eaten by wildlife. This shrub is also important for erosion control on dry slopes

Ethnobotanical Use: Native Americans made bows out of the wood and created a juniper berry cake for dessert! They also consumed the berries fresh.

Commercial Use: Ranchers use California Juniper to make fence posts. It is also used for fuel wood and Christmas trees.

Propagation: Not researched.

Remarks: The Utah Juniper, *Juniperus utahensis*, and California Juniper's ranges overlap, because the Utah Juniper is more tree like and the California Juniper is more shrub like.



***Juniperus occidentalis* var. *australis* – Sierra Juniper**

Juniperus is the Latin name the means juniper like and *occidentalis* mean western or of the west.

Plant Family: Cupressaceae - Cypress Family

Geographical Distribution: California and western Nevada; also found in north Coast Range, and San Bernardino and San Gabriel Mountains; elevations between 350 – 10,000 feet (100 – 3,000 meters)

Plant Communities: Grows in upper montane, subalpine coniferous forests and pinyon juniper woodlands.

Habitat: Mainly found on dry rocky slopes, flats, forests, and woodland that are underlain by granitic parent rocks.

Size: Small to medium size tree from 15 – 50 feet tall (4.5 – 15 meters) by 1 – 5 feet in diameter (0.3 – 1.5 meters). Some individuals live to be 2,000 – 3,000 years old. On exposed, harsh sites the species will take on a shrubby form

Bark/Trunk/Twigs: Reddish-brown, shreddy, furrowed, frequently spiraled; massive, squat trunk. Twigs are round, reddish green and overlapping.

Foliage: Evergreen, tiny, scale-like, overlapping each other, gray-green to bluish-green, set in whorls of 3, and usually covered with resin on its underside; pungent gin-like smell when rubbed or crushed.

Flowers: Gymnosperm, not a flowering plant. Pollen cone is oblong while seed cone is about twice as big as pollen cone and a resinous blue-green maturing to blue-black.

Fruit: berry-like, bluish-black, soft, juicy, resinous, coated with a frosty waxing; 0.33 inches (0.8 cm); dioecious, usually male and female cones on different trees.

Site Ecology: Intolerant of shade and readily killed by fire

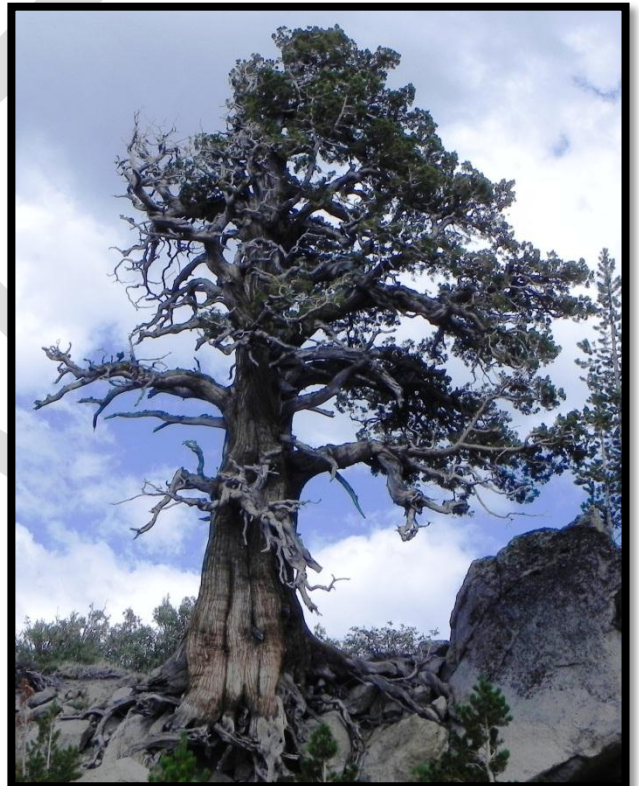
Natural Significance: Berry-like cones are an important source of food during the winter for many birds and rodents. It also provides habitat and cover for these species. It is browsed by mule deer and pronghorn antelope. Western juniper is used primarily as an emergency food source by most classes of livestock and many big game species.

Ethnobotanical Use: Some Native American peoples traditionally used western juniper wood in making bow staves. High elevation wind swept junipers are sought after by photographers.

Commercial Use: Western juniper has been used since historic times for firewood, charcoal, corrals, poles, and fence posts. The wood is extremely durable and resistant to rot. In recent times, western juniper has been used for paneling, interior studs, particleboard, veneer, plywood, and other lumber products.

Propagation: Juniper seeds do not readily germinate until they pass through the digestive tracks of birds or rodents; that natural stratification. If you're a human, not a bird or rodent, then stratify the seeds for 90 days at 40° F.

Remarks: The Sierra juniper is sometimes called Mountain Juniper. The "Scofield Juniper" has yielded a crossdated age of 2,675 years (Miles and Worthington 1998). The Rocky Mountain Tree Ring Research (RMTRR) organization lists this tree as the eight oldest tree on record. The Bennett Juniper in the Stanislaus National Forest is 12.75 feet in diameter (3.9 meters) and 78 feet tall (23.5 meters); it is the world record for the species. This species is undergoing a name change. The new name being suggested is *Juniperus grandis*.



***Juniperus utahensis osteosperma* – Utah Juniper**

Juniperus is the Latin name the means juniper like and *utahensis* mean from Utah.

Plant Family: Cupressaceae – Cypress Family

Geographical Distribution: Occurs on the east slopes of Sierra Nevada, Great Basin ranges, Mojave ranges, and desert side of San Gabriel and San Bernardino mountains; grows between 4,000 – 8,000 feet in elevation (1,200 – 2,400 meters) and up to 9,500 feet (2,900 meters) in the White Mountains. Elsewhere it ranges across Nevada, Utah, Colorado, New Mexico, Arizona, Wyoming, and Montana.

Plant Communities: Grows in the northern juniper woodland and the pinyon juniper woodland.

Habitat: Seen in open woodland on arid slopes and foothills; soils are usually thin, stony and of very low fertility; associated species include pinyon pine and big sagebrush.

Size: A small, spreading tree that has a very rugged appearance with mature trees between 15 – 30 feet tall (4.5 – 9 meters) and having diameters of 6 -12 inches (15 – 30 cm). Species is long lived, perhaps up to 1,000 years.

Bark/Trunk/Twigs: Straight, often forked trunk that has grayish brown bark that ages to ash white; bark that peels off in shredded, fibrous strips. Outer sap wood is white and heartwood is a deep red.

Foliage: Scale leaves that are stiff and coarse to the touch and yellowish green in color.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Seed cones are berry-like and up to ½ inch in diameter (1.75 cm) and mature to a bronze color with white, frosting-like bloom. Monoecious, male and female cones occur on same tree (A feature that distinguishes Utah juniper from California and most Sierra junipers).

Site Ecology: It will tolerate calcareous soils and pH's into the low 8's. However, fine textured soils, high moisture environments, and shade are three conditions Utah juniper will not tolerate. Fires will readily kill the Utah juniper.

Natural Significance: Birds, coyotes, and jackrabbits eat the fruit. The hard seeds are dispersed into new habitats in these animal's feces.

Ethnobotanical Use: Native Americans use wood for fuel, carved it into utensils, and as a foodstuff. The bark was made into rope and sandals.

Commercial Use: The decay resistant wood was used extensively for fence posts by early ranchers.

Propagation: Stratify seeds for 120 days at 40⁰ F before planting.

Remarks: Utah juniper is an extremely stress and drought tolerant tree, and as a result, very wide spread. Hybridizes with Sierra juniper where their ranges overlap.

Lithocarpus densiflorus – Tanbark Oak

Lithocarpus is from the Greek word lithos, "rock," and karpos, "fruit," an allusion to the hard acorns, which actually are no harder than the acorns of true oaks and *densiflorus* means densely flowered.

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Found from Northwestern California, Cascade Range, Sierra Nevada, Central Western California, Western Transverse Ranges and into southern Oregon at elevations below 5,000 feet (1,500 meters).

Plant Communities: Chaparral, Redwood Forests, and Mixed Evergreen Forest

Habitat: Occurs in moist valleys and on mountain slopes, in oak forests and occasionally in pure stands

Size: 50 – 80 feet (15 – 24 meters) in height, trunk diameter of 1 - 2 ½ feet (30 – 75 cm); however it is not uncommon to see a multi-stemmed shrub sized plant as understory growth or plant of this type on environmentally difficult sites.

Bark/Trunk/Twigs: Thick, brown bark is deeply furrowed into ridges and plates. Stout twigs have dull yellow hairs that disappear as they age.

Foliage: The alternately arranged oblong, evergreen leaves are 2 ½ - 5 inches (3.75 – 13 cm) long and ¾ - 2 ¼ inches (2 – 3 cm) wide, thick and leathery, with parallel sunken veins. Margins are toothed to wavy. Light green to nearly hairless above, whitish and hairy below.

Flowers: The male catkins are 2 – 4 inch (5 – 10 cm) long containing many tiny, stalkless flowers that exude an unpleasant odor. The tiny pistillate flowers bloom at the base of the male catkins. Flowers appear in Spring and occasionally in again Autumn.

Fruit: Yellow-brown ¾ - 1 ½ inch (2 – 3.75 cm) long egg-shaped acorns have a shallow cup covered in slender, spreading scales. The acorns tend to be somewhat rotund and are about an inch (2.5 cm) across. Fruit requires 2 years to mature. The acorn is really not an acorn, but rather a nut like the hazelnut. The Native Americans preferred the Tanoak nut to the oak acorns because they stored better due to their high tannin content.

Site Ecology: Require full sun to part shade and moist to rather dry soil conditions.⁷⁷

Natural Significance: Trees provide food, cover, and nesting sites for wildlife and birds.

Ethnobotanical Use: Tanoak bark was once the main commercial source of tannin; hence the common name of tanbark oak. The indigenous Native Americans made extensive use of the acorns in a wide variety of culinary applications. Infusion of bark used as a wash for face sores and to tighten loose teeth. The tannin from the acorns was also used as a cough suppressant. Wood from trees also provided firewood and lumber.

Commercial Use: In Oregon the wood is used for artisan and tourist curio items, and called Myrtlewood.

Propagation: Easily propagated from mature, two year old acorns.

Remarks: Though similar in fruit to the oaks, members of the genus *Lithocarpus* are more similar to Chestnuts and Chinquapins in flower, pollen and inflorescence and may be more closely related to them. Tanoak is one of the species most seriously affected by Sudden Oak Death (*Phytophthora ramorum*), with high mortality reported over much of the species' range.

L. densiflora var. *echinoides* is a dwarf variety that is found primarily at higher elevations in the Sierra Nevada. It may reach 10 feet (3 meters) in height.



***Lonicera hispidula* – California Honeysuckle**

Lonicera is after Adam Lonitzer, German botanist (1528 – 1586) and *hispidula* means bristly with stiff hairs.

Plant Family: Caprifoliaceae- The Honeysuckle Family

Geographical Distribution: Found throughout much of Western California and the Sierra Nevada, extending north into Oregon at less than 3,600 feet (1,100 meters) elevation.

Plant Communities: Grows in closed cone pine forests, mixed evergreen forests, yellow pine forests, and foothill woodlands.

Habitat: Occurs in canyons, stream sides, forests and woodlands.

Size: Sprawling shrub or climbing vine reaches 3 ½ - 13 feet (1.1 – 3.9 meters) in height.

Bark/Trunk/Twigs: Twigs are hollow, usually hairy, and the younger stems are purplish in color.

Foliage: Semi-evergreen, oppositely arranged, 1 – 3 inches (2.5 – 7.5 cm) long, leaves are oblong to ovate and often have heart-shaped bases. Upper leaf pairs are fused around stem. Green stipules on lower leaf pairs may be prominent and fused or small and scale-like.

Flowers: Terminal or axillary inflorescences are short, interrupted spikes of large pink flowers. Flowers are ½ - ¾ inches (12 – 20 mm) and tubular at the base and divided into two lips each having four lobes above. Lips are recoiled and as long as or longer than the tubed portion of the flower.

Fruit: Red berries are 1/3 inch (8 mm) in diameter and bear many seeds.

Site Ecology: Tolerates drought and full sun to full shade exposures.

Natural Significance: Flowers attract hummingbirds; berries are a food source for birds.

Ethnobotanical Use: Not Researched

Commercial Use: Useful for bank stabilization and to restore disturbed areas.

Propagation: Stratify seed got 30 – 60 days at 40⁰ F or can also be started by layering.

Remarks: The species climbs up into shrubs and trees where they are available. Five species of *Lonicera* occur in the Sierra Nevada; all have flowers in pairs with a swollen base on one side of each flower. The vines are referred to as honeysuckle and the shrubs are called twinberries.

Lonicera interrupta- Chaparral Honeysuckle

Lonicera is after Adam Lonitzer, German botanist (1528 – 1586) and *interrupta* means bristly with scattered leaves or flowers.

Plant Family: Caprifoliaceae- The Honeysuckle Family

Geographical Distribution: Native to the Central and Northern California Mountains, extending east into Arizona, at elevations from 1,600-4,500 feet (490 – 1,360 meters).

Plant Communities: Grows in chaparral, mixed evergreen forests, yellow pine forests.

Habitat: Occurs in chaparral, on dry ridges, and in forests and oak woodlands.

Size: A sprawling shrub or climbing vine reaching 2 ½ - 7 feet (0.75 – 2.1 meters) in height and 2 ½ - 3 feet (75 – 90 cm) in width.

Bark/Trunk/Twigs: Trunk is rigid and woody branches sprawling or climbing over other plants or along the ground. Young twigs are purplish.

Foliage: Evergreen leaves are elliptical to round, ¾ - 1 ¼ inch (2 – 3.2 cm) leaves are opposite in arrangement and have rounded bases. The upper 1-3 pairs of leaves are fused around the stem. Stipules are not present. Leaves are green above and whitish below.

Flowers: Inflorescences are 2 – 5 inches (5 – 12.5 cm) long interrupted spikes of creamy yellow flowers which are tubular at the base and two lipped and deeply divided above.

Fruit: Small red berries are edible but bitter and bear many seeds.

Site Ecology: Drought tolerant and tolerates full sun to full shade exposures.

Natural Significance: Honeysuckle flowers are attractive to hummingbirds. Fruit provides a food source for birds.

Ethnobotanical Use: Leaves and roots have been used medicinally.

Commercial Use: Useful to stabilize banks and to restore disturbed areas.

Propagation: Stratify seed got 30 – 60 days at 400 F or can also be started by layering.

Remarks: The species has sweet nectar and pleasant smelling flowers, but the fruits and medicinal portions of the plant are very bitter. . Five species of *Lonicera* occur in the Sierra Nevada; all have flowers in pairs with a swollen base on one side of each flower. The vines are referred to as honeysuckle and the shrubs are called twinberries.



Lonicera involucrata – Twin Berry

Lonicera is after Adam Lonitzer, German botanist (1528 – 1586) and *involucrata* means the flowers are surrounded by bracts (See the brownish colored projections around the flower on the picture below.)

Plant Family: *Caprifoliaceae* – Honeysuckle Family

Geographical Distribution: Western United States, Canada, and great lakes states; to 10,000 feet (3030 meters) elevation

Plant Communities: *Lonicera* is found in a variety of plant communities including: closed-cone pine forest, coastal sage scrub, red fir forest and sub-alpine forest.

Habitat: Black twin berry is found from sea level to valley bottoms to subalpine zones in moist to wet soils.

Size: A large shrub that grows between 1 ½ - 10 feet (0.5 – 3 meters) tall, but usually a little shorter than 10 feet.

Bark/Trunk/Twigs: An erect, spreading shrub

Foliage: The bright green leaves are arranged opposite of each other, elliptic, to oval-shaped, 1 ¼ - 6 ¼ inches (3 – 16 cm) long and ¾ - 3 ¼ inches (2 – 8 cm) broad; they are hairy along the margins and on the underside, and have a distinctive abruptly acuminate (long tapered, sharp tip with concave sides) tip.

Flowers: The flowers are yellow, tubular, and hairy, ½ - ¾ inch (1 – 2 cm) long, and are monoecious; they are produced in pairs bracketed by a pair of reddish basal bracts ¾ - 1 ½

inches (2 – 4 cm) across. The yellow tubular flowers surrounded by the red bracts make this plant very showy. Twin berry starts blooming in spring through midsummer and there may be sporadic fall blooming.

Fruit: The fruit ranges from very tiny to ½ inch (6 – 12 mm) diameter black berry containing several small tan seeds.

Site Ecology: Grows in sun to part shade, needs to be regularly watered to look good, but seems to have a degree of drought tolerance.

Natural Significance: Twinberries also attract butterflies and hummingbirds, for the nectar, and a wide variety of other birds that eat the fruit.

Ethnobotanical Use: Decoction of bark taken for cough. A Poultice of chewed leaves was used on itch, boils and gonorrheal sores and bark used for sores. Infusion of berries used as a cathartic and emetic to cleanse the body. Fresh juice of berries or infusion of inner bark used in sore eyes. Mashed berries boiled to make a purple paint, as a dye for basketry, and as face paint for dolls. There were additional uses, but these are the main one. The fruits are edible but only consumes during tough food times as they did do not taste very good.

Commercial Use: The combination of glossy green leaves, yellow flowers and shiny black berries make it garden worthy, and not only is it attractive, it is easy to grow. Twin berry is often used in wetland restoration projects.

Propagation: Easy to propagate by seeds. The germination percentage is about doubled if seed treated with gibberellic acid before planting.

Remarks: Five species of *Lonicera* occur in the Sierra Nevada; all have flowers in pairs with a swollen base on one side of each flower. The vines are referred to as honeysuckle and the shrubs are called twinberries.



***Lupinus albifrons* var. *albifrons* – Silver Bush Lupine**

Lupinus is from the Latin word **lupus** for "wolf," alluding to the belief that these plants robbed the soil, which is the opposite of the truth. *Albifrons* means white-fronded.

Note: See remarks below. The Knight's Ferry plants is the specie describe herein. I am unsure of any others. If you include the "any others" in your collection, use this description but label the pictures as Lupine ssp.

Plant Family: Fabaceae – Legume Family

Distribution: North and South Coast Ranges, Sierra Nevada Foothills, and central Western California; from sea level – 4,300 feet (0 – 1,500 meters) elevation. This is a very common lupine.

Plant Communities: Chaparral, Valley Grassland, Sagebrush Scrub, Yellow Pine Forest and Central Oak Woodland.

Habitat: Dry open meadow, prairies, and forest clearings.

Size: 3 – 5 foot (100 – 160 cm) erect shrub

Bark/Trunk/Twigs: Has a distinct green-silvery trunk

Foliage: The 6 – 10 silvery-white leaflets are oblanceolate, 1/3 – 1 1/4 inches (1 – 3 cm) long, and whorled around a 3/4 - 2 inch (2 – 5 cm) long petiole.

Flowers: 3 – 6 inch (1 1/4 - 2 1/2 cm) spikes that range from purple to magenta colors; bloom time is March – June. Really a stunning showy array when a hillside of Silver Bush Lupine is blooming.

Fruit: In 1 1/4 - 2 (3 – 5 cm) pods with 4 – 9 pea-like seeds in each pod that are yellow with dark mottles; pod twist and rupture laterally dispersing the seeds.

Site Ecology: Full sun, well drained soils, a variety of sandy to rocky places. Plant is drought tolerant and too much water will shorten its life or worse.

Natural Significance: Toxic to livestock, especially to sheep. As a legume, lupines naturally fix nitrogen in the soil. When blooming, butterflies and other pollinators are attracted to plant.

Ethnobotanical Use: Decoction of plant taken and used as a steambath for stomach troubles. Flowers used in wreaths for the Flower Dance performed at the Strawberry Festival in May.

Commercial Use: Works great in a xeriscape garden and is an excellent small screen planting in a garden where water is controlled.

Propagation: Many Lupines need seed treatment, scarification, stratification, inoculation, before germination. After treatment, seed propagation is relatively easy.

Remarks: Jepson lists 97 different species and numerous subspecies. Specie identification is difficult, to say the least. There are five varieties of silver lupine.



***Madia elegans* – Tarweed**

Madia is from the native Chilean name **Madi** for the species *Madia sativa* and *elegans* means elegant.

Note: *Madia elegans*, which has 4 subspecies, is used for the description below.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: California Floristic Province, Great Basin, to Northern Oregon and Baja, California; below 11, 600 feet (3,350 meters) elevation

Plant Communities: Grows in Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Subalpine Forest, Alpine Fell-fields

Habitat: Dry, open, usually grassy places, often along roadsides and open forests and non-irrigated pastures.

Size: This small herbaceous plant ranges from 8 – 45 inches (20 – 120 cm) tall.

Bark/Trunk/Twigs: An annual strongly aromatic, branched and sticky stem; often very leafy and hairy in lower portions of plant. The stickiness is caused by presence of glands in the stems.

Foliage: Generally opposite below and alternate above, linear to lanceolate with margins smooth to slightly toothed; $\frac{3}{4}$ - 8 inches (2 – 20 cm) long.

Flowers: A combination of yellow ray and disk flowers in open, rounded to flat top cymes (a flower cluster in which each flower stem ends in a single flower and other flower stems form below and to the side), yellow in color and blooming from July – September. The rays have a basal maroon blotch. The radiate flowering heads are solitary on long stems, and are both terminal and in the leaf axils.

Fruit: The seed is a 2.5 – 2 mm flattened achene that is black to dark brown with a pappus (feathery hairs to help disperse the seed).

Site Ecology: Dry, infertile soils, full sun, grow in serpentine soils.

Natural Significance: Tarweed is a source of nectar for numerous pollinators.

Ethnobotanical Use: Seeds processed and used flour, eaten alone, or mix with Manzanita berries, acorns, and pine nuts and eaten.

Commercial Use: Bee keepers seek out *Madia* fields as tarweed honey is very good. I don't know if I'd plant this one in a garden.

Propagation: Nothing noted but probably by seed.

Remarks: There are 21 species native to North and South America, 11 of which are native in California. One source stated that all the subspecies of *Madia elegans* have been consolidated under a single name. Tarweed is often an indicator plant that a range has been overgrazed.

Mahonia aquifolium – Oregon Grape

Mahonia is for B.M. Mahon, an American horticulturalist (1775 – 1816). *Aquifolium* is the classical name for holly, now under the genus *Ilex*, but applied to the holly family as Aquifoliaceae.

Plant Family: Berberidaceae – Barberry Family

Geographical Distribution: California Floristic Province, Modoc Plateau, to Canada, Southeast Alaska, Western Great Plains and Northern Mexico; less than 7,260 feet (2,200 meters) elevation

Plant Communities: Chaparral, oak woodland and coniferous forest, particularly Douglas Fir forests

Habitat: Moister slopes and canyons of above noted communities.

Size: A spreading shrub 3+ – 16.5 feet tall (1 – 5 meters) tall by 6 feet (2 meters) wide

Bark/Trunk/Twigs: Spreading to erect, branching, spiny or not, sometimes vine-like; inner bark, wood generally bright yellow and outer bark grayish brown to purple.

Foliage: Petioled leaves are pinnately compound from 3 – 9 ½ inches (8 – 24 cm) long with 5 – 9 leaflets per leaf and from ¾ - 3 inches (2 – 7 ½ cm) long by ½ - 2 ¾ inches (1.5 – 4.5 cm) wide. The evergreen leaf shape is round to elliptic and ranging from flat to wavy with a spine tipped serrate margin. The leaves resemble holly. Foliage turns red in fall.

Flowers: In clusters of 30 – 60 yellow flowers growing upright on the plant, quite attractive.

Fruit: The round fruit is purple with a waxy covering and about a ½ inch (1.25 cm) in diameter.

Site Ecology: Prefers medium to coarse textured soils, drought tolerant, full sun to shade tolerant

Natural Significance: Fruit serves as a food source for browsing wildlife.

Ethnobotanical Use: Decoction and infusions of roots, bark, stems and leaves taken as a medicine for all kinds of sickness. The fruit was eaten extensively. Parts of the plant were used for dyes.

Commercial Use: Berbamine, found in Oregon grape, kills bacteria on contact. Recent studies indicate that *M. aquifolium* contains a specific multidrug resistance pump inhibitor (MDR inhibitor) named 5'-methoxyhydnocarbin (5'-MHC) which works to decrease bacterial resistance to antibiotics and antibacterial agents. Even better, it improves immune function, and as an herbal medicine it is used to treat chronic skin disease, problems such as psoriasis, eczema, and acne. Used by florists as greenery in floral arrangements.

Propagation: Available as a bare root and/or container plant in nurseries, and can also be propagated by cuttings and seeds.

Remarks: There are 8 different species of Oregon Grape and 3 varieties in *M. aquifolium* but there is not total agreement on this. There have been numerous cultivars developed from these species. Oregon Grape is the state flower of Oregon.



Malvella leprosa – Alkali Mallow

Plant Family: Malvaceae – Mallow Family

Geographical Distribution: Wide spread through the following states: AZ, CA, CO, ID, KS, NM, NV, OK, OR, TX, UT, WA. In California mostly in the Great Central Valley but also along both the North and South Coast, the desert in the Modoc Plateau, to 6,000 feet (1,800 meters) elevation.

Plant Communities: Occurs in many plant communities but especially wetland and riparian.

Habitat: Inhabits many plant communities in semi-arid to arid regions, but also orchards, vineyards, agronomic crops, especially grains and cotton, pastures, roadsides, landscaped areas, and gardens. Often grows on moist, alkaline to saline soils.

Size: A prostrate to decumbent (mostly lying flat on the ground but the tip curve upward) from 4 – 16 inches (10 – 40 cm) high.

Bark/Trunk/Twigs: Perennial herbaceous plant has a densely white star like hairs some bristly, some scale-like on its branches. Vertical roots deep (more than 18 inches (46 cm)). Horizontal roots long, creeping, 6 – 8 inches (15 - 20 cm) below the soil surface and capable of producing new shoots. Fragmented roots can generate new plants.

Foliage: The leaf blade is ½ - 1 ¼ inches (1–3 cm) across, round or triangular, asymmetrical and toothed with a margin wavy.

Flowers: the cream colored to yellow flowers appear from May to September and are cup shaped with 5 petals

Fruit: The fruit is disk shaped and divided into several segments that separates into 6-10 triangular segments (mericarps). Segments are dark brown

Requirements: Grows in full sun, very drought tolerant but also thrives in high water table areas that are saline-alkaline.

Natural Significance: Reported to be toxic to sheep and perhaps other livestock

Ethnobotanical Use: Root used for "dysentery, diarrhea, inflammation of the bowels, burns, etc

Commercial Use: It is a weed, but a good indicator plant of saline and high water table soils.

Propagation: Reproduces by seed and vegetatively from creeping roots.

Remarks: Alkali Mallow is considered a noxious weed by the California Department of Food and Agriculture.



Mentzelia laevicaulis – Blazing Star

Mentzelia is after Christian Mentzel or Christianus Mentzelius (1622-1701), a 17th century German botanist and *laevicaulis* means smooth stemmed. The common name resulted when the Mt. Hamilton observatory thought they saw the plant in a constellation –not.

Plant Family: Loasaceae – Loasa or Stick-Leaf Family

Geographical Distribution: Southeastern British Columbia to Southern California and east to Utah at an elevation of less than 9,000 feet (2,700 meters).

Plant Communities: Yellow pine forest, red fir forest, lodgepole forest, subalpine forest, foothill woodland, chaparral, and valley grassland

Habitat: Sandy to gravelly slopes and plains in arid areas, including washes and roadcuts

Size: 1 – 3 feet (30 – 90 cm) tall

Bark/Trunk/Twigs: Initially a flat basal rosette from which grows stout shiny white stems

Foliage: Leaves are 4 – 12 inches (10 – 30 cm) long, narrowly lanceolate with very rough, and irregularly toothed margins.

Flowers: Large, 2 – 5 inch (2.5 – 12.5 cm) wide, star-like lemon yellow flowers on ends of stout stems. Five petals that are also lanceolate shaped. The center of the flower is filled with yellow filamentous stamen. Bloom time from June to September.

Fruit: Capsule fruit that contained winged seeds, seeds have a rough or granular surface.

Site Ecology: Well-drained soil, full sun and drought tolerant.

Natural Significance: Nothing noted

Ethnobotanical Use: Roots used for rheumatism, arthritis, chewed for thirst prevention, for earaches, mumps, measles and smallpox. Decoction of leaves applied as a lotion for certain skin diseases and a variety of other uses.

Commercial Use: These would add fabulous color to any garden and be especially appropriate in a xeriscape setting.

Propagation: By seed

Remarks: There are many species of *Mentzelia* in the West, called stick-leaf because the barbed hairs on the leaves stick to your clothes. There are two varieties of blazing star: var. 'laevicaulis' and var. 'parviflora'.



Metasequoia glyptostroboides – Dawn Redwood

Metasequoia means sequoia like and *glyptostroboides* means resembling a carved cone.

Plant Family: Cupressaceae – The Cypress Family

Geographical Distribution: Dawn redwood grows naturally only in Sichuan and Hubei provinces in west-central China.

Plant Communities: Native to China

Habitat: Riparian habitats on valley floors and in moist ravine bottoms, on acidic, montane yellow-earth soils in regions with moderate climate. It is a relic of a former worldwide distribution. The tree grows along rivers and around rice paddies where it is planted for soil stabilization.

Size: Grows to 50 - 90 feet tall (15 - 27 meters) by 15 – 20 feet wide (4.5 – 6 meters) trees grow very rapidly when young, especially in ideal environments like California's.

Bark/Trunk/Twigs: Reddish bark when young, older trees have dark brown fissured bark and rugged fluted trunk bases. Twigs may be deciduous or not; non-deciduous twigs are slender, light reddish brown in color, smooth, with short, buff colored, opposite, cylindrical buds protruding at right angles; deciduous twigs are two-ranked, resembling pinnately compound leaves.

Foliage: Deciduous pale green needles that turn light bronze in autumn, opposite on branchlets, linear flat ½ inch long (1 ¼ cm).

Flowers: Monoecious; males, light yellow brown, in narrow hanging clusters up to 12 inches long (30 cm); females, yellow-green, solitary and erect with fused scales.

Fruit: Monoecious with male and female cones on same tree. Male cones light yellow-brown in narrow hanging clusters up to 12 inches (30 cm) long, and female cones yellow-green and solitary; elongated to round cone ½ - 1 inch long (1 ¼ - 2 ½ cm); glaucous blue when young & turning brown to dark brown when mature. Male cones only produced on sites with hot summers.

Site Ecology: Full sun, regular water and well drained, slightly acidic soil. Avoid planting in areas that tend to frost, as early growth can be damaged by freezing temperatures.

Natural Significance: There are only about 5,000 trees in their natural Chinese habitat. *Metasequoia* is heavily protected, but trees planted worldwide has put the small forest at risk due to extensive cone harvesting and therefore no reseeded.

Ethnobotanical Use: Native to the Sichuan-Hubei region of China

Commercial Use: Has become a popular ornamental tree. There are at least five cultivars that have been developed: 'national', 'Sheridan spire', 'gold rush', 'emerald feathers', and 'Ogon'. All the cultivars tend to be slower growing and smaller. Planted extensively for reforestation in China.

Propagation: Can be propagated by seed from female cone or by cuttings.

Remarks: Thought to be extinct until discovered in 1941 by Chinese botanist, T. Kan in east Szechwan, China; the only species in its genus. Tree looks like bald cypress (another deciduous conifer) and coast redwood, but opposite buds on persistent limbs separate dawn redwood from bald cypress (*Taxodium distichum*) and deciduous foliage is unlike the evergreen coast redwood. To illustrate the noteworthy botanical position of the dawn redwood, an organization named *metasequoia.org* has been established. The largest Dawn Redwood in California is less than 70 years old and located in Palo Alto. It has a 5 foot diameter trunk (1.5 meters) and is 88 feet tall (26.5 meters). There is a Dawn Redwood specimen tree behind the theatre building on the Modesto Junior College east campus.



***Mimulus aurantiacus*. – Sticky or Sierra Monkey Flower**

Mimulus may come either from the Greek mimos, an ape, because of a resemblance on the markings of the seeds to the face of a monkey, or from the Latin mimus, an actor or mimic, because the flower is like the mouthpiece of one of the grinning masks worn by classical actors. *Aurantiacus* means orange, orange-yellow or orange-red.

Plant Family: Scrophulariaceae – Figwort Family

Geographical Distribution: California Floristic Province

Plant Communities: Grows in Chaparral, Mixed-evergreen Forest, Northern Oak Woodland and Yellow Pine Forest.

Habitat: It a tough plant that can be found on slopes, banks, rocky areas, or just growing out of a rock!

Size: Spreading subshrub from 18 – 54 inches (50 – 150 cm) tall.

Bark/Trunk/Twigs: The long stems have main leaves that have axials with clusters of smaller leaves.

Foliage: Leaves (2 – 8 cm) long deep green sticky leaves

Flowers: Flowers come in a variety of color but mostly yellow-orange. They are tubular, about 1 inch (2.5 cm) across, and have five petals fused into lobes. Bloom time is from March – August.

Fruit: The fruit is a capsule that opens along the upper suture.

Site Ecology: Monkey flowers grow in a variety of soils, including serpentine. They are drought tolerant and do well in full sun to shade. The flowers last longer if the plants are in part to full shade. The soil needs to be well drained.

Natural Significance: Monkey flowers are nectar plants that are pollinated by bees and hummingbirds.

Ethnobotanical Use: Decoction of plant used for bladder problems, stomach aches, kidney problems, diarrhea, and as an eye wash. The flowers commonly have been used to ornament Miwok wreaths and children's hair.

Commercial Use: This plant is a great addition to any garden. It will do well in the Central Valley. It gets a little rangy, but annual pruning will make it a little fuller and not impair blooming. Too much water will kill the plant.

Propagation: Sticky Monkey flower can be started from softwood and semi hardwood cuttings and seeds. Sow the seeds indoors for faster germination.

Remarks: A new classification systems resulted in botanists moving the more woody monkey flowers from *Mimulus* to *Diplacus*. Their classification is in some disarray. The herbaceous monkey flowers that need more water are still classified as *Mimulus*, while the woody ones are now classed as *Diplacus*. In the wild this plant may look rather ragged in late summer. It can be kept more attractive with occasional watering. *Mimulus* is probably a better garden plant.



***Monardella odoratissima* – ssp. *Pallida* – Coyote Mint or Mountain Monardella**

Monardella is diminutive of Monardas, Nicolas Monardas was a Spanish physician and botanist in the 16th century. *Odorata* means fragrant, sweet-smelling.

Plant Family: Lamiaceae – Mint Family

Geographical Distribution: High Inner and Outer Coast Ranges, High Cascade Range, Modoc Plateau, High Sierra Nevada Mountains, and White and Inyo Mountains; 3,000 – 11,400 feet (900 – 3,500 meters) elevation. Also found in Oregon, Washington, and Nevada

Plant Communities: Grows in Sagebrush Scrub, Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, and Subalpine Forest

Habitat: Dry, but can be wet, rocky forest openings

Size: Forms large mats about 1 – 1 ½ feet (30 – 45 cm) tall

Bark/Trunk/Twigs: A gray aromatic plant with erect leafy stems that are generally four angled.

Foliage: Leaves 1/2 – 2 inches (15–50 mm) long by ¼ - ½ inches (5–18 mm) wide, lanceolate to ovate, entire, sparsely to densely hairy, green to ash-gray, generally purple-tinged.. The small opposite leaves are very aromatic

Flowers: White to lavender to pink flowers in dense heads on the ends of stems and bloom from June – August; flower heads range from 1/3 – 1 inch (1 – 2.5 cm) in diameter.

Fruit:

Site Ecology: Full sun to partial shade, sandy soils

Natural Significance: Nothing noted

Ethnobotanical Use: Decoction of stems and flower heads taken for colds and fever, indigestion, and gas pains. Plant used to make a tea. Stem placed in hat to provide pleasant smell before a journey. Fishing equipment wiped with plant to remove odors. Mild doses of the plant were used for tranquility.

Commercial Use: Probably not too adaptable to the lower elevation California environments.

Propagation: Can be grown by cuttings, division or seed. Seed needs no special treatment.

Remarks: Hybrids are common, sometimes more so than individual species, thus making exact identification very difficult.



Muhlenbergia rigens – Deergrass

Plant Family: Poaceae – The Grass Family

Geographical Distribution: Deer grass is found from Shasta County in northern California, south throughout California into New Mexico, Texas, and Mexico; under 7,000 feet (2,100 meters). It is not found naturally in northwestern California and the northern and central Coast Range.

Plant Communities: Grows in valley grasslands, valley woodlands, foothill woodlands, riparian woodlands,

Habitat: Found along streamsides,, meadows, pastures,

Size: Large bunchgrass that may reach 5 feet in height (1.5 meters) including the flowering spikes.

Bark/Trunk/Twigs: Herbaceous subshrub with round, hollow stems; swollen at nodes, solid. The tightly packed stems resemble a pin cushion.

Foliage: Perennial narrow blades 4 – 20 inches long (10 – 50 cm) and 1/16 – 5/16 inches wide (1.5 – 8 mm);

Flowers: 6 – 24 inch long plumes (15 – 60 cm) rise above the plant. Spikelets are densely covered with seeds. Almost looks like a whip.

Fruit: In an achene and seed looks somewhat like a small grain, reddish-brown.

Site Ecology: Deep root system enables deergrass to tolerate drought conditions. Does not like poorly drained conditions and will thrive in full sun to partial shade.

Natural Significance: Dense patches provide cover for deer during fawning (humm, I wonder how it got its common name?). Young tufts are grazed by deer, horses, and cattle; but become unpalatable when aged. Animals eagerly seek out new growth *Muhlenbergia* after a burn. Two butterflies lay their eggs in deergrass, as it provides food for the larvae. Many songbirds feed on deergrass seeds. Massive numbers of *Hippodamia convergens*, the lady bug, overwinter in deergrass clumps.

Ethnobotanical Use: Used for making baskets by Native Americans.

Commercial Use: It has been used extensively in garden landscaping. In the garden, periodic summer water will make plant more attractive.

Propagation: Regenerates easily by seed due to its huge seed production.

Remarks: Looks like a smaller version of pampas grass. There are 160 species of *Muhlenbergia* worldwide.



Nicotiana glauca - Tree Tobacco

Nicotiana was named after Jean Nicot who introduced tobacco to France in the late 16th century and *glauca* means with a whitish bloom, sea green or bluish green. (non-native)

Plant Family: Solanaceae - The Nightshade Family

Geographical Distribution: Central California, southern Arizona, west Texas, into Mexico; found at elevations below 3,600 feet (1,100 meters).

Plant Communities: Grows in valley grasslands, valley and foothill woodlands, chaparral and riparian woodlands.

Habitat: This opportunistic plant is found along roadsides, slopes, washes, and alongside water ways; often in disturbed areas.

Size: Generally a small tree up to 26 feet (8 m), however as a maturing plant it is more shrub like in appearance.

Bark/Trunk/Twigs: Wood is very soft and is both glabrous and glaucous.

Foliage: Leaves 2 - 7 inch long (5 - 17.5 cm), smooth, ovate, and gray green

Flowers: Yellow trumpet shaped flowers 1 ½ - 2 inches (3.75 - 5 cm); blooms from April to November.

Fruit: A 1/3 - 2/3 inches (7 - 15 mm) wide capsule

Requirements: Needs full sun to partial shade

Natural Significance: The tubular flowers are a good indicator that this is a hummingbird plant; hummingbirds and Sphinx moths love them.

Ethnobotanical Use: All parts of the plant, except the roots, were used for medicinal purposes by the Native Americans. Tree tobacco got its name because it was dried and used as a smoke.

Commercial Use: Considered to be quite invasive; an example of another plant out of place. However, tree tobacco and prickly pear cactus are being investigated as biofuel (ethanol) producers for growing in harsh environmental areas.

Propagation: Can be easily propagated from seed or cuttings, but who would want to; besides you should try to quit smoking.

Remarks: Native to Boliva and Argentina but has become a common roadside plant. Tree tobacco contains the toxins nicotine and anabasine, the latter being very toxic to aphids. An effective organic aphid insecticide can be made by steeping tree tobacco in water and spraying the solution on affected plants. The plant is also very toxic to humans and livestock.



Oenothera elata – Evening Primrose

Oenothera is an unusual moniker, ass catcher, the Greek name for another plant. *Elata* means tall or high.

Plant Family: Onagraceae – Evening Primrose Family

Geographical Distribution: The three subspecies are found in Western states from Montana westward and in Kansas, Oklahoma, and Texas. The subspecies common to the Sierra Nevada, *O. e. ssp. hirsutissima* grows between 3,000 – 9,000 feet (900 – 2,727 meters) in the mixed conifer and upper montane belts.

Plant Communities: This primrose is found growing naturally from the coast to 9,000 feet (2,727 meters) elevation; this includes the coastal strand, mixed evergreen forest, and Northern Oak Coastal Sage Brush communities.

Habitat: Usually prefers a moist habitat, but will also grow in a drier environment. Evening primrose is a biennial or a short lived perennial.

Size: Can reach 6 feet (1.8 meters) tall, but normally less, like 3 – 4 feet (0.9 – 1.2 meters) tall.

Bark/Trunk/Twigs: This herbaceous plant forms a rosette of basal leaves, then sends up numerous upright stems that are topped by

Foliage: Leaves are cauline (borne on a stem, not basal), 4 – 9 inches long (10 – 22.5 cm), oblanceolate to lanceolate shaped

Flowers: Flower colors vary from yellow to orange and blooms from June through September.

Fruit:

Requirements: Grows best in medium to coarse textured soils, needs full sun, but is a medium to high water use plant. *O. elata* does not tolerate saline/alkaline soils.

Natural Significance: Both native bees and the Sphinx moth visit the flowers of the primrose.

Ethnobotanical Use: The Zuni people applied dried powder of the flower as a poultice for swelling.

Commercial Use:

Remarks: There are two or three subspecies, depending on the source you reference. They include *hookeri*, and *hirsutissima*, (Jepsen) and maybe *elata*. *Hookeri* is a coastal subspecies while *hirsutissima* is more inland.

Opuntia basilaris - Beavertail Cactus (Prickly Pear Cactus)

Opuntia is Greek and means thorny plant and *basilaris* means relating to the base (of the plant).

Plant Family: Cactaceae – Cactus Family

Geographical Distribution: Southern Sierra Nevada, Tehachapi Mountain Area, South Eastern San Joaquin Valley, San Gabriel Mountains, San Bernardino Mountains (and adjacent South Coast), Eastern Peninsular Ranges, South East of Sierra Nevada, and Mojave Desert between 400 – 7,250 feet (120 – 2,200 meters) elevation. Distribution outside California: Utah, Arizona, and Mexico.

Plant Communities: Grows in desert, chaparral, and pinyon/juniper woodland.

Habitat: Grows naturally in a hot, dry desert-like environment.

Size: Grows to about 2 feet (60 cm) tall, but fleshy, flattened pads grow atop each other making plants up to 8 – 10 feet (2.5 – 3 meters) tall.

Bark/Trunk/Twigs: This cactus is a fleshy plant having no true bark.

Foliage: The plant is leafless. A single plant may consist of hundreds of fleshy, flattened pads. These are more or less blue-gray, depending on variety, growing to a length of 1 foot (30 cm) and are maximum 6 inches (15 cm) wide and ¼ - ½ inch (1 to 1.5 cm) thick. They are typically spineless, but have instead many small barbed bristles, called glochids, that easily penetrate the skin.

Flowers: The pink to rose colored flowers are most common; however, a rare variety of white and even yellow flowers also exist.

Opuntia basilaris blooms from spring to early summer; from February – June.

Site Ecology: This plant is very drought tolerant, prefers full sun and does well on very sandy to gravelly soil. Under a cultivated regime it needs excellent drainage.

Natural Significance: The cactus is of special value to native bees as, it is recognized by pollination ecologists as attracting large numbers of native bees. Although not a major U.S. crop, prickly pear cactus has significant value as an ecological plant, adding to wildlife habitat, ecosystem structure, and biodiversity.

Ethnobotanical Uses: Buds cooked and dried for indefinite storage, seeds ground into mush, fruit cleaned of thorns, dried and eaten, and joints boiled and mixed with other foods or eaten as greens.

Commercial Uses: The cactus is a major agricultural commodity in Mexico, with significant acreage devoted to crop and forage. It is grown as a vegetable, and the pads taste something like green beans. Different prickly pear cactus species produce flowers in an array of colors. The resulting fruit can be eaten raw or cooked into jams and preserves.

Propagation: A joint (this is a piece of the plant not an item that can be smoked) broken from a plant will quickly root in dry sand.

Remarks: The gray-green stems, low growth, and brilliant flowers, which often nearly cover the plant, make this a popular ornamental in hot, dry climates. *Opuntia* with flat joints are called Pricklypear; in the Southwest, if the fruits are juicy and edible, they are called tuna by people of Spanish-American heritage.



Opuntia phaeacantha – Prickly Pear

Opuntia is Greek and means thorny plant and *phaeacantha* means

Plant Family: *Cactaceae* – Cactus Family

Geographical Distribution: In California south Coast Ranges, peninsular ranges, San Bernardino mountains, and desert mountains between 150 – 7,300 feet (45 – 2,220 meters) elevation. Also grows in these states: AZ, CO, KS, NM, NV, OK, SD, TX, and UT.

Plant Communities: Desert, chaparral, pinyon/juniper woodland

Habitat: Grows naturally in a hot, dry desert-like environment.

Size: Prickly pear forms dense thickets up to 2 - 4 feet (0.6 1.3 meters) tall and wide.

Bark/Trunk/Twigs: This cactus is a fleshy plant having no true bark. It is made up of an array of obovate shaped pads that tend to be upright and spread. There areas on the pads called areoles that contain with two kinds of spines

Foliage: Does really have a true leaf but, rather hundreds of fleshy, flattened pads. These are more or less bluish-green, depending on variety, growing to a length of 1 foot (30 cm) and are maximum 6 inches (15 cm) wide and ¼ - ½ inch (1 to 1.5 cm) thick. This species tends to have more numerous and thicker spines than other *Opuntia* species.

Flowers: Flowers are showy, and vary from yellow to orange to pink often with a red center, up to 3 inches (7.5 cm) wide, opening in April and May.

Fruit: Fruit fleshy and juicy, up to 2 ¼ inches (5.75 cm) long, purplish, flattened to concave at the apex, tapering to the base. The fruits contain many small seeds.

Requirements: This plant is very drought tolerant, prefers full sun to partial shade and does well on very sandy to gravelly soil. Under a cultivated regime it needs excellent drainage.

Natural Significance: The seeds are eaten by small mammals, nectar moths and butterflies feed on the flowers and it is the larval host of the Yucca giant skipper butterfly. In Texas javelinas, coyotes, and pack rats relish the fruit.

Ethnobotanical Use: Poultice of heated plant applied to breasts to encourage the flow of milk. Plant used to make a drink. Dried fruit pounded into cakes for storage or pieces of cake eaten without further preparation. Fruits and plant flesh eaten fresh. Plant used to make fruit juice. Dried seeds and ground into flour.

Commercial Use: In the landscape plant can be an accent tree or shrub, blooms are ornamental and showy. People consume the fruit.

Propagation: Very easily by pad segments

Remarks: This species has a very wide range, and up to ten or more varieties have been described, making exact identification confusing. Usually the varieties are distinguished by pad size, spine distribution on the pad, spine color and size, and fruit length.



Oxalis oregano – Redwood Sorrel

Oxalis is from the Greek **oxys** for sharp, sour, referring to the pleasantly sour taste of the leaves and stem. *Oregano* means of or from the state of Oregon, or the old Hudson's Bay territory of Oregon, which included the present-day states of Oregon and Washington.

Plant Family: Oxalidaceae – Oxalis Family

Geographical Distribution: California north coast, central coast, San Francisco Bay Region, to state of Washington at less than 3,300 feet (1,000 meters) elevation.

Plant Communities: Grows in moist coniferous forests (Redwood and Douglas Fir Forests)

Habitat: Almost exclusively occupies moist, shady forest floors.

Size: This herbaceous plant is less than 1 foot (30 cm) tall

Bark/Trunk/Twigs: Fleshy perennial the creeps via rhizomes; it is not a woody plant.

Foliage: Herbaceous, clover-like leaves that are bright green on surface and purplish colors underneath. Leaves clustered at end of rhizomes and comprised of 3 leaflets that are heart shaped and about 1 ½ inches (4 cm) across.

Flowers: Flowers range from white to pink and are about 1 inch (2.5 cm) in diameter. Flowers have purplish streaks and have 5 petals and 10 stamen; blooms from April - September.

Fruit: The egg-shaped seed capsules have 5 chambers, each containing an almond-shaped seed.

Site Ecology: Needs moisture and a shady site. The leaves will fold under with prolonged exposure to the sun. They come back when shaded.

Natural Significance: Nothing noted

Ethnobotanical Use: Eaten by Native Americans in small quantities. Not consumed in large amounts due to plant's oxalic acid content. Medicinally the plant was used for sore eyes and skin ailments.

Commercial Use: This is a useful understory plant in a shade garden. Beware, it can be invasive.

Propagation: Best way to propagate is to divide and plant clumps. The rhizomes will root easily in a shady, moist fertile soil.

Remarks: Redwood sorrel is an invasive plant. It should be contained in the garden or planted in a container.



***Penstemon heterophyllus* var. *heterophyllus* - Foothill Penstemon**

Penstemon is from the Greek words pente, five, and stemon, stamen, for the fifth stamen, referring to the staminode. *Heterophyllus* means that the leaves are different on the same plant.

Plant Family: Scrophulariaceae – Figwort Family

Geographical Distribution: Northwestern, Central Western, and Southwestern California, Cascade Range foothills, Sierra Nevada foothills, and the Sacramento Valley; from sea level – 5,280 feet (0 – 1,600 meters) elevation.

Plant Communities: Grows in Chaparral, Southern Oak Woodland and Yellow Pine Forest.

Habitat: Grasslands, forest openings, dry rocky slopes, and hillsides

Size: 10 inches – 4 feet (25 – 120 cm) tall by 2 feet (60 cm) wide.

Bark/Trunk/Twigs: Lower portions of mature plant are branched and woody.

Foliage: Narrow, linear, lance shaped medium green leaves from 2 – 4 inches (5 – 10 cm) long

Flowers: Very showy flower display of gentian blue to magenta, tubular shaped flowers about 1 ½ inches (4 cm) long with bloom time from April – July.

Fruit: No citation

Site Ecology: Drought tolerant, full sun, and well drained soils, however, this is one of the more garden adaptable penstemons.

Natural Significance: This is an important hummingbird plant and also attracts butterflies.

Ethnobotanical Use: Nothing noted

Commercial Use: Foothill Penstemon is a prolific bloomer and very showy; thus it has many applications in a garden setting. The renowned rock gardener Geoffrey Charlesworth wrote that “penstemons are the glory of the North American

flora. . . . If you value the alpine look, the showy shrub, the glorious border plant, the wild garden colonizer, the difficult rarity, you can find them all within this genus.”

Propagation: Propagates best when seeds are sown in the fall.

Remarks: This herbaceous perennial is very long lived, up to 30 years. There are three varieties and numerous cultivars of foothill penstemon; cultivars include: 'Electric Blue', 'Margarita BOP', 'Heavenly Blue', 'Jean Grace', 'True Blue', and 'Züriblau', and 'Blue Springs'.



***Philadelphus lewisii* var. *californicus* - Wild Mock Orange**
Philadelphus is Greek for Ptolemy Philadelphus, Greek king of Egypt.

Plant Family: Philadelphaceae – The Mock Orange Family

Geographical Distribution: Grows from western Canada into California's northern Cascade and Coast Ranges and throughout the Sierra Nevada; below 4,500 feet (1,400 meters).

Plant Communities: Grows in yellow pine forests, foothill woodlands, closed cone pine forests, north coast coniferous forests, redwood forests, Douglas fir forests, and mixed evergreen forests.

Habitat: Mock orange is most often found on slopes and canyons of woodlands and forests, especially forest openings

Size: Shrub that can grow to 10 feet tall (3 meters)

Bark/Trunk/Twigs: This loosely branched shrub has twigs that are red-brown and turn gray with age and are glabrous to hairy. Bark peels as narrow strips or rectangles.

Foliage: Deciduous, opposite, simple leaves that are 1 ¼ - 3 ½ inches long (3 – 9 cm), green with 3 or 5 veins originating from leaf base. Margin may be entire or toothed.

Flowers: Inflorescences are borne on terminal shoots, in clusters of about 6, and very showy white color with many stamen. Flowers are about 1 inch wide (2.5 cm) and produced from late spring into early summer. The name mock orange came about due to the citrus fragrance of its flowers.

Fruit: A brown capsule less than ½ inch (1.25 cm) long that becomes woody and contains many seeds.

Site Ecology: Grows in sun to partial shade, adaptable to many soil types but prefers heavier soils. Its moisture needs range from drought tolerant to occasional water.

Natural Significance: Mock orange tends to be sparse plant

Ethnobotanical Use: Native Americans used the slender shoots to make arrow shafts.

Commercial Use: Widely used in landscape planting, especially cultivars such as 'Goose Creek'. *P.*

microphyllus has been used in breeding programs for its scent. Its best use in the garden seems to be as an accent plant or in an informal hedge.

Propagation: Mock orange can be started from seed that receives no special treatment or from cuttings taken from the tip in the early summer that in place in vermiculite under mist.

Remarks: There is a southern desert species, little leaf mock orange, *P. microphyllus* that has smaller leaves and flowers and is much more aromatic. Usually occurs as an individual plant in the forest. It is quite easily recognizable when in bloom, but there is great variation in leaf characteristics. This is the state flower of Idaho.

Phoradendron macrophyllum – Big Leaf Mistletoe

Phoradendron: from the Greek phor, "a thief," and dendron, "tree," hence "tree thief" because it draws nourishment from its host tree. *Macrophyllum*: means large-leaved

Plant Family: *Viscaceae* – Mistletoe Family

Geographical Distribution: Coast Range, Great Valley, Sierra Nevada Foothills, Peninsular Range, Transverse Range, South Coast into Texas and Baja California at less than 3,960 feet (1,200 meters) elevation.

Plant Communities: Chaparral, coastal sage scrub, mixed-evergreen forest, northern oak woodland, riparian (rivers & creeks), shadscale scrub, southern oak woodland and central oak woodland.

Habitat: Wherever trees such as those listed under requirements grow.

Size: The branches can grow up to 5 feet (1.5 meters) in length.

Bark/Trunk/Twigs: The stem is erect, green and short. It is hairy, especially near the tip.

Foliage: The leaves are opposite and thickly fleshed; obovate to elliptic to round shaped and range in size from 1 ¼ - 1 ¾ inches (3 – 4.2 cm) long by ½ - 1 inch (1.5 – 2.3 cm) wide. Generally the leaves are smooth but if hairy the hairs are sparse.

Flowers: It is dioecious, having pistillate and staminate flowers on separate plants. The flowers are on jointed spikes arising from the leaf axils up to 1 ¼ inches (3+ cm) long. There are about 12 flowers per pistillate joint and about 20 per staminate joint. Flowering period is from December to March.

Fruit: The fruit is a glabrous white berry sometimes tinged with pink and about 3/16" in diameter. Seed are small, 4 – 5 mm, and white to pinkish tinged color.

Requirements: A parasite on woody dicots such as *Fraxinus*, *Juglans*, *Platanus*, *Populus*, *Robinia*, and *Salix*; but not *Quercus*.

Natural Significance: A broad array of animals depend on mistletoe for food, consuming the leaves and young shoots, transferring pollen between plants, and dispersing the sticky seeds.

Rather than being a pest, mistletoe can have a positive effect on biodiversity, providing high quality food and habitat for a broad range of animals in forests and woodlands worldwide.

Ethnobotanical Use: The sticky juice of mistletoe berries was used as adhesive to trap small animals or birds. Mistletoes were widely used to treat a variety of health disorders in Native Americans.

Commercial Use: Mistletoes are being researched as a cancer cure. Mistletoe is sold extensively during the Christmas holiday season.

Propagation: The seed is surrounded by a gummy, sticky substance which allows it to adhere to the branches of host trees. Germinating seeds produce a root-like haustorium that penetrates the host tissue to absorb nutrients and establish a new plant.

Remarks: Big Leaf Mistletoe's favorite host is probably *Platanus racemosa*. *Phoradendron serotinum* ssp. *macrophyllum* is a synonym for *Phoradendron macrophyllum*.



***Phoradendron villosum* – Oak Mistletoe**

Phoradendron is from the Greek words phor, a thief, and dendron, tree, hence "tree thief" because it draws nourishment from its host tree. *Villosum* means hairy.

Plant Family: Viscaceae – Mistletoe Family

Geographical Distribution: Klamath Range, North and South Coast Ranges, Sierra Nevada Foothills, Central Valley, Transverse Range, Peninsular Range, and to Northern Oregon, Texas and Mexico; 200 – 7,000 feet (60 – 2,100 meters) elevation

Plant Communities: Valley grasslands, oak woodland, foothill woodland, mixed coniferous forest, yellow pine forest

Habitat: Oak Woodlands . . . duh

Size: Up to 3+ feet (1 meter) in size

Bark/Trunk/Twigs: Dense mass of erect stems attached to an oak tree (also found in *Adenostoma*, *Arctostaphylos* (Manzanitas), *Rhus* (Sugarbush, lemonade berry), and *Umbellularia* (Bay Trees)); hairy when young.

Foliage: Gray-green leaves about 6/10 – 2 inches (1.5 – 5 cm) long by 4/10 – 1 inch (1 – 2.5 cm) wide, obovate to elliptic in shape and usually very dense

Flowers: Both staminate and pistillate inflorescences located at internode, no real flower, but rather a cluster of yellowish color swellings on this internode growth. Bloom time is July – September.

Fruit: Small pinkish-white and translucent round berries that contain a nipple-like protrusion on its end.

Site Ecology: A living tree of the desired species.

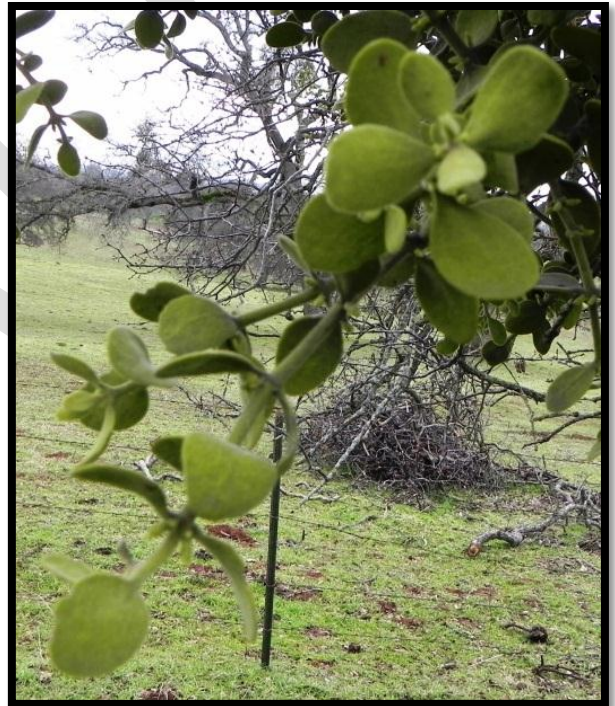
Natural Significance: The fruit is consumed by birds and spread from tree to tree in their droppings and the sticky seeds that cling to their bodies.

Ethnobotanical Use: Infusion of plant taken first two months of pregnancy to cause an abortion or as a wash on limbs affected by rheumatism. Decoction of leaves taken to bring on delayed menstruation.

Commercial Use: Nothing cited

Propagation: No sure if anyone would want to propagate this plant.

Remarks: Not a true parasitic plant because it does photosynthesize, but it does rob water and nutrients from the trees it occupies. Mistletoe can will kill entire branches that may weaken a tree and eventually cause the death of that tree.



***Phyllodoce breweri* – Red Mountain Heather**
Phyllodoce is the name of a sea nymph and *breweri*

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Found in the Southern Cascades near Mount Lassen, throughout the Sierra Nevada, and in the San Bernardino Mountains at elevations from 6,500 – 12,000 feet (1,970 – 3,640 meters).

Plant Communities: Grows in yellow pine forests, lodgepole forests, red fir forests, mixed evergreen forests, sub alpine forests, and alpine meadows.

Habitat: open sub-alpine forests and alpine meadows; moist rocky slopes

Size: Semi-prostrate, typically under 1 foot in height (30 cm), but forms extensive clusters

Bark/Trunk/Twigs: Stems are erect to prostrate and create a very busy arrangement.

Foliage: Alternately arranged, evergreen foliage measures less than ½ inch long, and appears needle-like as margins are tightly rolled under obscuring the underside of the leaf. The leaves are crowded on the stems.

Flowers: Short, terminal inflorescences contain pink to rose-colored bell-shaped flowers with stamens which extend beyond the corolla.

Fruit: spherical capsule

Site Ecology: Does best on coarse textured soil but needs a constant source of moisture.

Natural Significance: This is a high elevation wildflower that adds beauty and color to a sometimes stark environment.

Ethnobotanical Use: Flowers used for dye coloring

Commercial Use: Nothing noted.

Propagation: Red mountain heather can be started from seed with no special treatment or from cuttings or layering.

Remarks: Nearly indistinguishable from *P. empetriformis*, Cascade heather, by means other than using its native range. The latter species grows North of Mount Lassen.

Picea abies – Norway Spruce

Picea is from Latin **picea**, and means pitch-pine, and *abies* is the Latin name for silver fir.

Plant Family: *Pinaceae* – Pine Family

Geographical Distribution: Native of North and Central Europe in high elevations. Norway Spruce is naturalized in North America and is widely planted in northeastern, Pacific Coast and Rocky Mountain States. Is thought to have “escaped” in the northeast US and naturalized locally, though not considered invasive.

Plant Communities: Grows in coniferous and hardwood forests

Habitat: Tolerates acidic soils, but does not do well on dry or deficient soil. Prefers humid, cool, temperate regions.

Size: Large evergreen growing from 115 - 180 feet (35 - 55 meters) tall with a trunk diameter of up to 2 feet (60 cm). Grows fast (2+ feet/year (60 cm)) for the first 25 years under good conditions and becomes slower growing after 60 – 70 feet (18 – 21 meters) tall.

Bark/Trunk: Reddish brown, scaly.

Foliage: Needles .5 – 1 inches (1.5 – 2.5 cm), stiff 4 angled (not flat) and sharply pointed, spreading on all sides of twig from very short leafstalks; shiny dark green on all 4 sides. Needle petioles remain on branch when needle is removed.

Flowers: Insignificant as Norway Spruce is a cone bearer.

Fruit: Female cone green or reddish and from 4 – 6 inches (10 – 15 cm) long (longest of any spruce) and have bluntly to sharply triangular pointed scale tips. Cones mature to brown 5-7 months after pollination. Male cones near branch ends 2 – 3 inches (2.5 – 8 cm) long and reddish brown.

Site Ecology: Acidic soils that need some moisture; prefers cool, humid climates.

Natural Significance: Norway Spruce cone scales are used as food by the caterpillars of the tortrix moth *Cydia illutana*, while *C. duplicana* feeds on the bark around injuries or canker.

Ethnobotanical Use: Poultice of sap or gum applied for boil and abscess pains.

Propagation: By seed and there are numerous cultivars available through nurseries.

Commercial Use: Norway spruce is used for timber and paper production in Europe, where it is one of the most economically important coniferous species. Also popular Christmas tree, and used in shelter belts and forest plantations.

Remarks: Most widely planted spruce as an ornamental tree in parks, gardens and used for Christmas trees. From 1928 to 1960's it was planted on surface mine spoils in Indiana. Pictures for this tree are obtainable in front of Magnolia Elementary School in Oakdale, CA.



Picea sitchensis – Sitka Spruce

Picea is from Latin **picea**, and means pitch-pine, and *sitchensis* from Sitka Island, Alaska

Plant Family: *Pinaceae* – The Pine Family

Geographical Distribution: From southern Alaska to north western California; to timberline at 3,000 feet (915 meters) in Alaska and from sea level to below 1,200 feet (370 meters) in California. In California Sitka spruce occupies a fog bound belt within 30 miles of the ocean from Del Norte to Mendocino counties.

Plant Communities: Grows in northern coastal coniferous forests, redwood forests, Douglas fir forests and mixed evergreen forests.

Habitat: Coastal forests in fog belt, occupies an 1,800 mile (3,000 km) narrow strip of high rainfall and cool climate sites. Sitka spruce grows in wet sites like bogs, river mouths, and high rainfall environments.

Size: Mature trees range from 130 - 180 feet (40 - 55 meters) and 3 ½ - 5 feet diameter (1 - 1 ½ meters) trunks; trees live up to 800 years. Sitka spruce trees have exceeded of 300 feet (91 meters) in height with trunk diameters between 14 – 16 feet (4.2 – 4.8 meters).

Bark/Trunk/Twigs: Bark is thin and silvery gray with large exfoliating scales that look like purplish-gray potato chips. Tall columnar trunks with upswept limbs, bases are buttressed or swollen. Twigs are moderately slender, smooth and range from yellowish brown to orange brown in color.

Foliage: Short evergreen needles 5/8 – 1 inch (1.5 - 2.5 cm) long, growing on all sides of the branches like a bottle brush, stiff and sharply pointed. New growth is green but turns a darker even blue-green with age.

Flowers: Gymnosperm, not a flowering plant. Male pollen cones dark red and at end of pendulous branches. Female pollen cones in upper part of tree on rigid terminal shoots.

Fruit: Cones are 2 - 3 ½ inches (5 - 9 cm) long, cylindrical and short stalked, light orange brown and hanging at the ends of twigs.

Site Ecology: Shade tolerant and the most enduring conifer to high soil moisture content conditions; truly the tree of the temperate rainforest. Sitka spruce is readily killed by fire.

Natural Significance: Not researched

Ethnobotanical Use: Not researched

Commercial Use: Very important timber tree, producing high grade lumber, plywood, and pulp for news print. Special products include: piano sounding boards, boats, and food containers. Sitka spruce is an extremely important pulp wood tree in the Pacific Northwest.

Propagation: Stratify seed for 60 – 90 days at 40⁰ – 50⁰ F.

Remarks: World's largest spruce species. The largest recorded specimen is 320 feet (97 meters) and located in British Columbia. Sitka spruce wood has the highest strength to weight ratio of any conifer.



Pickeringia Montana var montana– Chaparral Pea

Plant Family: *Fabaceae* – Legume Family

Geographical Distribution: Grows from Mendocino Co. to the north to Baja California to the south at elevations below 5,000 feet (1,500 meters). It also grows in the foothills of the Sierra Nevada's from Butte (Chico area) to Mariposa Counties. It is also found on Santa Cruz Island.

Plant Communities: Grows in coastal foothills, lower montane chaparral and woodlands

Habitat: Open woodlands and washes

Size: Chaparral pea is a medium sized shrub that ranges from 2 – 6 ½ feet (60 cm – 2 meters) tall.

Bark/Trunk/Twigs: This shrub has twigs are very stiff and have long sharp spines and has a numerous intertwining branches.

Foliage: This is a legume so the leaves are a 3 leaflet palmately compound arrangement. They are alternate and evergreen. Leaves are elliptic to ovate shaped and between ¼ - ½ inch (6 – 13 mm) long. Leaf tips are pointed, margins are entire and usually they are hairless. They do not have petioles.

Flowers: The flowers look like pea flowers, are solitary and have conspicuous magenta colored petals. The flowers are ½ - ¾ of an inch (13 – 19 mm) long.

Fruit: It is difficult to find a plant with fruit on it, but they are produced in a 1 – 2 ½ inch (2.5 - 6.25 cm) pea pod that contains 1 – 8 round “pea” seeds.

Site Ecology: Chaparral pea grows on dry, well-drained soils in full sun. It will also tolerate serpentine soils.

Natural Significance: Chaparral pea is an important deer browse and as it is a legume, it adds nitrogen to the soil.

Ethnobotanical Use: Not researched

Commercial Use: Nothing noted.

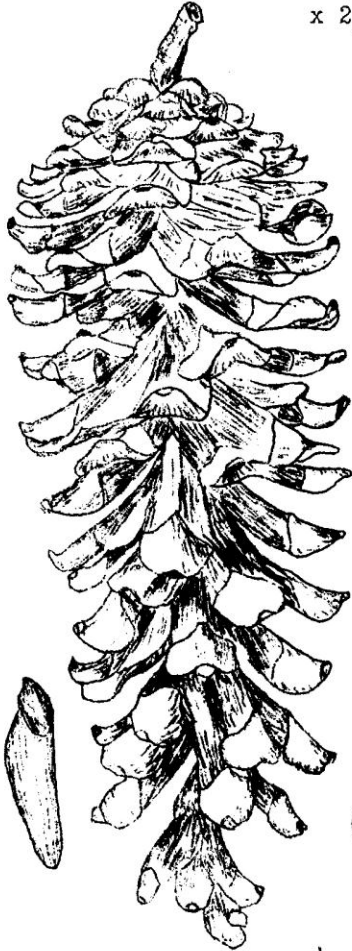
Propagation: Regenerates from its own root system, rhizomes, and very seldom from seed. After a fire it will readily sprout from its roots and root crown.

Remarks: Plants occur singly or it can grow into an impenetrable thicket. *P. montana* var. *montana* is rarely abundant and grows above 2,200 feet (660 meters). It is found in northern California as described above. *P. montana* var. *tomentosa* is quite abundant in southern California and found at the higher elevations.

PINE FAMILY - PINACEAE

SOME MOUNTAIN FIVE-NEEDLE PINES

WESTERN WHITE PINE
(*Pinus monticola*)
x 2/3



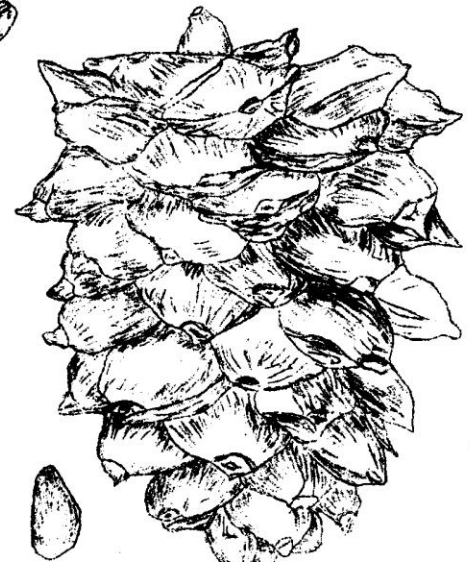
LIMBER PINE
(*Pinus flexilis*)



FOXTAIL PINE
(*Pinus balfouriana*)



BRISTLECONE PINE
(*Pinus aristata*)



WHITEBARK PINE
(*Pinus albicaulis*)

Pinus albicaulis – Whitebark Pine

Pinus means cone producing, of pines, resembling a pine and *albicalus* means having a white stem (trunk)

Plant Family: *Pinaceae* – The Pine Family

Geographical Distribution: British Columbia east to Alberta, south to Wyoming into the mountains of central California. 4,500 - 7,000 feet (1,370-2130 meters) elevation to the north and 8,000-12,000 feet (2,424 - 3,660 meters) in the south.

Plant Communities: Whitebark pine grows mostly in upper red fir forests and subalpine forests.

Habitat: Grows in dry rocky soils on exposed slopes and ridges from the subalpine zone to the timberline.

Size: Smaller tree 20 - 50 feet tall (6 – 15 meters with trunks 1-2 foot diameter (0.3 - 0.6 meters); has a short, twisted or crooked trunk and an irregular spreading crown; a shrub at the timberline sometimes less than 6 feet tall (1.8 meters). The whitebarks in Oregon at lower elevation, less severe climatic regimes are larger – 70 feet tall (21 meters) with 5 foot diameter (1.5 meter) trunks. Trees will live over 250 years of age.

Bark/Trunk/Twigs: Mature trees have a whitish gray bark that is thin and often becoming scaly. Twigs are stout, tough and flexible. This is the only white barked pine and it becomes quite distinguishing when observed in its natural setting.

Foliage: Evergreen needles in bundles of 5, from 1 ½ - 2 ¼ inches long (4-7 cm), dull green with faint white lines on all surfaces; needles crowded at end of twigs, stout, stiff and short-pointed.

Flowers: Conifer, non-flowering plant

Fruit: Cones 1 ½ - 3 ¼ inches (4-8 cm) long, egg shaped or rounded and almost stalkless, purple to brown; shedding at maturity but not opening. Cone scales very thick, with sharp edges ending in raised stout point. The seeds are wingless and fall directly to the ground underneath the parent tree. Cones are tough to find because the Clark's nutcracker feeds on them before they hit the ground. The pollen cones (males) are crimson in color.

Site Ecology: Grows near or at the timberline on exposed rocky slopes. The site is subject to gale force winds and extremely heavy and long lasting snowfall. This results in stunted, gnarled trees that have much character. White bark pine withstands full sun and needs a well-drained soil.

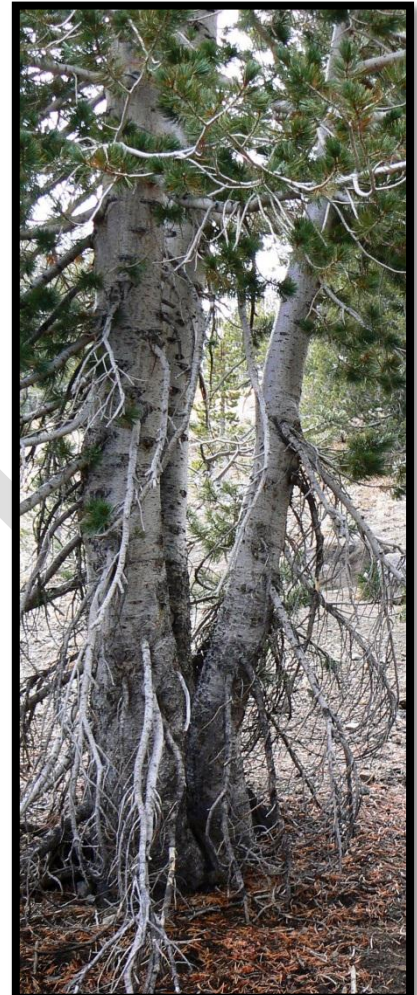
Natural Significance: White tail jackrabbits use the low growing forms of the tree for shelter. Squirrels and birds, especially the Clark's Nutcracker, consume the pine nuts.

Ethnobotanical Use: Native Americans gathered the cones for the seeds.

Commercial Use: Due to its natural range the trees have little commercial value, other than visual appeal they add to their stark surroundings.

Propagation: Regeneration by seed is the most common method of propagation. The Clark's Nutcracker is chiefly responsible for much of this reseeded.

Remarks: Tree has an almost mutualistic relationship with Clark's Nutcracker. It has been estimated that a single Nutcracker gathered 98,000 seeds in a eight day period. Most of these seeds were planted by the bird. Whitebark is considered one of most primitive pines because cones do not open until decayed.



Pinus attenuata – Knobcone Pine

Pinus means cone producing, of pines, resembling a pine and *attenuata* means tapering

Plant Family: *Pinaceae* – The Pine Family

Geographical Distribution: Knobcone pine grows from western Oregon to Baja California below 6,200 feet (1,900 meters). In California there are extensive stand in the Klamath Mountains and northern Coast Range. There are two main clusters in the Sierra; one in Mariposa County and one on the Nevada/El Dorado County border. Remainder of state has patchy distribution. Knobcones are not found in the southern Sierra and southern Coast Range.

Plant Communities: Most commonly found growing in closed cone pine forests and chaparral plant communities, but also in the yellow pine forests in the Sierra Nevada.

Habitat: The knobcone grows on some of the most inhospitable sites, serpentine outcrops that are dry and highly infertile. The often form dense thickets.

Size: Small to medium sized tree 20 – 40 feet tall (6 – 12 meters), often with a multiple erect, crooked trunks 1 – 2 feet in diameter (0.3 – 0.6 meters)

Bark/Trunk/Twigs: On young trees and branches bark is smooth and pale brown on mature trees it is grayish brown and has shallow furrows separated by external scaly ridges.

Foliage: Evergreen needles usually in bundles of 3, yellowish green, and 3 – 6 inches long (7.5 – 15 cm)

Flowers: Gymnosperm, not a flowering plant

Fruit: Yellowish brown female cones are asymmetrical, elongated, conical and in whorls of 3 – 5; like the needles they too are 3 – 6 inches long (7.5 – 15 cm). Cones are attached rigidly to branches or trunk, rather than on ends of branches like other pines. They may remain on tree for up to thirty years and will remain closed until burned. The small male pollen cones are orangish-brown.

Site Ecology: Need fire to open cones and prepare a seedbed for seedlings to sprout. Usually grows on shallow, rocky infertile soils, especially serpentine. Knobcones are shade intolerant

Natural Significance: The knobcone has value for reforestation after a fire. The seeds germinate quickly after a fire to the point that Jepson stated they stand “as thickly as stalks in a cornfield”.

Ethnobotanical Use: Not Researched

Commercial Use: Wood is weak and brittle. Not a useful timber tree. Tree is of little ornamental value

Propagation: Propagate by seed that has been stratified for 60 days at 40⁰ F, plant in spring. Soaking the seeds in water for 1 – 2 days before stratification also helps germination. In a natural setting it needs fire to regenerate, in fact the knobcone is one of the most fire dependant conifers.

Remarks: This pine is short lived, with life spans typically about 60 years. Knobcone is called the tree that swallows its cones, as they become embedded in the bark as the tree grows. This cluster of cones surrounding a branch makes identification of a mature tree quite easy. Knobcone is not a common species on the west slope of the Sierras. Hybridizes with Monterey pine in Santa Cruz Mountains.



Pinus balfouriana* ssp. *balfouriana* (northern population) – Foxtail Pine**Pinus balfouriana* ssp. *austriana* (southern population) – Foxtail Pine**

Pinus means cone producing, of pines, resembling a pine and *balfouriana* is after Professor John Balfour who headed that committee that financed Scotsman John Jeffrey, who discovered the Foxtail pine in the Scott Mountains in 1852.

Plant Family: *Pinaceae* – Pine Family

Geographical Distribution: There are two main population separated by about 300 miles apart. The Klamath range population ranges between 6,000 – 9,000 foot (1,818 – 2,727 meters) elevation and is estimated to reach 1,500 years of age. The Sequoia and Kings Canyon populations range between 9,000 – 11,300 feet (2,727 – 3,423 meters) elevation and is estimated to reach from 2,500 – 3,000 years of age.

Plant Communities: Grows in upper montane and sub alpine forests.

Habitat: The northern population grows on south facing slopes on a variety of soil types, including serpentine. The southern population grows on ridge lines amongst granite boulders.

Size: Tree height ranges between 20 – 45 feet (6 – 13.6 meters) with the northern populations being taller. Both populations have stout trunks that can be up to 6 feet (1.8 meters) in diameter.

Bark/Trunk/Twigs: Northern foxtails are erect with intact leaders and pendulous branches. Southern foxtails are often tilted and distorted with dead leaders and ragged crowns and upswept branches. Bark of mature northern foxtails is gray with ridges and furrows. Bark of the southern foxtails is bright reddish brown to orange in blocky plates and often present on old trunks in narrow strips like that of the bristle cone pine.

Foliage: This five needle pine has short, 1 – 1 ½ inches (2.5 – 3.75 cm) long needles, sharp tipped, spreading equally around the branch and massed like a fox tail at the end of branches. Northern foxtail needles are green to blue-green; while southern foxtails have yellowish foliage.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones are 3 – 5 inches (7.5 – 12.5 cm) long; deep purple in summer with each scale bearing a spine. No other five needle pine has this spiny feature.

Site Ecology: Like the ancient bristlecone pine, *P. longavea*, foxtail pine has adapted to harsh environmental conditions. The southern foxtail grows in scattered stands usually apart from other plants on bare rocks or rocky elevated slopes. The northern foxtail occurs in upper elevations with Brewer's spruce, lodgepole pine or western white pine.

Natural Significance: Provides shelter and nesting sites for birds and small mammals. The pine nuts are also a source of food.

Ethnobotanical Use: Not researched.

Commercial Use: Use of the foxtail pine as timber tree is limited due to inaccessibility.

Propagation: Collected seed requires no special treatment prior to planting.

Remarks: The foxtail pine is a California endemic. In the Sierra Nevada the old foxtails look quite abit like the bristle cone pine. The divergent populations of this species has not been fully researched and explained. More study regarding the foxtail pine is in order.

***Pinus brutia* 'eldarica' – Afgan Pine**

Pinus means cone producing, of pines, resembling a pine and

Plant Family: *Pinaceae* – The Pine Family

Geographical Distribution: Primarily in Turkey and far Eastern Greece, secondarily in the Crimea, Caucasus coast, Azerbaijan, Iraq, Syria, Lebanon, Crete and Cyprus. It grows at sea level – 5,000 feet (0 – 1,525 meters) elevation,

Plant Communities: Scattered in arid grasslands, creosote –bush scrub, oak woodland, and chaparral.

Habitat: Afgan pine's range varies for coastal to sparse landscapes to heavily forested sites.

Size: This is a medium size tree that will grow between 90 – 115 feet tall (27 - 35 meters). A ten year old tree in my yard on an 18 deep soil over hard pan is about 15 feet (4.5 meters) tall and pruned to a large, bushy shrub.

Bark/Trunk/Twigs: The Turkish pine is a tree to, with a usually open crown of irregular branches. The bark on the lower trunk is thick, scaly, fissured, patterned red-brown and buff, and thin, flaky and orange-red higher in the crown. The shoots are slender, 3-7 mm thick, grey-buff, and rough with persistent small decurrent scale-leaf bases

Foliage: The needles on most trees they are in fascicles of two, and 4 – 7 inches (10 - 18 cm) long. They are bright green to yellow-green, slender, about 1mm thick, with serrulate margins, fine lines of stomata on both faces, and several marginal resin canals.

Flowers: Gymnosperm, not a flowering plant.

Fruit: The cones are erect to forward pointing on short stout stalks, symmetrical, broad conic, 4 – 6 inches (10 - 15 cm) long, and 1 ½ - 2 inches (4 - 5 cm) broad when closed, green, ripening shiny red-brown in April two years after pollination. The seeds are grey-brown, 7-8 × 5mm with a broad, auricled 15-20 × 10 mm wing, yellow-buff streaked darker brown (Frankis 1993).

Site Ecology: Afgan pine survives salt spray, rocky, infertile soils, high wind conditions, full sun and drought circumstances.

Natural Significance: Not sure, see ethno botanical comments below.

Ethnobotanical Use: Known as 'pity's' to the ancient Greeks, this is the most important forest tree in the north-eastern Mediterranean area. A sap-sucking insect *Marchalina hellenica* produces large amounts of honey-dew, harvested by honeybees and sold as 'pine honey'. *Pinus brutia* was planted outside its native range in Greece from early times for this harvest (G. Schiller, 1993, *pers. comm.* to M. P. Frankis).

Commercial Use: This tree needs to have more widespread use in the landscape because it is adaptable to our climate, is drought tolerant, and is an attractive evergreen conifer.

Propagation: Propagate from cone pine nuts that probably have to have some treatment before planting.

Remarks: Subsp. *eldarica* has shorter, stouter leaves 3 – 5 inches (8 - 13 cm) long, slightly smaller cones and slightly larger seeds, and is adapted to a different climatic regime.



***Pinus contorta* ssp. *contorta* – Shore Pine**

Pinus means cone producing, of pines, resembling a pine and *contorta* means twisted or bent

Plant Family: Pinus – The Pine Family

Geographical Distribution: SE Alaska, central Yukon, and the Coast Range from Del Norte to Mendocino County; from sea level to 2,000 feet (600 meters)

Plant Communities: The California population grows almost exclusively in the coastal strand, but there is a population in the closed cone pine forests of Del Norte County. True shore pine grows below 500 feet (150 meters) elevation.

Habitat: In California it grows on coastal dunes, cliffs, and grasslands. In its northern ranges it is found in peat bogs and sinks.

Size: A small tree 20 - 30 feet (6 – 9 meters) tall with trunks about 1 foot diameter (30 cm); a smaller pine with a broad rounded crown. Even though not very large, trees have been aged at over 200 years.

Bark/Trunk/Twigs: Bark thick and furrowed, covered with orange or purple tinged flatten scales; twigs are stout and orange at first then turning to a red brown and finally black. Those trees subjected to the ocean elements tend to be low growing and quite gnarled and more prostrate.

Foliage: Evergreen needles in bundles of 2, from 1 - 3 inches long (2.5 - 7.5 cm), yellowish green to dark green and twisted. Needles are quite thin in its natural habitat.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Small asymmetrical cones $\frac{3}{4}$ - 2 inches (1 - 3 cm) long, stalk less, egg shaped, yellowish brown, pointing backwards and remaining on branches for years. Cones are prickly when young but tend to smooth with age due to the elements.

Site Ecology: The coastal trees grow on exposed cliffs and sand dunes under high wind and salt spray conditions.

Natural Significance: Trees stabilize sand dunes and when in grove numbers, buffer an area against the winds. Wildlife will use groves of shore pine for shelter.

Ethnobotanical Use: Nothing noted

Commercial Use: Most trees have little timber value due to their small size and distorted trunks.

Propagation: Stratify seeds prior to planting.

Remarks: The lodgepole pine ssp. *murrayana* is a tall, narrow tree with thin scaly bark; symmetrical, light weight cones that open at maturity and are shed in a few years. It is an inland version of the shore pine. A third variety, Rocky Mountain Lodgepole Pine (ssp. *latifolia*), is found in the Rocky Mountains, duh. There is also a fourth called Mendocino White Plains lodgepole ssp. *bolanderi*.



***Pinus contorta* ssp. *murrayana* – Sierra Lodgepole Pine**

Pinus means cone producing, of pines, resembling a pine and *contorta* means twisted or bent.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Cascade Mountains of southwestern Washington and western Oregon; south through central Sierra Nevada to northern Baja; grows 5,000 -11,600 feet (1,515 – 3,515 meters); nearly to the timber line. Lodgepole is found at the 4,000 foot (1,212 meters) in Yosemite Valley. The range also include Alaska and as far east a South Dakota.

Plant Communities: Lodgepole is found in closed- pine forest, montane forest, subalpine forest, montane coniferous forests and wet meadows and cold places in these forests.

Habitat: Occupies a wide ecological spectrum ranging from dry, rocky slopes to wet meadows to riparian areas. On fertile sites the lodgepole is out competed by other species.

Size: medium size 30 - 110 feet tall (9 - 33 meters) with trunk diameters of 1 - 3 feet (0.3 - 1 meters); erect, single stem with a narrow dense conical crown; trees near the tree line have a dwarfed shrubby form.

Bark/Trunk/Twig: Bark on mature trees is thin, scaly and tan to gray. Twigs are Orange-brown, turning darker with age; buds are narrowly ovoid, reddish brown and resinous.

Foliage: Evergreen needles in bundles of 2, from 1 - 3 inches long (2.5 - 7.5 cm), yellowish green to dark green and twisted; needles are persistent for several years.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Monoecious; male pollen cones are yellow, cylindrical and clustered at branch tips; female seed cones are reddish purple at branch tips in the upper crown. They mature to small woody cones $\frac{3}{4}$ - 2 inches (1 - 3 cm) long, stalkless, egg shaped, yellowish brown and remaining on branches for a few years.

Site Ecology: Sierra subspecies is **not** fire dependent to release cone seeds. At lower elevations 6,000 – 9,000 feet (1,818 – 2,727 meters) lodge pole is found in moist places like creek banks and meadow margins. At higher elevations, up to 11,000 feet (3,333 meters) it grows on dry sites.

Natural Significance: Many birds and small mammals use the abundant cone crop seeds for food, including chickarees, crossbill, nutcrackers, and chipmunks.

Ethnobotanical Use: Native Americans used lodge pole trunks for their conical teepees.

Commercial Use: The wood is very pitchy and of little commercial value other than fire wood.

Propagation: Typically is propagated by seed.

Remarks: Lodgepole pine is a wide ranging species made up of four subspecies. Subspecie *contorta* is a small tree with a thick spreading crown found on the California coast. A third variety, Rocky Mountain Lodgepole Pine (ssp. *latifolia*), is found the the Rocky Mountains. The cones of these two species are fire dependent in order to open. The fourth ssp. is *Pinus contorta* ssp. *bolanderi* is isolated on the Mendocino coast and named Mendocino White Plains Lodgepole.



Pinus coulteri – Coulter Pine

Pinus means cone producing, of pines, resembling a pine and *coulteri* is after its discoverer, Thomas Coulter, (1793 – 1843), an Irish physician.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Its range starts in the central Coast Range, starting in Contra Costa County, to southern California Coast Range into Baja; 3,000 - 6,000 feet (915 - 1,830 meters); rarely above or below these elevations. Also grows in the Transverse and Peninsular ranges of southern California. There are no Coulter pines in the Sierra Nevada.

Plant Communities: Coulter pine grows in chaparral, oak woodland and yellow pine forest communities.

Habitat: Grow on dry foothills and mountain side; survives on dry south facing rocky slopes and ridges; tolerant of serpentine soils.

Size: Moderately large tree 40 - 70 feet (12 - 21 meters) tall with trunks 1 – 2 ½ feet (0.3 - 0.8 meters) diameter; tree with straight trunk and horizontal branches that form annually.

Bark/Trunk/Twigs: Mature trees have a dark gray, thick, deeply furrowed bark, becoming slightly shaggy; blackish-gray, very rough, divided into rectangular plates on branches. Branches tend to grow horizontally to upright. Twigs are stout to moderately slender, violet-brown, often glaucous, aging to gray-brown, rough.

Foliage: Evergreen yellowish-green needles in bundles of 3, from 8 - 12 inches long (20 - 30 cm), light gray-green with many white lines; crowded on ends of stout brown twigs, very stout, stiff, and sharp pointed.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Seed cones are large, 8 - 12 inches (20 - 30 cm) long, egg shaped, bent down on very stout stalk, (cone is extremely heavy, hence the name big cone pine), slightly shiny, yellow-brown, resinous; opening gradually and remaining on tree; cone scales very long, thick, sharply keeled, with very long, stout spine flattened and curved forward. Seeds are very large, dark brown, edible, with detachable wing. The most massive cone of any pine species. Pollen cones ovoid to cylindrical, to 1 inch (25 mm), light purple-brown, aging orange-brown.

Site Ecology: Prefers a dry, rocky soil, full sun and a medium amount of moisture. Under ideal conditions, this tree can grow 10 feet (3.3 meters) per year. It most often found on coarse textured sandstones and granitic soils.

Natural Significance: The larger seeds provide food for a variety of birds and wildlife.

Ethnobotanical Use: Native Americans used seeds as food, but preferred grey and pinyon pine seeds. The long needles were used to make baskets.

Commercial Use: The wood is weak and soft, thus the most common use is firewood. It can be an attractive specimen tree if one has a lot of space.

Propagation: Stratify seed 30 – 60 days at 40⁰ F prior to planting

Remarks: Has heaviest cone in world, weighing 4-5 pounds (1.8 – 2.3 kilos). A 20 inch (51 cm) long eight pounder (3.6 kilo) has been recorded, but it was probably still green. Coulter Pine can be a useful landscape plant, but needs to be planted where cones will not fall on someone. The largest known specimen has a diameter of 4 feet (123 cm), a height 142 feet (43.0 meters), with a crown spread of 73 feet (22 meters). It is located near Julian, California. Coulter pine hybridizes with Jeffrey Pine where their ranges overlap.



Pinus flexilis –Limber Pine

Pinus means cone producing, of pines, resembling a pine and *flexilis* means pliant or flexible.

Plant Family: *Pinus* – Pine Family

Geographical Distribution: Limber pine is found in the eastern Sierra Nevada from Mono Pass to Walker Pass, in the great basin desert ranges, and across the Transverse Ranges to the Peninsular Ranges between 8,000 – 11,500 feet (2,424 – 3,484 meters) elevation. It also grows in the Rocky Mountains from Arizona/New Mexico to Alberta/British Columbia and in the mountain tops of Nevada's ranges.

Plant Communities: Grows in the montane coniferous forests and subalpine forests.

Habitat: Limber pine grows in high elevation sites that range from moderately severe to very severe. The trees in moderate sites can be 50 feet (15 meters) or taller and in the severe sites the trees are stunted waist high woody shrubs.

Size: In tree form limber pine ranges from 15 – 60 feet (4.5 – 18 meters) tall. However, it can be a shrubby mat at a windswept tree line site. Tree trunks are 3 – 4 feet (0.9 – 1.2 meters) in diameter. Limber pines up to 2,000 years old have been reported. The trees that live to these ages are wind and snow battered gnarled specimens growing on sites where there is little competition.

Bark/Trunk/Twigs: The bark can be 2 inches thick and dark brown and deep furrowed with rectangular plates. Twigs are tough, flexible and light gray to silvery in color. Limber pine is similar to the white bark pine, but its bark is never white.

Foliage: This five needle pine's needles are 2 - 3 inches (5 - 7.5 cm) long and bright yellow green. Needles are in dense brush-like tufts at the end of flexible branches.

Flowers: Gymnosperm, not a flowering plant. The Pollen cones are bright yellow and found on lower limbs.

Fruit: Seed cones are 3 ½ - 6 inches (8.75 – 15 cm) long, bright green (remember white bark pine cones are purple) and oval shaped. Cones ripened to a pale brown and weathered cones litter the ground under trees. The pine nuts are wingless.

Site Ecology: Most often found growing on dry, rocky shallow soils. Limber pine is shade intolerant and somewhat fire tolerant.

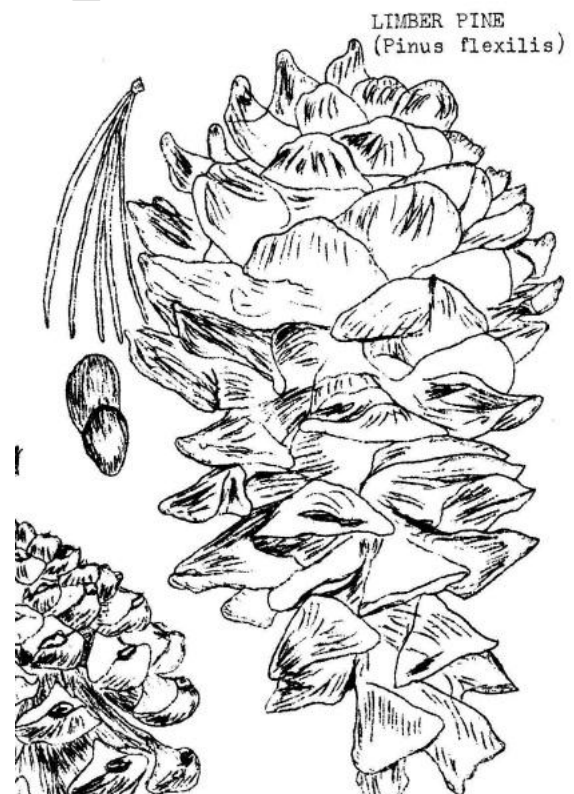
Natural Significance: Like the white bark pine, limber pine has a mutualistic relationship with the Clark's Nutcracker. The pine provides food for the birds and the birds replenish the tree population by caching pine nuts.

Ethnobotanical Use: Not researched.

Commercial Use: When Nevada was being settled, limber pines were one of the lumbers of choice to build a community's infrastructure. Today the pines are not used due to their inaccessibility.

Propagation: Scarify seed then stratify them for 90 days at 40° F before planting.

Remarks: Limber pine closely resembles white bark pine, but DNA has proven that they are not closely related. In spite of that, they do hybridize with each other.



Pinus halepensis – Aleppo Pine

Pinus means cone producing, of pines, resembling a pine and *halepensis* means from Aleppo in northern Syria.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Mediterranean region: range extends from Morocco and Spain to southern France, Italy and Croatia, and to Greece and northern Libya, with an outlying population (from which it was first described) in Syria (including Aleppo), Jordan and Israel. Generally found at altitudes of less than 1,000 feet (300 meters).

Plant Communities: Aleppo pine is not a native to the United States, but from its geographical location it grows on on three sides of the Mediterranean Sea.

Habitat: Tree is rather wide ranging; from the Mediterranean coast to Middle Eastern deserts.

Size: Small to medium sized tree 50 - 80 feet (15 - 25 meters) tall with trunks 2 feet (0.6 meters) in diameter; tree with straight trunk and horizontal branches that form annually.

Bark/Trunk/Twigs: The bark is orange-red, thick and deeply fissured at the base of the trunk, and thin and flaky in the upper crown.

Foliage: Evergreen needles in bundles of 2, from 2 - 5 inches long (6 - 12 cm), yellowish green and quite slender.

Flowers: Gymnosperm, not a flowering plant, however, monoecious; males cones are cylindrical, in tight cluster at branch tips; females small, reddish purple with loose scales at branch tips.

Fruit: The cones are narrow conic, 2 – 5 inches (5 - 12 cm) long and 1 – 2 inches (2 -3 cm) broad at the base when closed, green at first, ripening glossy red-brown when 24 months old. They open slowly over the next few years, a process quickened if they are exposed to heat such as in forest fires. The seeds are 5-6 mm long, with a 20 mm wing, and are wind-dispersed.

Site Ecology: Highly varied, influenced by the coastal Mediterranean climate.

Natural Significance: Nothing noted

Ethnobotanical Use: In the eastern Mediterranean, *Pinus halepensis* are important for resin, fuelwood and forest honey production and also for livestock grazing.

Commercial Use: It is widely planted for timber in its native area, being one of the most important trees in forestry in Algeria and Morocco. It is also a popular ornamental tree, extensively planted in parks and gardens in hot dry areas such as southern California. The resin of the Aleppo Pine is used to flavor the Greek wine retsina.

Propagation: Seed can be collected and planted directly into the soil in winter.

Remarks: The Aleppo is a drought tolerant pine. It is a slow grower at first, but once established it will grow rapidly. The tree is a good landscape choice for CA's central valley and should be a consideration to replace the more thirsty redwoods that are planted so extensively.



Pinus jeffreyi – Jeffery Pine

Pinus means cone producing, of pines, resembling a pine and *Jeffery* is after

Plant Family: Pinus – The Pine Family

Geographical Distribution: South west Oregon through the Sierra Nevada (especially eastern slopes) to western Nevada and southern California into northern Baja; mostly 6,000 – 9,000 feet (1,830 – 3,050 meters), occasionally down to 3,500 feet (1070 meters) and up to 10,000 feet (3,050 meters).

Plant Communities: Typically grows in the upper margins of the yellow pine forests and lower margins of the red fir forests in the Sierra Nevada. Also found in the pinyon pine-juniper woodland of transverse ranges.

Habitat: Grows in montane and subalpine coniferous forests, on harsh sites, including serpentine soils, may be found in pure stands on lava flows or granite.

Size: Large tree 60 - 170 feet tall (18 – 51.5 meters) with trunks 4 - 7 foot diameter (1.2 – 2.1 meters); tall tree with straight trunk and spreading branches.

Bark/Trunk/Twigs: Mature trees have a purplish brown, 4 inch (10 cm) thick, furrowed into narrow scaly plates. Twigs are stout, hairless, gray-green with whitish bloom, smooth. The bark of Ponderosa and Jeffery pine are very similar, however, the Jeffery pine bark is harder than Ponderosa; test both with your finger nail.

Foliage: Evergreen needles in bundles of 3, from 7 ½ - 11 inches long (19 - 29 cm), bluish green with broad white lines on all surfaces.

Flowers: Gymnosperm, not a flowering plant

Fruit: Large cones 5-10 inches (13-25 cm) long, conical or egg shaped, light reddish-brown almost stalkless, opening and shedding at maturity, prickles bent back so cone is gentle to touch. The shape of the cone has been described as that of a bee hive.

Site Ecology: Shade intolerant, fire resistant, and more adaptable to climatic extremes than Ponderosa pine.

Natural Significance: Jeffery Pine cone seeds provide food for Clark's nutcracker, Stellar's jay, black bear, golden mantle and California ground squirrels, deer mice and the yellow pine and lodgepole chipmunks. Birds

and wildlife and mammals also eats Jeffery stems and roots. Also provides hiding cover for birds and thermal cover for deer and elk.

Ethnobotanical Use: Not researched

Commercial Use: Jeffery pine trees (in the timber industry called yellow pine) have been extensively harvested for lumber and molding. This pine could also be used as a specimen tree in a large landscape.

Propagation: Stratify seed 30 – 60 days at 40⁰ F prior to planting

Remarks: Crushed twigs and inner bark smells like vanilla, or apples, or lemons. Very susceptible to ozone pollution and southern Sierra Nevada population has suffered significant damage. It hybridizes with Ponderosa and Coulter Pines; making positive identification difficult when these tree's ranges overlap.



Pinus lambertiana – Sugar Pine

Pinus means cone producing, of pines, resembling a pine and *lambertiana* is after Alymer Lambert.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Western Oregon, south through Sierra Nevada into southern California to northern Baja; grows between 1,100-5,400 feet (335-1,650 meters) in north; 2,000-7,800 feet (610-2,380 meters) in the Sierras; 4,000-11,500 feet (1,220-3,200 meters) in the south. Also grows in the Klamath Range south to Sonoma and Napa Counties. There is another population in the Santa Lucia Range of Monterey County.

Plant Communities: Sugar pine grows in yellow pine forests, montane coniferous forests, and in moist chaparral sites.

Habitat: Grows in montane and subalpine coniferous forests, woodlands and chaparral on a variety of soil types in scattered populations throughout California.

Size: Large tree 100 - 170 feet tall with trunks 3 - 6 foot diameter (30 - 52 meters by 0.9 - 1.8 meters); very tall tree with straight trunk and horizontal branches. Sugar pines live to be between 300 – 500 years of age.

Bark/TrunkTwigs: Mature trees have a reddish brown to purplish bark up to 4 inches (10 cm) thick arranged in board plates with deep furrows. Bark on younger trees is grayish green. Limbs grow at right angles to the trunk; this is a prominent ID characteristic.

Foliage: Evergreen needles in bundles of 5, from 2-4 inches long (5-10 cm), dark green to bluish green with white stomatal lines on all surfaces .

Flowers: Gymnosperm, not a flowering plant

Fruit: Very large cones 10-24 inches (25-60 cm) long and 4-5 inches (10-12.5 cm) in diameter and pendant; the longest cone of any pine. Cones are on stalks with thin lipped scales, no prickles, and pitchy. The black seeds are about ½ inch (1.25 cm) long with broad wings.

Site Ecology: Moderately shade tolerant; resistant to surface fires due to thick bark; susceptible to white pine blister rust (*Cronartium ribicola*) that has reduced population. Sugar pine needs at least 20 inches of annual precipitation and grows on a wide variety of soil types, but it must be well-drained.

Natural Significance: Seeds are eaten by Stellar's jay, white-headed woodpeckers,

Ethnobotanical Use: Native Americans used pitch to repair canoes and attach feathers to shafts. The resin contains the sugar pinitol that California Indians used as a laxative. The resin was also chewed as a gum.

Commercial Use: Noresinous wood to make lumber and molding;

Propagation: Stratify seed 30 – 60 days at 40⁰ F and plant in spring; sugar pine can also be propagated by grafting.

Remarks: Old sugar pines are the world's largest pine trees. Trees as tall as 250 feet (75.8 meters) and trunk diameters up 18 feet (5.5 meters) have been recorded. The tall straight trees with horizontal branches and huge pendant cones make this pine identifiable by its silhouette from a long distance.



Pinus longaeva – Great Basin Bristlecone Pine

Pinus means cone producing, of pines, resembling a pine and *longaeva* means long-lived.

Plant Family: *Pinus* – Pine Family

Geographical Distribution: This is an uncommon species as it is very site specific. In California Bristlecone Pine is found on the White Mountains, east of Lone Pine, as well as the Last Chance, Panamint, and Inyo Mountains. Populations are also found in Nevada and Utah all at elevations between 7,500 – 12,000 feet (2,300 – 3,600 meters).

Plant Communities: Grow only in the bristle cone pine forest of the subalpine forest

Habitat: Grows in subalpine coniferous forests on desert mountains.

Size: These small contorted trees range from 30 – 40 feet (9 – 12 meters) tall with trunks from 1 – 6 feet (30 cm – 1.8 meters) in diameter.

Bark/Trunk/Twigs: Older trees have thin strips of cambium exposed on their leeward side that support the tree's canopy. This layer is a maroon color. The younger trees have a reddish brown bark. The dense wood is very resistant to decay and there is 5,000 year old wood still intact on slopes where the Bristlecone grows.

Foliage: The dark green needles are in bundles of 5 concentrated on the end of twigs in a foxtail-like display on older trees. On the twigs of younger trees the needles are dense and surround the entire branch. These ½ - 1 ½ inch (1.2 – 4 cm) long needles will persist on the tree for 20 to 40 years. The needles are stiff, slightly curved, have 2 white stomatal lines on the inner surface, and are usually covered with resin droplets.

Flowers: Gymnosperm, not a flowering plant.

Fruit: The reddish brown egg to barrel shaped seed cone is from 2 – 5 inches (5 – 12.5 cm) long. The cones turn to a purplish color when mature. The cones have bristles. (I wonder where the common name for this tree came from.)

Site Ecology: This tree grows to the tree line. It is in full sun exposed slopes on some of the most nutrient poor soils in existence. They are extremely drought tolerant and withstand tremendous wind storms. Bristlecone are easily killed by fire, although it is a rare occurrence in this rather sparsely population area. See remarks below.

Natural Significance: Porcupines eat the bark of the trees. The Clark's Nutcracker harvest and cache the seed, much like it does with the Whitebark Pine, *Pinus albicaulis*. Other birds use both the living and dead trees as nesting sites.

Ethnobotanical Use: Nothing noted because very few people lived in the area.

Commercial Use: They have no commercial use due to their small populations, inaccessibility, and gnarled growing patterns. There are 3 universities that maintain dendrochronology research labs in the White Mountains. Many tourists visit these venerable trees annually. Access to the trees is closed in the winter.

Propagation: By seed, in fact you can buy Bristle Cone Pine seeds at the visitor's center located in the Inyo National Forest. Seeds should be stratified for 60 days at 40⁰ F before planting.

Remarks: Bristle cone pines have evolved survival mechanisms that have enabled them to grow in such an inhospitable environment. There is little competition for nutrients and water because the soils are so infertile. The needles persist on the tree for so long to reduce input the needs required to constantly replace old fallen needles. The cambium strips enable a portion of the tree to remain alive for 1,000's of years while the balance of the tree dies. This also reduces nutrient and water needs. These are the oldest living organisms on earth, with one tree ring measured to be in excess of 4,600 years old. *Pinus aristata*, the Rocky Mountain Bristle Cone and the Great Basin Bristle Cone pine were once considered the same species.



Pinus monophylla – Single Leaf Pinyon Pine

Pinus means cone producing, of pines, resembling a pine and *monophylla* means single leaf or needle.

Plant Family: Pinus – The Pine Family

Geographical Distribution: This high elevation pine normally grows between 3,000 – 10,000 feet (900 – 3,000 meters) elevation. There are two major areas of distribution in California. The northern area stretches from Alpine County along the east slope of the Sierra Nevada to Kern County, then south and west along the Tehachapi Mountains to Santa Barbara County. The Southern range extends south of the Tehachapi Mountains into Baja California.

Plant Communities: Grows in northern and pinyon juniper woodlands.

Habitat: Pinyon pine grows on dry rocky slopes, ridges and alluvial fans. It does occur in pure stands but most often grows in mixed woodlands. Its closest associate tree is the Utah juniper (*Juniperus utahensis*).

Size: It is a small tree with maximum heights to 50 feet (15 meters) and normally between 15 – 25 feet (4.5 – 7.5 meters) tall. Trunks that range between 6 – 15 inches (15 – 37.5 cm) in diameter. The oldest of these pines range between 100 - 225 years of age.

Bark/Trunk/Twigs: Bark is rough and irregularly furrowed, about 1 inch (2.5 cm) thick, dark brown and sometimes with reddish scales.

Foliage: Single evergreen needles (sometimes two) that are pale yellow green with whitish tinges, range in length from 1 1/3 – 2 1/4 inches (3.3 – 5.6 cm) wrap around the twigs. The needles often curve inward, are stiff, sharp pointed and circular in cross section (roll them between your fingers).

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones are egg shaped and very broad at the base, 1 – 4 1/2 inches long (2.5 – 11 cm) and often erect on the tree. The scales are thick and house two large egg-shaped seeds.

Site Ecology: Pinyon pine does best on dry, well-drained soils in full sun. It occupies rather low precipitation areas; between 5 – 16 inches (16 – 40 cm) annually, in other words the deserts above valley floors.

Natural Significance: Many birds, including Clark's nutcracker, Stellar's jay, Scrub jays and pinyon jays feed on and bury seeds. These buried seeds are sources of woodland replenishment cover.

Wildlife that feed on these pine nuts include, pinyon, chipmunks, deer, bear, squirrels, and desert bighorn sheep. In early settlement days, charcoal was made from pinyon pine wood to smelt silver ores mined from the Great Basin and Mojave Desert.

Ethnobotanical Use: The seeds, pine nuts, were a staple for Native Americans.

Commercial Use: The trees are used for Christmas trees and to make fence posts.

Propagation: Stratify seed for 60 – 90 days at 40° F

Remarks: There is a great deal of controversy surrounding the classification of the pinyon pines. Without going into detail there are two observations that I feel are solid. First there are at least 4 species of pinyon pines. Second the issue of a single widely accepted classification of these species will probably not happen for a time.



Pinus monticola – Western White Pine

Pinus means cone producing, of pines, resembling a pine and .

Plant Family: Pinus – The Pine Family

Geographical Distribution: Sierra Nevada, Cascade, Klamath, and northern Coast Ranges into Pacific northwest and northern Rocky Mountains; grows between 7,500 -11,000 feet (1,500 - 3,300 meters); grows down to 500 feet (150 meters) on serpentine soils in Del Norte County, the Klamath Range.

Plant Communities: Western white pine is found in the upper mixed coniferous and subalpine forests that include the red fir forest, and lodgepole forest. It tends to be a scattered, rather than a pure stand tree, with the exception of the Klamath range population.

Habitat: Western white pine is found in periodic pure stands in environments that vary from moist to dry, but generally where this much snowfall and the growing season is short.

Size: A large tree from 120 - 180 feet tall by 2 - 4 feet in diameter (37- 55 meters by 0.6 -1.2 meters). Most California western white pines are in the 120 foot tall 37 meters) or shorter height. The oldest of these pine trees are about 600 years of age.

Bark/Trunk/Twigs: Bark is grayish brown, thin, and split into rectangular plates; the bark on young trees is light brown to grayish green; usually a single trunk. The branches emerge from the trunk at regular intervals giving the tree a “pagoda” effect.

Foliage: Evergreen needles in bundles of 5, from 2 - 4 inches long (5-10 cm), bluish green with white stomatal lines on inner surface.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones 5-10 inches (12.5-25 cm) long by 1.5-2 inches wide (4-5 cm), Cylindrical shaped, yellowish brown and often found in clusters of 1-7 and ends of branches; cone scales are round, thin lipped, usually pitchy and lacking prickles but having a prominent stalk. The cones are erect and green at first but become pendulous and purple with age. The winged seeds are released in the fall. Male catkins are yellow and in clusters of 6 – 7 on lower branches.



Site Ecology: Western white pine grows on a variety of parent rocks, including granite and even serpentine. It is very shade intolerant and fire resistant.

Natural Significance: Trees provide food and habitat for numerous species.

Ethnobotanical Use: Not researched

Commercial Use: Nonresinous wood is used to make moldings and wooden matches. Paneling, both knotty pine and clear is made from western white pine.

Propagation: Stratify seed for 30 – 120 days at 40⁰ F before planting.

Remarks: Highly susceptible to white pine blister rust (*Cronarium ribicola*) which has disseminated the U.S. native population. Sugar and white bark pine are similar species but sugar grows a lower and white bark grows at higher elevations.

Pinus muricata - Bishop Pine

Pinus means cone producing, of pines, resembling a pine and *muricata* means rough with short superficial tubercles..

Plant Family: Pinus – The Pine Family

Geographical Distribution: North and central coast from Humboldt to Santa Barbara counties, Cedros Island, and northern Baja; from sea level to 1,300 feet (400 meters). Does not grow in the Sierra Nevada.

Plant Communities: Grows in redwood forests, north coast coniferous forests, closed cone pine forests, chaparral, and oak woodlands.

Habitat: Variety of habitats results in a variety of tree heights and forms.

Size: Medium sized tree typically from 40 – 80 feet tall (12 – 24 meters) and 2 – 3 feet diameter trunks (60 – 90 cm). Not a long lived conifer, as tree generally succumbs to disease between 80 – 100 years old.

Bark/Trunk/Twigs: On mature trees, thick brown and exhibiting rough ridges, twigs are ashy brown and scaly.

Foliage: Evergreen needles, generally 2 per bundle, twisted and 2 ½ - 6 inches long (6 – 15 cm). Needles from trees in the northern populations are bluish green and in southern populations are yellowish green. The dividing line is between Mendocino and Sonoma Counties.

Flowers: Gymnosperm, not a flowering plant. Seed cones are obliquely ellipsoid, 2 – 4 inches in length (5 – 10 cm), brown, weathering gray, generally closed and persisting on tree for long time. Cones are in whorls of 3 – 5 nearer the ends of branches. Male cones ellipsoid, to 5 mm long, orange

Fruit: Cones may persist on a tree for many years, so much so that the wood of the tree grows around the cone. The body of the seed is 6-7 mm, dark brown to near black; wings are 15 - 20 mm in length.

Site Ecology: Fire needed to open cones. Bishop pine can be found in the fog belt, on wind swept dunes, or in inland sites where trees can attain maximum height.

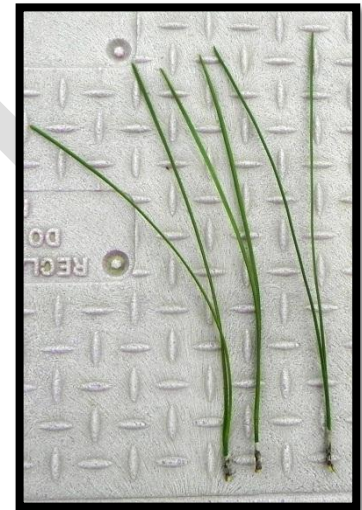
Natural Significance: When trees are abundant, they provide shelter and habitat for a variety of bird and wildlife.

Ethnobotanical Use: Not researched

Commercial Use: Limited lumber use; may have some use a fuel wood

Propagation: Stratify seed for 60 days between 35 – 40° F before planting.

Remarks: Bishop pine is a relic from a pre ice age pine population. It is found primarily



***Pinus ponderosa* var. *ponderosa* – Pacific Ponderosa Pine**

Pinus means cone producing, of pines, resembling a pine and *ponderosa* means heavy wood.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Widely distributed; from southern British Columbia east to southwest North Dakota south to Texas and northern Mexico then west to southern California. Ponderosa Pine grows from sea level to 6,000 feet (1,818 meters) on west slopes and 7,000 feet (2,121 meters) on east slopes; occasionally up to 9,000 feet (2740 meters). Ponderosa pines are found in California's northern ranges, coast range, the Sierra Nevada, and the So. Calif. ranges.

Plant Communities: Grows in lower to central yellow pine forests, woodlands and chaparral throughout much of the western North America.

Habitat: Tolerates a wide variety of conditions from moist to dry and mountain ridges to canyon bottoms.

Size: Large tree 60-180 feet tall (18 - 55 meters) with trunks 2 ½ - 4 feet diameter (0.8 - 1.2 meters); very tall tree with straight trunk; mature trees have flattened crowns with down sweeping branches that turn abruptly upward at their ends. Ponderosas can live up to 600 years.

Bark/Trunk: Mature trees outer bark is yellowish (or reddish) tan, up to 4 inches (10 cm) thick arranged in puzzle-shaped plates with deep furrows, inner bark is sulphur yellow. Bark on younger trees is reddish-brown with plates separated by blackened furrows.

Foliage: Evergreen needles in bundles of 3, from 4 - 10 inches long (10 - 25 cm), stout, stiff, and yellow to dark green. Needles are raspy to the touch when drawn through the fingers from tip to base. Not unusual to have bundles of 4 needles. These are usually clustered at the branch tips, especially in older trees.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones 2 - 6 inches (5 - 15 cm) long, conical or egg shaped and almost stalkless, light reddish-brown and opening and shedding at maturity. Cone scales raised and ending in short, sharp prickles, hence the descriptive "prickly ponderosa".

Site Ecology: Its ability to grow in igneous, metamorphic, and sedimentary rocks has made the Ponderosa the most common and widespread conifer in California. A hardy tree due to its ability to send down a long tap root when very young. Able to withstand drought conditions and, therefore, outcompetes other vegetation. The Ponderosa regenerates most successfully after disturbances such a fire or logging.

Natural Significance: Provides a food source through seeds to chipmunks, nutcrackers, quail, squirrels, and many other species. Old decaying wood provides nest sites and food for ants, grubs, and woodpeckers.

Ethnobotanical Use: Not researched

Commercial Use: The primary lumber tree in California. Can also be used as a specimen tree in a landscape.

Propagation: Stratify seed for 30 – 60 days at 40^o F.

Remarks: Also called yellow pine in reference to the yellow color of the bark; most common western conifer. Its range is defined by a 25 inch annual precipitation at lower elevations and prolonged winter freezing at higher elevations. Ponderosa is very similar to Jeffery pine, but usually occurs at a lower elevation. It will hybridize with Jeffery pine.



Pinus radiata – Monterey Pine

Pinus means cone producing, of pines, resembling a pine and *radiata* means radiating outward like how the cones are attached to the branches. .

Plant Family: Pinus – The Pine Family

Geographical Distribution: Rare in California; found in three locations: Ano Nuevo-Swanton, Monterey-Carmel, and Pico Creek-Cambria. These sites are around southern Monterey Bay. Also found in Mexico and Cedros and Guadalupe Islands. Grows below elevations of 1,400 feet (400 meters).

Plant Communities: Monterey pine grows in closed cone pine forests, oak woodland and coastal strand.

Habitat: Grows on dry sandy loam soils where there is coastal influence and summer fog occurs. Found in association with Gowen Cypress and Coast Live Oak.

Size: Medium tree 50 - 125 feet tall (15 - 38 meters) with trunks 2 - 3 feet diameter (0.6 - 0.9 meters); usually a single trunk with a crooked irregular branching pattern. Cultivars in other countries far exceed afore noted size. For example, a New Zealand tree, designated 80055, was discovered in 1955. This tree at 24 years of age measured 135 feet tall (41 meters) with a trunk diameter greater than 2 feet (60 cm).

Bark/Trunk/Twigs: Mature trees have a dark brown to black bark with deep fissures separating narrow ridges. Trunks tend to be branched and are often leaning or altered by constant sea winds. Twigs are slender, flexible, rather crooked and at first bright brownish but turning to gray.

Foliage: Evergreen needles in bundles of 3, from 4 - 6 inches long (10 - 15 cm) and a rich shiny or grassy green.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones 3 - 5.5 inches (7.5 - 14 cm) long, asymmetrical and a broad egg shaped, they are in whorls of 3 - 5, closed, have minute prickles on their scales and are massive near the base where they have large round knobs. Cones remain on trees for many years until opened by a forest fire or extreme hot weather. Seeds are ¼ inch long (6.25 mm) with a striped wing.

Site Ecology: Native to cool, humid, foggy coastal and inland areas. Winter rains and summer fog are typical of the trees' native home. It grows on highly organic sandy loam soils. It is intermediate in shade and fire tolerance. Those near coastal Monterey pines are often draped in in a moss that is really the lichen *Ramalina reticulata*.

Natural Significance: Monterey pines help with dune stabilization when they are near the coast. They also provide habitat for birds, small mammals, & deer.

Ethnobotanical Use: Not researched, but probably limited due to the small native population of these trees.

Commercial Use: Planted extensively as a landscape, park and ornamental tree. The Monterey is the world's most planted conifer species with over 11 million acres (4,400,000 hectares) worldwide. Chiles' paper industry depends this California import. The wood of the pine can be valuable if there were sufficient tree cultivated in the United States.

Propagation: Stratify seed for 30 – 60 days at 40⁰ F.

Remarks: Millions of Monterey pines have been planted world wide because of its rapid growth and beauty. Unfortunately native trees are threatened by urbanization, fire suppression, and pine pitch canker (*Fusarium subglutinans* forma *pini*). Tree is short lived for a conifer, usually living 80 - 100 years



Pinus sabiniana – Gray Pine

Pinus means cone producing, of pines, resembling a pine and *sabiniana* means named after Sabine.

Plant Family: Pinus – The Pine Family

Geographical Distribution: Foothill woodlands and chaparral of most California mountains with the exception of 50-60 mile gap in the southern Sierra Nevadas; grows mostly between 1,000-7,000 feet elevations (300 - 2100 meters), rarely down to 100 feet (30 meters) and above 6,000 feet. (1,830 meters). Like the blue oak, the gray pine encircles the central valley.

Plant Communities: Normally grows in the foothill woodland, northern oak woodland, and chaparral

Habitat: Dry slopes and ridges of foothills and low mountains; associated with oaks

Size: medium sized tree 40 to 80 feet tall by 1 to 3 feet in diameter (12-24 meters by 0.3-0.9 meters).

Bark/Trunk/Twigs: Single trunk that can be crooked or forked; bark dark gray, thick and irregularly furrowed becoming scaly with age; branches smooth and light gray and loose and open.

Foliage: evergreen needles in bundles of 3, 8 - 12 inches long (20 - 30 cm), gray-green, drooping with many white lines.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Large cones 6 -10 inches (15-25 cm) long, off-center egg shaped, brown and remaining on ends of upper branches for a long time (years). The cone exudes a great deal of resin.

Site Ecology: Shade intolerant and fire dependent; needs fire to reduce competition and prepare a seedbed; very drought tolerant once established. It can survive on 10 inches (25 cm) of rainfall and will grow on serpentine soils.

Natural Significance: Provides much wildlife habitat and the large seeds, pine nuts, are consumed by a wide variety of birds and wildlife.

Ethnobotanical Use: native Americans ate pine seeds and used resin for medicinal purposes. The pine nuts are highly nutritious: 25% protein and 49% fat, of which 95% is polyunsaturated.

Commercial Use: the pitchy wood makes this tree unsuitable for construction lumber, however, it is used for railroad ties and shipping pallets. It can be used for fence posts or for fire wood. In the landscape, this is a quick effect tree for a native or drought tolerate planting.

Propagation: Stratify seed for 30 days at 40⁰ F

Remarks: Has numerous common names: silver pine, ghost pine, digger pine, bull pine, and foothill pine. Sparse needles caused early Californian to call it the tree you can see through. The tree contains heptane, rather than turpenes like most other pines, and it very volatile in a forest fire; referred to as a “gasoline tree”.



***Platanus racemosa* - California or Western (Jepson) Sycamore**

Platanus means flat leaf and *racemosa* means with flowers arranged in a raceme

Plant Family: Platanaceae – Plane Tree, Sycamore Family

Geographical Distribution: Shasta County through central California foothills and valleys south into Baja; 6,600 feet (under 2,000 meters)

Plant Communities: Grows in valley and foothill woodlands, valley grasslands, and riparian woodlands.

Habitat: Common along streamsides and in riparian environments such as creeks and springs.

Size: Tree 40 – 80 feet tall (12 – 24 meters) with a trunk commonly 2 - 4 feet in diameter (0.6 – 1.2 meters) but it can be larger. There is a tree on the Stanford University campus that has a trunk diameter of 10.5 feet (3 meters)

Trunk /Bark: Single or multistemmed trunk that is mottled dark gray on light gray with flaking bark. With age, bark darkens and becomes rough and thick and deeply furrowed at base. This flaking bark is a distinctive feature of the native sycamore. Branches are whitish and smooth.

Foliage: Deciduous light green palmately shaped leaves 6 – 9 inches long and wide (15 – 25 cm); 5 (sometimes 3) deeply divided lobes with wavy margins; paler green and hairy on under side. Leaf stalk is quite long and stout and enlarged at its base. Leaves are similar to maple leaves.

Flowers: Small clusters of flowers in 3/8 inch (1 cm) head shape that appear in spring with leaves.

Fruit: Round ball 1 inch (2.5 cm) hanging on a long stalk. Composed of many nutlets with a curved stalk on the surface and a tuft of hair at the base of each nutlet.

Site Ecology: Typical along streams, in canyon areas that have sufficient moisture, on flood plains, and near springs and seeps.

Natural Significance: Due to the trees branched shape and dense foliage, this tree is a favorite nesting site for raptors. Its dense shade along streams keeps that part of a stream cooler, thus creating a different microclimate and habitat. Birds feed on the seed balls.

Ethnobotanical Use: Infusion of plant used as a general remedy, decoction of bark taken for a week for asthma, wood used in building construction, and the leaves used to wrap bread prior to baking.

Commercial Use: A useful ornamental and shade tree, but do the problems noted below, it's London plane tree relative is more widely used.

Propagation: Sycamore can be grown from cuttings, seed and through budding and grafting. If by cuttings, green ripened wood collected in June and planted under mist. If by seed, collect in spring plant directly in ground in shaded area.

Remarks: California or Western Sycamore has an aggressive and formidable root system and should not be planted near sewer and water lines or septic systems. It has a large fall leaf drop and the scaly bark sloughs off the trunk. Subject to sycamore blight, a fungus caused anthracnose. The genetic purity of the California sycamore could be compromised by its hybridization with the commonly planted non-native London plane tree. Because of its large size, form, and deciduous nature, this can be a useful tree in sustainable landscaping; providing shade in the summer and allowing the winter sun through.



***Polygonum aubertii* – Silver Lace Vine**

(*Fallopia baldschuanica* is what the new name is going to be)

Polygonum is derived from the Greek words polys, many, and gonu, knee or joint, hence "many joints" because of the thickened joints on the stem. *Aubrieta* is named for the French artist Claude Aubriet (1651-1743), painter of flowers and animals.

Plant Family: Polygonaceae - Buckwheat

Geographical Distribution: Native to China

Plant Communities: Naturalized in CA, WA, UT, CO, NM, MI, NY, PA, CT, DE, and VA; that about tells you it can grow just about anywhere.

Habitat: In a naturalized setting just about any disturbed place.

Size: May grow 10 to 15 feet (3 – 4.5 meters) tall in a single season, you can allow it to grow to about any height you wish; 20 – 30 feet (6 – 9 meters) might be its maximum.

Bark/Trunk/Twigs: A fast growing deciduous. It spreads by rhizomes and is very vigorous vine **Foliage:** The deciduous foliage is bright green, new leaves have a reddish bronze hue. It can look pretty ragged when it goes dormant in winter.

Flowers: Small, fragrant flowers bloom in summer, ranging from greenish to white, sometimes with a pink tinge, borne abundantly on slender panicles. When in full flower the plant is a white, fluffy mass; bloom time is from September until the first frost.

Fruit: Fruit is not showy

Site Ecology: Tolerant of a variety of soil textures and dry environments, heat, full sun to shade, humidity

Natural Significance: This is an absolutely amazing insectary plant. It attracts a wide variety of pollinators and other beneficials during long blooming period.

Ethnobotanical Use: Nothing noted

Commercial Use: Silver lace vine has a variety of potential applications, but it must be managed. This extremely fast growing vine can be used on a trellis, as a ground cover, on a fenced hedge row, or as a climber on woody plants. It should be pruned back annually to keep under control, otherwise it will become invasive. This plant is an excellent source for provide natural pest control through the beneficial insects it attracts.

Propagation: Easy to grow with any method; cuttings, seed, air layering, rhizomes, root dividing, etc.

Remarks: In some states it is considered a weed. Silver lace vine may be undergoing a genus name change to *Fallopia*.



Polystichum munitum – Western Sword Fern

Polystichum: from the Greek polys, "many," and stichos, "row," referring to the rows of sori;
munitum: means armed, fortified

Plant Family: Dryopteridaceae – Wood Fern Family

Geographical Distribution: Found everywhere except the interior valleys, high mountains and the desert below 5,000 feet (1,515 meters) elevation. Also grows north to Alaska, east to Montana, and south to Baja California.

Plant Communities: Most commonly grows in Douglas fir forests, redwood forests and yellow pine forests.

Habitat: Most often found on moist wooded hillsides and shaded slopes; more rarely on cliffs and rock outcrops due to lack of water. In the wild it thrives under a forest canopy.

Size: Under favorable conditions this fern can reach 5 feet (1.5 meters) in height.

Bark/Trunk/Twigs: A herbaceous plant that has rhizomes that are either sub erect to erect and often stout. Large Western Sword Ferns can produce 75 – 100 fronds that are initially erect but eventually develop an arching form.

Foliage: The lance shaped forest green fronds grow out of a stout crown that has papery russet brown scales. The thick fronds have parallel rows of sword shaped leaflets that grow on each side of a midrib.

Flowers: Is not a flowering plant, therefore, produces no seeds, but rather spores formed by a structure called a sporangia located on the underside of the leaflets.

Fruit: The sori, fruiting bodies, are under the frond leaflets in two rows on either side of the midrib.

Requirements: This is a plant that does not withstand high heat. It does best in part to full shade and the roots need to have a continuous source of moisture. It is adaptable to a variety of soil types but does better under acidic soil conditions.

Natural Significance: Western sword fern provides forage for elk, deer, and black bear. In coastal Oregon forests it is one of the ten most frequently used foods of Roosevelt elk. In Oregon western sword fern is a preferred food of mountain beaver.

Ethnobotanical Use: Native Americans used sword fern in a variety of ways, including: protective layers in pit ovens, separators between foods in storage boxes or baskets, as non-stick mats on berry drying racks, for a children's leaflet counting game, and rhizomes were peeled, baked and eaten. The fronds were also tied with maple bark to make bedding and mattresses. The number of fronds used was a precursor to the sleep number bed – NOT!

Commercial Use: Sword fern is a good choice for stabilizing and restoring degraded slopes. In an interior valley garden plant this fern on the north side of a building or under your shade trees. The cut fronds are long lasting and make an interesting addition to flower arrangements. Enormous quantities of leaves are gathered for backgrounds in funeral wreaths and other floral displays; the evergreen leaves keep well in cold storage and are exported to Europe.

Propagation: Ferns are propagated from their spores. There is a specific protocol that must be followed in order to be successful. See the Propagation Protocol Database for propagation details.

Remarks:



***Populus balsamifera ssp. trichocarpa* – Black Cottonwood**
Populus is the ancient name for people, arbor populi ‘tree of the people’.

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Alaska south through British Columbia down into California, Nevada, and Utah and east to North Dakota; sea level to 11,600 feet (3,550 meters)

Plant communities: Grows in riparian woodlands within a wide range of other plant communities.

Habitat: Found on stream banks, flood plains, and other moist areas, often with willows and Red Alder

Size: Typically reaches 60 – 120 feet in height (18 – 36 meters) with a trunk diameter of 1 – 3 feet (0.3 – 0.9 meters), can be much larger.

Bark/Trunk/Twigs: Branches brown the first year, turning gray later and are moderately stout. The bark is smooth yellowish tan in young trees and gray to grayish brown in mature trees.

Foliage: Deciduous, alternate, simple, narrowly to broadly egg-shaped or lanceolate, 3 – 6 inches long (1 ¼ - 2 ½ cm) and 2 – 4 inches wide (¾ – 1 ½ cm); broadly ovate leaves are dark green and shiny above, whitish below with veins that are often red-tinted. Margins are finely serrate, leaf tips pointed, and bases round. Foliage turns yellow in the fall. A sticky aromatic resin covers buds and new leaves.

Flowers: Dioecious: male catkins about 1 inch long (2-3 cm) and female catkins 3 – 8 inches long (8 – 20 cm); bear tiny purplish-red flowers in early spring.

Fruit: Light brown, hairy, ¼ inch capsule (6 mm) , matures in spring and divided into 3 parts. Black cottonwood is a prolific producer of cottony seeds.

Site Ecology: Black cottonwood grows in a variety of conditions including both moist and dry areas. It likes full sun and is shade intolerant. Sensitive to air pollution

Natural Significance: This is an important tree for its browse value to wildlife. It also a nesting site for many birds. The resin noted under foliage acts a deterrent against plant eating insects and bees collect the resin to use a bacterial disinfectant in their hives. Black cotton also protects and stabilizes stream banks.

Ethnobotanical Use: Not researched

Commercial Use: The wood of Black Cottonwood is used in the fabrication of crates, pulp, and veneer. It is a commonly seen street tree in England.

Propagation: The tree can be easily started by both seeds and cuttings.

Remarks: In early spring, the young leaves and buds exude a strong balsam fragrance. Some sources use *Populus trichocarpa* as the scientific name.



***Populus fremontii* ssp. *fremontii* – Fremont Cottonwood**

Populus is the ancient name for people, arbor populi ‘tree of the people’. *Fremontii* is named for John Charles Fremont (1813-1890), "the Pathfinder," Army officer and presidential candidate who collected plants on four hazardous journeys exploring the western United States.

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Found throughout California (except for the Modoc Plateau) into Mexico and east into Nevada, Arizona, New Mexico, and west Texas; from sea level to 6,500 feet (2,000 meters)

Plant Communities: Cottonwood grows in valley and foothill woodlands and riparian woodlands.

Habitat: Riparian areas near streams, river, and wetlands;

Size: Grows rapidly to 50 feet tall (15 meters) in 20 years; 100 feet (30 meters) maximum height with trunk diameters up to 5 feet (1.5 meters)

Bark/Trunk Twigs: Smooth when young; deeply furrowed with whitish cracked bark with age. Twigs are round in cross section and pale yellow at first turning to yellow gray.

Foliage: Deciduous green; cordate (heart-shaped) with white veins and coarse crenate-serrate toothed margins; petioles ½ - equal leaf length, laterally compressed near base that causes leaves to flutter in the wind.

Flowers: Flowers are drooping catkins; bloom in March-April.

Fruit: Achene attached to silky hair, hence cottonwood. Wind dispersed

Site Ecology: Need a gravel bar or sand substrate soil to germinate, seed establishment difficult; cuttings work well; high water use; does best in pH 6-8 and 20 - 30 inches (50 – 75 cm) of precipitation.

Natural Significance: In California, Fremont cottonwood-willow and willow communities provide the greatest over story canopy coverage of any desert riparian vegetation type. Consequently, they provide a wider range of perches, nest sites, and foraging substrates for wide variety of bird species.

Ethnobotanical Use: Sweet, starchy sap can be consumed raw or cooked. Bark is bitter, but edible. The catkins can be consumed raw or boiled in stews. Native Americans used the bark and leaves to make poultices to relieve swelling, treat cuts, cure headaches, and wash broken limbs, and to treat saddle sores and swollen legs of horses. The twigs were used for basket materials and the wood for mortars and tools. In northern Mexico, small industries utilize the wood to make bowls and small statues. Fremont cottonwoods were used by the Pueblo tribes for drums and were the preferred wood for Quechan cremations.

Commercial Use: Stream bank and sediment stabilization; water quality improvement; ground water recharge; flood abatement; fish and wildlife habitat. Primary wood products include lumber, veneer, and pulpwood. Finished products include crates and boxes for food storage and pallets. The wood is used locally in the southwestern United States for fence posts and firewood and is preferred for kilning bricks in Arizona. The wood shavings from Fremont cottonwood are used in livestock bedding, mulches, packing material, and insulation. Fremont cottonwood has been widely planted as an ornamental and a shade tree, and used as a windbreak throughout the southwestern United States.

Propagation: Cuttings or suckers from male trees are the best way to propagate and avoid the cottony seeds produced by female trees.

Remarks: Distributed throughout southwest; susceptible to mistletoe infestations.



Populus nigra 'Italica' – Lombardy Poplar

Populus is the ancient name for people, arbor populi 'tree of the people'.

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Naturalized throughout California, native to Italy

Plant Communities: Not an native plant

Habitat: Variable, but prefer hot summer and cold winters. Do not do as well on coast where there is minimal temperature fluctuations and in areas that have mild winter temperatures.

Size: This straight growing tree ranges from 30 – 70 feet tall (9 - 21 meters) and 1 – 2 diameter trunks (0.3 – 0.6 meters)

Bark/Trunk/Twigs: Trunk takes a narrow, columnar form; bark becomes dark and fissured with age; twigs smooth and yellowish.

Foliage: Deciduous 2 - 8 inch long leaves (5 – 20 cm), fine toothed with classic deltate shape. Leaves are bright green and turn golden yellow in fall.

Flowers: Green catkins

Fruit: None, all trees are males

Site Ecology: Adaptable to many soil types and moisture regimes, but prefers full sun

Natural Significance: It straight growing nature does not make it an ideal nesting site, however if the trees develop into a thicket, as the will do, then they become excellent habitat for a variety of critters.

Ethnobotanical Use: Probably not readily available to Native Americans, and besides they undoubtedly use quaking aspen and Fremont cottonwood for their purposes.

Commercial Use: Landscaping, windbreaks, privacy screens; but plant them away from sewers, pavement, and driveways. When the biomass movement started in the mid 1970's, many groves of Lombardy poplar were planted to produce wood for energy. Lombardy poplar suckers profusely, so new trees will come up at random near the parent plants.

Propagation: All trees are male; propagate from cuttings and sprouts.

Remarks: Rapid growth, up to 6 feet per year, however, short-lived due to pest susceptibility: borers, cytospora canker, and bacterial wetwood.



Populus tremuloides – Quaking Aspen

Populus is the ancient name for people, arbor populi ‘tree of the people’.

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Quaking aspen is found in forests from Arctic to Mexico and from Atlantic to Pacific oceans; between 3,000 – 10,000 feet (900 – 3,000 meters), in other words, almost nationwide.

Plant Communities: Grows in yellow pine forests, subalpine forests, lodgepole forests, and montane coniferous forests.

Habitat: Colonies of this tree are sited along stream beds, damp places, dry ravines, depressions, meadows, ridges and upland forests.

Size: It is a small to medium tree between 10 – 80 feet tall (3 – 25 meters), trunks 4 - 24 inches in diameter (10 – 60 cm), colonial

Bark/Trunk/Twigs: Branches and twigs greenish-white and smooth, becoming darker and more furrowed with time; tree crowns are rounded with long clear trunks. When in groves the trunks are straight and vertical. The outer bark is thin and white, when it sloughs off the green inner bark is photosynthetic.

Foliage: Deciduous, alternate, simple, broadly egg-shaped, kidney shaped, or circular, 1 – 4 inches long (2.5 - 10 cm), bases rounded to heart-shaped, finely toothed, upper surface green and lower surface paler green; petioles $\frac{3}{4}$ - 3 inches long (2 – 7.5 cm). The flattened petiole of the leaf make them flutter in the breeze, hence the common name.

Flowers: Catkins; male about 1 inch long (2 - 3 cm) and female $1\frac{3}{4}$ – 4 inches long (4 - 10 cm)

Fruit: Lanceolate to narrowly egg-shaped capsules, smooth with a very short stalk

Site Ecology: The aspen is shade intolerant and grows in a variety of soil types. It will thrive in wet area, producing dense stands or also as individuals on dryer rocky sites.

Natural Significance: Valuable wildlife habitat and browse for deer and elk. Beaver love quaking aspens. They stabilize stream banks.

Ethnobotanical Use: Not researched

Commercial Use: Use for pulp, manufactured into boards, furniture, and novelty items.

Propagation: Suckers and cuttings work much easier than seeds for regeneration purposes.

Remarks: Grows abundantly from root suckers and stumps into clonal colonial stands following fire, flooding, grazing or cutting. Difficult to regenerate through its seeds. Trees are short-lived; from 100 – 200 years old. However, clones in the great basin are estimated to be over 8,000 years old!



Prunus emarginata – Bitter Cherry

Plant Family: Rosaceae- The Rose Family

Geographical Distribution: Distributed throughout western Canada and the United States. In California it occurs at elevations between 4,000 - 9,200 feet (1,212 - 2,790 meters) in the Sierra Nevada.

Plant Communities: Grows in montane coniferous forest, red fir forests, lodgepole forests, subalpine forests, yellow pine forests and chaparral.

Habitat: Occurs on moist soils in valleys and along stream banks and on mountain slopes in chaparral, and in open forests and woodlands.

Size: Thicket forming shrub or small tree commonly reaches between 3 ½ - 12 feet (1.1 – 3.6 meters, occasionally to 20 feet (6.1 meters) in height.

Bark/Trunk Twigs: Dark brown, smooth bark is very bitter. The smooth, slender twigs are red or gray and hairy when young.

Foliage: The deciduous narrowly ovate leaves are generally widest past the mid-point of the leaf, 1 - 2 ½ inches long (2.5 – 6.25 cm) and 3/8 - 1 ¼ inches (0.9 – 3.1 cm) wide, and have blunt tips. Upper surfaces are dark green, lower are paler and occasionally hairy, with 1-2 dot-like glands near or on the petiole. Margins are finely and bluntly serrate.

Flowers: Inflorescences are clusters of 5-12 white 5-petaled flowers. Flowers are ½ inch wide (1.25 cm), have rounded, notched petals, and appear in spring simultaneously with the leaves.

Fruit: Bright red to blackish round to oval fruits are ¼ - ½ inch (6.25 – 12.5 mm) in diameter and have a single pointed stone. Pulp is juicy and very bitter.

Site Ecology: Drought tolerant, but is tolerant of damp conditions, including seasonal flooding, however, soil must be well-drained, preferably gravelly. Bitter cherry does equally well in full sun to ½ shade.

Natural Significance: The bitter fruit provides a food source for birds and other wildlife.

Ethnobotanical Use: Native American had to use both the woody portions and the fruit from this plant, but I not sure how.

Commercial Use: Tree has been harvested for lumber that has been used to make furniture.

Propagation: Stratify seed for 60 days at 40⁰ F.

Remarks: The largest known specimen is found in Seward Park, Seattle at a height of 100 feet (30 meters). When in bloom, this cherry gives off an almond like fragrance.



Prunus ilicifolia var *lyonii* – Catalina Cherry

Plant Family: Rosaceae-The Rose Family

Geographical Distribution: Distribution is limited to four of the Channel Islands, though the species has been reportedly observed in Baja California. Catalina Cherry grows at elevations from sea level to 3,000 feet (900 meters).

Plant Communities:

Habitat: Occurs in chaparral, oak woodlands, and in canyons, moist or dry.

Size: Tree or large shrub which can reach 45 feet (13.5 meters) in height.

Bark/Trunk Twigs: Bark is dark reddish-brown and rough. Twigs can be yellow-green or reddish brown and are hairless.

Foliage: Evergreen, narrowly ovate, 2 – 4 inches (5 – 10 cm) long by ½ - 2 ½ (1 ¼ - 3 ¾ cm) inches wide leaves are glossy, dark green on upper surfaces and paler below. Margins are mostly without teeth, bases rounded, and tips short-pointed.

Flowers: 2 - 4 ½ inch (5 – 11.25 cm) spike-like clusters appearing at leaf axils in early spring hold many ¼ inch (0.6 cm) white 5-petaled flowers.

Fruit: Dark purple to black, round fruit is ½ - 1 inches (1 ¼ - 2 ½ cm) in diameter and hold a large stone, therefore, not a lot of flesh. Fruit is edible and matures in late autumn.

Site Ecology: Plant is drought tolerant, but will grow more rapidly with supplemental water; will not tolerate hard frost.

Natural Significance: Wildlife habitat and fruit provides food for both birds and mammals.

Ethnobotanical Use: Catalina Cherry is an extremely valuable plant to Native American, as they made use of fruit and seeds, leaves and bark.

Commercial Use: Species is widely used as an ornamental; and fruit can be made into jams or dried for human consumption.

Propagation: Stratify seeds for 60 days at 400 F before planting.

Remarks: *P.i. spp. lyonii* hybridizes readily with *P. i. spp. Illicifolia*. As a result, many plants offered in nurseries are actually hybrids. In fact it is difficult to find a non-hybridized specimen. The two plants are often treated as separate species.



***Prunus ilicifolia* var *ilicifolia* – Hollyleaf Cherry**

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Pacific coast from central California to Baja; from sea level to 5,000 feet (1,500 meters)

Plant Communities: Grows in chaparral and foothill woodlands.

Habitat: Dry slopes, moist sites along streams and in chaparral and foothill woodland.

Size: Small tree or shrub with short trunk up to 50 feet (15 meters) tall with trunk diameters of 1 foot (0.3 meters)

Bark/Trunk/Twigs:

Twigs are gray to reddish brown

Foliage: Evergreen, shiny dark green, and leathery; blades are elliptical or oval, 0.5 – 2 inches long (2 – 5 cm), with spiny or smooth margins, but the majority of the leaves have spiny margins.

Flowers: Long clusters of tiny, ¼ inch, (6.25 mm) flowers up to 2 inches (5 cm) long, white.

Fruit: Round, dark purple to black sweet fleshy pulp around the stone. Large amount of stone (pit) in relationship to amount of fruit.

Site Ecology: Extremely drought tolerant, but need good soil drainage.

Natural Significance: Wildlife habitat and fruit provides food for both birds and mammals.

Ethnobotanical Use: Hollyleaf Cherry is an extremely valuable plant to Native American, as they made use of fruit and seeds, leaves and bark.

Commercial Use: Very useful ornamental as a specimen tree, screen or tall hedge.

Propagation: Stratify seeds for 60 days at 40⁰ F before planting.

Remarks: Don't plant near sidewalks because fruit stains. *P. ilicifolia* var *lyonii* (Catalina Cherry) will hybridize with hollyleaf cherry.



Prunus subcordata – Sierra Plum

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: Southern Oregon, throughout Coast Ranges, and Sierra Nevada to Kern County; from 330 - 6,500 feet (100 - 2,000 meters) elevation.

Plant Communities: Grows in foothill woodlands, yellow pine forests, mixed evergreen forests, and north coastal coniferous forests.

Habitat: Sites vary from along streams to rocky slopes.

Size: Shrub or small tree from 6.5 – 25 feet tall (2 – 7.5 meters), tends to broader than tall.

Bark/Trunk/Twigs: Stiff rigid branches and twigs that tend to be crooked and may end in a sharp point; bark is dark brown and cracks with age. Horizontal lines are evident in the bark.

Foliage: Deciduous; elliptic to widely ovate, $\frac{3}{4}$ - 2 inches long (2 – 5 cm) and $\frac{1}{2}$ - 1 $\frac{1}{2}$ inches wide (0.12 – 4 cm) with very fine toothed margins; often times glands are present at the base of petioles. Leaves are pinnately veined and have short petioles, and turn scarlet to orange to red to yellow in the fall.

Flowers: Inflorescence is a cluster of 1 – 7 complete $\frac{1}{2}$ inch broad (0.12 cm) 5 petal white to pink flowers. The flowers come out before the leaves.

Fruit: Oblong, plum-like fruit is red to yellow colored and about 1 inch long (2.5 cm); pulp of fruit is fleshy.

Site Ecology: Sierra plum (probably an old name like Pacific plum would be a more accurate moniker) varies in its requirements. It can be found along both moving and still water areas or it will also do just fine in a dry open well-drained slope. It does some moisture to produce a fruit crop.

Natural Significance: Birds love the fruit.

Ethnobotanical Use: Native Americans ate the fruit fresh and dried it for later use.

Commercial Use: The fruit is somewhat tart but is harvested and made into preserves. Given the early flowering and the fall color of the leaves, this could be an underutilized accent tree in a landscape.

Propagation: Stratify seed for 60 days at 40^o F before planting.

Remarks: Sometimes referred to as the Klamath Plum. The fruit and thorn like twigs separate Sierra plum from bitter cherry and western choke cherry. Plants vary, some have white flowers, some have pink. Others will have sweet and yellow fruit with other plants producing bitter red fruit. There may be varieties that have not been described.



Prunus virginiana var. *demissa* - Western Choke Cherry

Plant Family: Rosaceae- The Rose Family

Geographical Distribution: This species is widely distributed throughout Southern Canada and The United States. It is found throughout much of California including: along the coast and in the desert, at elevations ranging from 300 – 9,500 feet (91 – 2,880 meters). It is not found in the central valley.

Plant Communities: Grows in chaparral, mixed evergreen forests, yellow pine forests, and almost all other communities except the deserts.

Habitat: Found growing in moist soils often along stream sides and along forest edges or clearings.

Size: A small tree or shrub, often forming thickets, commonly reaching between 3 ½ to 15 feet (1.1 – 4.6 meters) in height, but may grow as tall 20 feet (6.1 meters).

Bark/Trunk/Twigs: Bark is gray to brown and smooth or becoming scaly. Twigs are brown with fine gray hair when young and have prominent lenticels and a bitter odor.

Foliage: Deciduous, alternately arranged, broadly elliptical leaves are 2 ½ - 3 ½ inches long (6.25 – 8.75 cm) and up to 1 ¾ inches wide (4.4 cm) and are widest above the mid-point. Upper surfaces are shiny dark green and lower are paler and occasionally slightly hairy, often showing two glands near or on the petiole. Margins are sharply saw-toothed, and leaf tips sharp pointed. The deciduous leaves turn to a red to yellow in Autumn.

Flowers: Inflorescence consist of unbranched clusters to 4 inches in length (10 cm) bold ½ inch wide (1.25 cm) white flowers with 5 rounded petals each that appear in spring.

Fruit: Glossy dark red to blackish or occasionally yellow round fruits are ¼ - 1/3 inch in diameter (6.25 – 8.25 mm) and have a single stone covered by fleshy, astringent pulp.

Site Ecology: Grows in partial shade in hot summer areas. Drought tolerant but withstands moist conditions. Most commonly found at higher elevations or in the northern part of its range, as it is more adapted to the cooler summers in these environments.

Natural Significance: Birds and wildlife consume the fruit.

Ethnobotanical Use: Bark was used by Native Americans as a medicinal.

Commercial Use: Fruits are edible, if rather astringent, but can be made edible by leaching out acidity. Berries make a good jelly or jam and there is nothing better than western choke cherry glass of wine after your western choke cherry fruit cocktail. Stones of cherry are poisonous.

Propagation: Stratify for 60 days at 40⁰ F before planting.

Remarks: The largest known specimen is found in Kootenai County, Idaho at a height of 73 feet (22 meters). The *P.v.* var. *virginiana* is known as Eastern Chokecherry and grows in the eastern part of the plant's range, *P.v.* var. *demissa* grows in California. Some sources treat both as simply as *Prunus virginiana*, disregarding the minor differences in leaves and fruits.

Pseudotsuga menziesii var. *menziesii* – Douglas Fir

Plant Family: Pinaceae – The Pine Family

Geographical Distribution: Northern California in the Coast Range, south to Santa Barbara County; in the Sierra Nevada, south to Fresno County and north into British Columbia; from sea level to 7,200 feet (2,200 meters)

Plant Communities: Grows in numerous communities including: north coastal coniferous forest, redwood forest, douglas fir forest, mixed evergreen forest, and yellow pine forest.

Habitat: Found in a wide spectrum of habitats; from the wet north coast forests where redwoods dominate to summer-dry west side Sierra Nevada mixed conifer hardwood forests.

Size: Large to very large tree between 80 – 200 feet tall (24 – 61 meters) and 2 – 6 foot diameter (0.6 – 1.8 meters) trunks.

Bark/Trunk/Twigs: An erect, tall single stemmed tree with deeply furrowed corky bark. The furrows often appear in elongated diamond patterns. A cross section of the outer bark reveal alternating patterns of reddish-brown and yellow. Twigs are slender and start orange-brown but soon change to gray-brown. The branches are covered in needles and sweeping in nature. Douglas firs may live to 1,000 years of age.

Foliage: Evergreen needles ½ - 1 ½ inches long (1.2 – 4 cm), blunt at tip, yellow (when younger) to dark blue green with two yellow lines on underside. Needles spreading mostly in two rows and flattened

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones are 2 – 4 inches long (5 – 10 cm) and pendant. The seed cones have three lobed bracts that protrude from between the cone scales. These bracts resemble a mouse entering a hole with its hind legs and tail projecting. The bracts have also been described as tridents.

Site Ecology: Requires nearly full sun for best development, but is intermediate in shade tolerance; its thick bark makes Douglas Fir resistant to fire. As a pioneer species Douglas fir usually colonizes areas that lack competing vegetation, such as burned or logged sites. Like most conifer species, Douglas fir has a mutualistic relationship with mycorrhizal fungi. These saprophytic organisms aid in moisture and nutrient uptake. The tree is susceptible to many other fungi and insects, as well as mammals eating the inner bark.

Natural Significance: Old growth Douglas Fir forests are habitat for many rare or threatened species, such as the northern spotted owl and the marbled murrelet. Foliage is consumed by grouse, deer and elk, while birds and mammals eat seeds.

Ethno botanical Use. Not researched

Commercial Use: Douglas Fir is the major timber producing species in western North America. It is used for lumber, pulp, plywood, and particle board. It is probably a little too hot in the Central Valley for this tree to be a common landscape choice.

Propagation: Stratify seed for 60 days at 40° F.

Remarks: Douglas fir is the world's 2nd tallest conifer. A tree near Coos Bay, Oregon is 329 feet tall (100 meters) and has an 11 ½ foot diameter (3.5 meters). There are 5 species in the genus *Pseudotsuga*, with two being in the United States. *P. macrocarpa*, big cone Douglas fir, occurs in southern California. *P. menziesii* var. *glauca* grows in the Rocky Mountains.

Pteridium aquilinum var. *pubescens*- Bracken Fern

Plant Family: Dennstaedtiaceae – The Bracken Family

Geographical Distribution: : California floristic province, except the central valley, to Alaska and into eastern Canada and the United States; sea level to 10,500 feet (0 – 3,200 meters).

Plant Communities: Grows in foothill woodlands, yellow pine forests, north coast coniferous forests, redwood forests, Douglas fir forests, and mixed evergreen forests.

Habitat: Foothill and mixed conifer pastures, meadows, hillsides, roadsides, and woods

Size: Petiole and frond from 10 inches to 10 feet in length (0.25 – 2.5 meters)

Bark/Trunk/Twigs: Herbaceous, no true stem, but long petioled fronds grow from stalks connected to underground rhizomes.

Foliage: Deciduous Fronds widely triangular, leathery, hairs on lower surface and may also be on upper. Display pinnate venation and are deeply divided (lobed).

Flowers: Non-flowering plant. Usually multiply by underground rhizomes.

Fruit: Brown sporangia clusters cover undersurface of frond near margins.

Site Ecology: Full sun to partial shade and little to moderate water; bracken fern especially likes acidic soils.

Natural Significance:

Ethnobotanical Use: Native

Americans use young tender fronds and rootstocks for food. They also wove baskets and textiles from the wiry rhizomes. Early settlers thatched summer shelters with the fronds. The Ohlone boiled the root to make a hair rinse. The Mendocino used the plant as a diuretic for horses.

Commercial Use: Nothing noted, however, it will do well in a landscape but must be controlled as the rhizomes make this an extremely invasive plant.

Propagation: Dividing the rhizomes and planting them is the most efficient means of reproducing bracken fern.

Remarks: Very common in the Sierra where entire hillsides may be covered with large fronds. Toxic in quantity to livestock and humans, but cooking removes toxins, but still may be carcinogenic. Care must be taken when planted in a landscape, because plant can become invasive.



***Purshia tridentata* var. *tridentata*- Bitterbrush**

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Found throughout the Inner Mountain West; in California the Klamath and Cascade Ranges, higher elevation of the north coast range, and higher elevation Sierra Nevada east side at elevations from 2,970 - 11,200 feet (900 – 3,400 meters).

Plant Communities: Grows on mixed evergreen forests, yellow pine forests, lodgepole forests, sagebrush scrub, and pinyon-juniper woodlands.

Habitat: Grows in dry coniferous forests, woodlands and scrubs in the Great Basin and the mountains of California; common in Ponderosa and Jeffery Pine forests as an understory shrub and commonly grows in the desert mountain woodlands

Size: Can reach 3 ½ - 10 feet (1.1 – 3 meters) in height, though most commonly seen at 4 – 5 feet (1.2 – 1.5 meters)

Bark/Trunk: Twigs are gray or brown

Foliage: Alternate, ¼ - 1 inches (0.6 – 2.5 cm) long leaves are pinnately 3, or occasionally 5, lobed and clustered on short twigs. Upper surfaces are green to grey-green, lower have long white hairs. Margins are rolled toward the lower surface.

Flowers: Single, cream to pale yellow flowers bearing numerous stamens attached to a cup surrounding 1-10 pistils grow on short, lateral twigs.

Fruit: From 1-3 achenes, each ending in a beak-like style, per flower.

Site Ecology: Drought tolerant; struggles in humid or coastal areas.

Natural Significance:

Nitrogen fixing. Species serves as important browse for wildlife; seeds provide food for birds and chipmunks.

Ethnobotanical Use: Not researched.

Commercial Use: Useful to control erosion.

Propagation: Stratify seed for 60 – 90 days at 400 F; can also be started by layering.

Remarks: Closely related, and very similar, to the more southern *P. tridentata* var. *glandulosa*, the main differences being that the leaves of *P. glandulosa* are a darker green, glandular, and mostly lacking hairs. To further complicate matters, these two hybridize with each other.



***Purshia tridentata* var. *glandulosa* – Waxy Bitterbrush**

Geographical Distribution: Found on the eastern slope of the Sierra Nevada south to the mountains of Southern California extending into West-Central Nevada from 2,300 – 9,900 feet (700 – 3,000 meters) elevation.

Plant Communities: Grows in chaparral, Joshua tree woodlands, and pinyon-juniper woodlands.

Habitat: Grows in dry coniferous forests, woodlands and scrubs in the Great Basin and the mountains of California and commonly grows in the desert mountain woodlands.

Size: To 4 feet (1.2 meters) in height and 6 feet (1.8 meters) wide.

Bark/Trunk/Twigs: Twigs are gray or brown

Foliage: Evergreen, alternate, ¼-1” long leaves are pinnately 3, or occasionally 5, lobed, glandular and clustered on short twigs. Upper surfaces are green, lower are mostly hairless. Margins are rolled toward the lower surface.

Flowers: 1 inch (2.5 cm) single, white to pale yellow flowers bearing numerous stamens attached to a cup surrounding 1-10 pistils grow on short, lateral twigs.

Fruit: From 1-3 achenes, each ending in a beak-like style, per flower.

Site Ecology: Normally grows on well-drained soil in dry, full sun settings.

Natural Significance: Nitrogen fixing. Important as winter browse for animals

Ethnobotanical Use: Not researched.

Commercial Use: Useful to control erosion.

Propagation: Stratify seed for 60 – 90 days at 40⁰ F; can also be started by layering.

Remarks: Closely related, and very similar, to the more northern *P. tridentata* var. *tridentata*, the main differences being that the leaves of *P. glandulosa* are a darker green, glandular, and mostly lacking hairs. To further complicate matters, these two hybridize with each other.

***Quercus agrifolia* – Coast Live Oak (California Live Oak)**

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; *agrifolia*)

Plant Family: Fagaceae – The Oak Family

Geographical Distribution: Occurs in coast range from Northern California to Northern Baja.; to 5,000 feet (1,500 meters).

Plant Communities: Coast live oak grows in the northern and southern oak woodland, foothill woodlands, coastal forests.

Habitat: Well drained soils in coastal canyons, plains, and foothills

Size: Mature trees range from 30 – 80 feet tall (9 – 24 meters) with trunks 1 – 3.3 feet in diameter (30 cm – 1 meter); slow growth rate and long lived; 250 years and older.

Bark/Trunk Twigs: mature bark is grey and shallowly furrowed; trunks are usually crooked that separate into wide spreading limbs in its natural habitat. The limbs and branches on mature trees are twisted and gnarled. There may be multiple trunks that often times result from stump sprouting after a fire.

Foliage: Evergreen leaves oblong to oval 1 - 3 inches long (2.5 – 7.5 cm) and cupped shaped (convex). Entire toothed margins; upper surface is convex, deep green and smooth and lower surface is paler, with hairy-tufted vein axils (hard to see, probably need a hand lens).

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Acorns $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches long (2 – 4 cm) and narrowly conical; mature in one year to a rich reddish-brown color; and have high production every 2 - 3 years. Acorn cups cover about 25% of the seed.

Site Ecology: Respond to fires by resprouting; pH 5.5-7.6; 20-60 inch ppt.; Unique among California Oaks in its ability to thrive in coastal regions.

Natural Significance: Stabilizes soils on slopes. Trees provide wildlife habitat and acorns are food for birds, small mammals, and deer.

Ethnobotanical Use: a least 12 Native American tribes used acorns as important food staple; colonists used wood for charcoal but wood warps on drying and have little commercial value.

Commercial Use: Excellent tree for shade and aesthetic quality, also a high heat fire wood. Due to the crooked nature of trunks and scaffolds it has little use in construction

Propagation: Directly plant the seed about 1 inch (2.5 cm) deep in the fall.

Remarks: Obligate relationship with mycorrhizal fungi, which provide critical moisture and nutrients to the oak tree. Canopy produces dense shade.



Quercus berberidifolia- Scrub Oak

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree;

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Grows from South-western Oregon South to Baja California extending into Arizona. In California, it is most commonly found on the western side of the Sierra Nevada at elevations from 300 – 9,000 feet (90 – 2,700 meters) elevation.

Plant Communities: Scrub oak grows in northern coastal scrub, closed cone pine forest, mixed evergreen forest, and coastal sage scrub (soft chaparral).

Habitat: Occurs in woodlands where thickets can exclude other understory plants, in chaparral, and on steep, dry slopes and shallow soils.

Size: This shrub grows 6 - 15 feet (1.8 – 4.5 meters) tall and can establish dense thickets.

Bark/Trunk/Twigs: bark is gray and scaly, twigs are yellowish-gray or occasionally reddish

Foliage: ¾-1 inch (2 – 2.5 cm) long, evergreen leaves have upper surfaces that are dark green and lower a slightly paler grayish- to yellowish-green scattered with sparse hairs. Margins are highly variable and can be smooth, toothed, or spiny, all three often found on the same twig.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Light Brown acorns are egg-shaped and ½ -1 ¼ inches (1.25 – 3 cm) long, ½ - ¾ inches (1.25 – 1.9 cm) wide. Bowl-shaped cups are warty with a regular, spiral pattern, and enclose 1/3 of the acorn.

Site Ecology: Shade intolerant. Re-sprouts vigorously after fire, allowing it dominance in the area. Does not tolerate serpentine soils. Prefers well drained soils and will tolerate occasional watering.

Natural Significance: Like the other oaks, birds and mammals consumed the acorns. This plant is also an excellent habitat for many organisms.

Ethnobotanical Use: Native peoples used these shrubs for food and wind shielding in windy conditions.

Commercial Use: Used as a background ornamental on well drained soils also good for stabilizing degraded or eroded sites. This could also be a useful hedgerow plant, although it does not grow particularly fast.

Propagation: Not researched

Remarks: The species is known to hybridize with numerous other oaks. *Quercus berberidifolia* is one of the two most common scrub oaks in California. Formerly known as *Q. dumosa*, a name now reserved for a rare Southern California species.



Quercus chrysolepis - Canyon Live Oak

(Quercus is Latin for oak, quer is Celtic for fine and cuez is Celtic for tree; chrysolepis means golden hair)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: The most widely distributed oak in California; Found from Oregon to Baja California at elevations ranging from sea level to 9,000 feet (2,700 meters)

Plant Communities: Canyon live oak grows in mixed evergreen forests, yellow pine forests, and montane chaparral.

Habitat: Typically found in foothills, mountain canyons, and on rocky slopes. Canyon live oak tolerates a wide variety of conditions, with an equally variable growth habit and mature size.

Size: Usually 15 – 50 feet in height (4.5 – 15 meters), though widely variable according to site conditions. Where drought and poor soils prevail, canyon live oak can be seen as a low, spreading shrub. Under north coast conditions with sufficient moisture and on good soil this can reach 70 feet (21 meters) in height. These trees can live up to 300 years.

Bark/Trunk/Twigs: Light gray bark is nearly smooth or scaly but will show slight furrowing with age.

Foliage: Evergreen, 1 – 3 inches long (2.5 – 7.5 cm) and ½ - 1 ½ inches wide (1.25 – 3.75 cm), elliptical to oblong leaves are shiny green above, pale gray-green below. Margins can be entire or spiny and often both are present, with spines more prevalent on younger growth.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: The ½ - 2 inches long (1.25 – 5 cm), brown acorns bear a distinctive shallow cup which is covered in yellow, hairy scales and mature about 1 ½ years after pollination

Requirements: Large trees are rarely found in areas that receive heavy snowfall. Grows in a variety of soils but is rare on serpentine.

Natural Significance: Wildlife use canyon live oak for cover, nesting, and foraging. Birds and mammals feed on acorns.

Ethnobotanical Use: The hardest wood of any western Oak, it has been historically used to fashion tools and in ship making; of lesser commercial value today. Native Americans leached tannins from acorns and made an edible mush.

Commercial Use: The species is used for fire wood, furniture, pallets, and paneling.

Propagation:

Remarks: The largest specimen in the state, at a height of 72 feet (21.6 meters) and trunk diameter of 10 feet (3.3 meters), lives in Cleveland National Forest in San Diego County. The name “chrysolepis” means golden scale and refers to the unique acorn cup of the species.



Quercus douglasii - Blue Oak

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; for David Douglas, collector in America for Royal Horticultural Society – 1798-1834)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Found only in California, but widely distributed from Shasta County to Los Angeles County as well as on the Santa Cruz and Santa Catalina Islands. Elevations range from close to sea level to as high as 5,900 feet (1,790 meters) in the southern part of its range. The species forms a nearly continuous ring in the foothills around the central valley.

Plant Communities: Blue oak grows in northern and southern oak woodlands, foothill woodlands, and infrequently in valley grasslands and chaparral.

Habitat: Common in the foothills bordering the interior valleys, often on poor soils. Blue oaks can often be seen in nearly pure stands.

Size: Typically 20 – 60 feet in height (6 – 18 meters), with a trunk diameter of 1-3 feet (0.3 – 0.9 meters); has a somewhat slow growth rate.

Bark/Trunk Twigs: Whitish gray bark is divided into narrow, checkered scales, from a distance bark has a somewhat white appearance.

Foliage: Alternately arranged, 1 - 3 ½ inches (2.5 – 8.75 cm) long and ¾ - 1 ½ inches wide (1.9 – 3.75 cm); leaves are blue-green above and paler and slightly hairy below. Margins are often wavy and shallowly and 4 to 7 lobed, occasionally entire. Leaves are generally widest beyond the midpoint of the leaf. Deciduous, but may retain most of its leaves year round on moist sites. The name blue oak is derived from the bluish tint of the leaves.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Brown, elliptical acorns are ¾ - 1 ½ inches in length (1.0 – 3.75 cm) with a shallow warty cup

Site Ecology: Tolerates drought but not shade. Will re-sprout following fire injury or cutting

Natural Significance: Acorns provide a food source for livestock and wildlife.

Ethnobotanical Use: Used extensively by native Americans for a wide variety of uses, including: poultice of ground galls and salt applied to burns, sores, and cuts; ground gall powder & salt wrapped in a small piece of cloth & dipped in water applied to sore eyes; leaves chewed for sore throats; acorns used extensively for food - acorns made into a fine meal, cooked into a mush and allowed to stand and harden into a "cake; dried, pounded, sifted into a fine meal and leached; branches used to make rims for twined work baskets; logs used in house construction; caps as toys for children, etc.

Commercial Use: Wood is used for fuel. Planted as an ornamental and its use is more appropriately as a background plant.

Propagation: Best to start from seed, no dormancy required.

Remarks: The largest known specimen is found in Southern Alameda County at 94 feet in height (28.5 meters). This species is known to hybridize with Oregon White Oak, Valley Oak, and Tucker Oak. *Quercus douglasii* is susceptible to Sudden Oak Death disease (*Phytophthora ramorum*), though less so than Tanoak (*Lithocarpus densiflorus*), or Coast live oak (*Q. agrifolia*).



Quercus durata- Leather Oak

(Quercus is Latin for oak, quer is Celtic for fine and cuez is Celtic for tree;

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Leather Oak is a California endemic. It grows in scattered thickets in the Klamath Mountains and in the Coast Range as far south as San Luis Obispo County. In the Sierra Nevada it ranges from Nevada to El Dorado Counties. It is distributed from 500 to about 6,000 feet (150 - 1,800 meters) elevation.

Plant Communities: Grows in mixed evergreen forest, valley foothill and woodland, yellow pine forest and montane_chaparral.

Habitat: Occurs in woodlands where thickets can exclude other understory plants, in chaparral, and on steep, dry slopes and shallow soils; plant communities: Chaparral and Central Oak Woodland

Size: This shrub grows 5 - 10 feet (1.5 – 3 meters) tall and 10 feet (3 meters) wide and can establish dense thickets.

Bark/Trunk/Twigs: Bark is gray and scaly, twigs are yellowish-gray and generally tomentose (covered with fine hairs).

Foliage: Evergreen leaves are $\frac{3}{4}$ - 1 inch (2 – 2.5 cm) long, evergreen and have upper surfaces that is dull green and lower leaf side a pale gray and thickly coated with fine, soft hairs. The oval leaves are convex, in fact almost curled inward and stiff and leathery. Margins are highly variable and can be smooth, toothed, or spiny, all three often found on the same twig.

Flowers: It is in flower from April to May. The flowers are monoecious (individual flowers are either male or female, but both sexes can be found on the same plant) and are pollinated by Wind.

Fruit: Light Brown acorns are egg-shaped to cylindrical and $\frac{1}{2}$ - 1 inches (1.25 – 2.5 cm) long, $\frac{1}{2}$ - $\frac{3}{4}$ inches (1.25 – 1.9 cm) wide. The acorn cap is turban shaped and covers approximately one third to one half of the acorn.

Site Ecology: Leather oak is largely confined to growing on soils formed from serpentine rock. It needs good drainage and is drought tolerant. Usually found growing in full to partial sun.

Natural Significance: Like most shrub oaks, leather oak serves as habit for numerous wild life species. The acorns were consumed by both birds, rodents, and deer.

Ethnobotanical Use: Seed can be dried, ground into a powder and used as a thickening in stews etc. or mixed with cereals for making bread. The roasted seed is also a coffee substitute. Any galls produced on the tree are strongly astringent and can be used in the treatment of hemorrhages, chronic diarrhea, or dysentery.

Commercial Use: This tree has excellent bonsai properties. The leaf mulch from the Leather Oak is applied to gardens for its efficacy in repelling slugs and grubs; however, it may impact the growth of other plants.

Propagation: Not researched

Remarks: There are two varieties of leather oak. The second variety *Q. durata var. gabrielensis*, occurs at elevations of 1,500 – 3,300 feet (450 to 1000 meters) and is limited to distribution in the San Gabriel Mountains within San Bernardino and Los Angeles Counties.

Quercus garryana - Oregon White Oak

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; for Nicholas Garry of the Hudson Bay Company)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: From isolated groves as far south as Santa Clara County north to Vancouver Island in British Columbia at elevations between 1,000 and 4,000 feet (300 – 1,200 meters). Found on the Central and North Coast, and in the foothills of the Klamath and Sierra Nevada Mountain Ranges.

Plant Communities: Oregon oak grows in northern mixed evergreen forests, at the edges of redwood and Douglas fir forests, northern and southern oak woodlands, and foothill woodlands.

Habitat: Oregon oak exists in a variety of sites including, upland slopes, exposed ridges, and valley bottomsoften found in pure stands or with other oaks.

Size: Typically 30 – 80 feet (9 – 25 meters) in height with trunks between 2 – 4 feet (0.6 – 1.2 meters). Maximum age of Oregon oaks is 400 years.

Bark/Trunk Twigs: The unbranched, straight trunks have thin, gray-white bark and are finely fissured. The main branches tend to grow upright and the lesser are horizontal and spreading.

Foliage: Deciduous leaves are 4 – 6 inches (7.5 – 15 cm) long and lobed; shiny green above and paler below due to a coating of soft hairs. Lobes are rounded or broadly angular, margins with teeth. The leaves turn a russet red color in the fall.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Rounded acorns are $\frac{3}{4}$ - 1 $\frac{1}{4}$ inches (2 – 3 cm) long, and appear to bulge out of their deep, bowl-shaped, slightly warty cups. The acorns have a blunt, rather than pointed end.

Site Ecology: Unlike many oaks, tolerates part shade and a variety of soil types including, rocky or gravelly sites and heavy clay. The climate is moderate with warm summers and freezing winter temperatures; precipitation ranges between 20 – 50 inches annually (50 – 125 cm).

Natural Significance: Acorns are relished as food by both livestock and wildlife.

Ethnobotanical Use: The hard heartwood of the species is rot-resistant and has commonly been used for fence posts, resulting in an alternate common name, “Post Oak”. The acorns are sweet and edible. Oregon Oak acorns were a food staple for Native Americans that lived in areas where trees were plentiful. Other uses included: a decoction of bark taken for tuberculosis, infusion of plant taken by mother before her first baby, and wood used for a variety of applications.

Commercial Use: Today, the wood is used for furniture and cabinet making. It has also been used for ship building and other construction. Wood is an excellent fuel wood. Oregon Oak is also planted for shade and as an ornamental. It resembles the eastern White Oak.

Propagation: Not researched

Remarks: The largest specimen ever recorded in California measured 120 feet in height (36 meters) with a trunk diameter of 8 feet (2.4 meters). *Q. garryana* is the only oak native to Washington and has the most commercial importance of the western oaks.



Quercus kelloggii - California Black Oak

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree;)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Western Oregon south to Baja California, with stands becoming smaller and more scattered in the south, at elevations from 2,000 – 6,000 feet (600 – 1,800 meters).

Plant Communities: Black oak grows in yellow pine forests, montane coniferous forests, and mixed evergreen forests.

Habitat: Found in woodlands and coniferous forests in foothills and mountains away from the coast.

Size: Trees range from 30 – 80 feet (9 – 24 meters) in height with trunk diameters of 2 – 4 feet (0.6 – 1.2 meters).

Bark/Trunk/Twigs: Dark brown to black bark is divided into broad, irregular ridges. Trunks tend to be tall with ascending limbs.

Foliage: The deciduous leaves are 2 – 6 inches long (5 – 15 cm), deeply lobed leaves are green above and slightly paler yellow-green below. Lobes are pointed and tipped by a soft bristle. The leaves are obovate in shape and arranged alternately. The fall autumn foliage is striking display of russet and yellow against the backdrop of it evergreen neighbors.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Brown oblong to egg-shaped acorns are $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches long (1.9 – 3.75 cm) and have a cup shaped, scaly cap that encloses $\frac{1}{3}$ of the nut. Papery red coats cover the cream colored kernels.

Site Ecology: Becomes a shrub on infertile soils. Re-sprouts following injury from fire or cutting. Tolerates many soil types and will grow in dry to moist sites, but typically requires about 25 inches (62 cm) of annual precipitation. . Tree is tolerant of full sun and high heat.

Natural Significance: Like other oaks, many animal species utilized black oak acorns for food. Because the black oaks tends to be an understory tree to the associated conifers, it is less valuable as an animal habitat.

Ethnobotanical Use: Historically, the acorns have been a valuable food source; in fact, black oak acorns were preferred over others by Native Americans. The bark was used to produce dyes. Native Americans also favored black oak wood to make cooking paddles and stirrers. Until the 1960's and the development of mill equipment that could handle the specialized process required to produce lumber from the crooked limbs, *Q. kelloggii* was widely treated as a weed tree.

Commercial Use: Black Oak wood is used in the manufacture of furniture, paneling and cabinets. It is also high quality firewood.

Propagation: Plant the acorns directly in the soil in the fall for best results.

Remarks: The largest specimen grows in Siskiyou National Forest and measures 124 feet (37.5 meters) in height with a trunk diameter of 9 feet (2.7 meters). Tolerates shade in youth, becoming shade intolerant at maturity. Hybridizes with Coast Live Oak and Interior live oak, the interior live oak hybrid is called oracle oak. It received its common name, black oak, from Dr. Albert Kellogg who observed the leafless winter branches and trunk as black from the snowmelt that trickles over the tree in the spring.



***Quercus lobata* - Valley Oak (California White Oak)**

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; *lobata* is Latin for deeply lobed)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Widely distributed in great central valley from Shasta Lake to southern San Joaquin Valley; also found in inner coast and transverse ranges. Grows from sea level to 2,000 feet (600 meters) to the north and 4,000 feet (1,200 meters) to the south

Plant Communities: This tree was once common in the valley grass land, oak woodlands, and chaparral. Agriculture and development have greatly reduced this trees natural populations.

Habitat: Central valley, oak savanna, and low elevation riparian forests; but now found in inner coast range and surrounding foothills

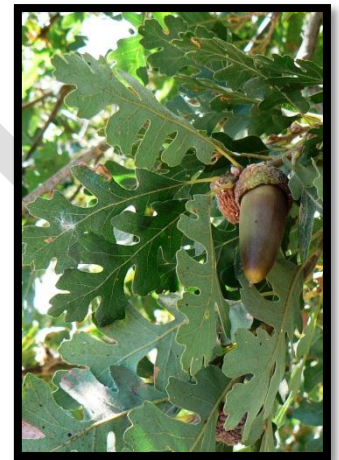
Size: Valley oak grows to 100 feet tall (30.5 meters) and almost as wide; old trees are among largest oaks in North America. Largest valley oak trunk diameter is near Gridley, CA and is 9.3 feet (2.83 meters).

Bark/Trunk/Twigs Young trees have a grayish bark in a checkered or vertically fissured pattern, as trees age the bark becomes very thick with deep fissures.

Foliage: Deciduous leaves are oblong to obovate 2 - 5 inches long (5 – 13 cm) and about 2 inches (5 cm) across with 7 to 11 blunt, deep lobes; upper surface is shiny green and lower surface is grayish green. Lower surfaces of leaves have a soft felt covering of hair. Small branches and leaves usually bear woody spherical galls that are occupied by the larvae of small native wasps.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Conical, cartridge-like acorns from 1 – 2 inches (2.5 – 5 cm) long that sit in a warty cup. These are some of longest native acorns and turn chestnut brown when mature.



Site Ecology: Normally requires 15 - 40 inches precipitation (38 – 102 cm); deep tap roots go down 50 – 60 feet (15 – 18 meters) seeking ground water.

Natural Significance: Critical habitat for many animals and plant species; stabilize soils in flood plains; contribute to aesthetic value of natural landscape; wildlife: deer, CA ground squirrels, band-tailed pigeons, and acorn woodpeckers consume acorns as a food source. A least seven species of wasps lay their eggs on valley oak leaves. The valley oak is a keystone* species in valley habitats.

Ethnobotanical Use: Native Americans used acorns for food. Oak galls (these galls are called oak apples) were collected and stored by Yokut Indians for tinder.

Commercial Use: The pale yellow to dull brown wood of the valley oak is of little commercial value except as fuel.

Propagation: Valley oak is best propagated by seed planted directly in the fall.

Remarks: This is the largest of the Native American oaks. Valley oaks have an obligate relationship with mycorrhizal fungi, which provide critical moisture and nutrients. Valley oaks suffer from oak root fungus which can result in sudden breakage of large scaffolds. The valley oak can be a great specimen tree in a landscape. Recommend that it be watered for the first 5 to 10 years and then weaned to one or two deep summer watering per year.

*keystone species is a species whose very presence contributes to a diversity of life and whose extinction would consequently lead to the extinction of other forms of life. Keystone species help to support the ecosystem (entire community of life) of which they are a part.

Quercus suber – Cork Oak

Plant Family: Fagaceae – Oak Family

Geographical Distribution: It is native to southwest Europe and northwest Africa. This not a high elevation plant and seems to do best when planted under 600 feet (200 meters) elevation.

Plant Communities: Cork oaks are found in forest mosaics alongside other tree species, including a variety of other oaks, stone and maritime pines, and even wild olive trees.

Habitat: Mediterranean type of climate; like California's

Size: It grows to up to 66 feet (20 meters) with up to a 50 foot (15 meter) spread, although it is typically more stunted in its native environment.

Bark/Trunk/Twigs: Very unique, light gray with deep reddish brown furrows, developing very thick (inches) layers of cork, ruggedly ridged and furrowed; reddish brown when recently harvested for cork. Twigs are moderately, light gray-brown, with abundant gray fuzz; buds are clustered, reddish brown, with some gray fuzz, broadly triangular and pointed.

Foliage: The leaves are 1 ½ - 3 inches (4 - 7.5 cm) long, weakly lobed or coarsely toothed, dark green above, paler beneath, with the leaf margins often curved downward.

Flowers: Male flowers are slender, yellow-green catkins 2 - 3 inches (5 – 7.5 cm) long; female flowers are very small, in clusters of 2 to 4 in leaf axils; both male and female flower occur on the same tree and bloom time is May – June.

Fruit: The acorns are ¾ - 1 ¼ inches (2 - 3 cm) long, in a deep cup fringed with elongated scales. The cap covers approximately half the acorn.

Site Ecology: Cork oak grows in loamy to clay soil, part shade to full sun and is drought tolerant. Probably will grow faster and look better with monthly or less deep watering.

Natural Significance: Natural stands of cork oak support numerous endangered species. For example, in parts of northwestern North Africa, some cork oak forests are habitat to the endangered Barbary Macaque, *Macaca sylvanus*, a species whose habitat is fragmented and whose range was prehistorically much wider. In Western Europe, namely in Portugal and Spain, the cork oak forests are home to endangered species such as the Iberian Lynx, the most critically threatened feline in the world.

Ethnobotanical Use: Seed can be dried, ground into a powder and used as a thickening in stews etc. or mixed with cereals for making bread. The roasted seed is a coffee substitute.

Commercial Use: It is the primary source of cork for wine bottle stoppers and other uses, such as cork flooring. The cork can be harvested every 9 to 12 years. The harvesting does not harm the tree, in fact, no trees are cut down during the harvesting process. Only the bark is extracted, and a new layer of cork regrows, making it a renewable resource.

Propagation: Planting seeds directly in the spot they are to be located seems the best propagation option.

Remarks: The Rainforest Alliance is working with cork producers throughout Spain and Portugal to help them achieve Forest Stewardship Council certification. By meeting the comprehensive social and environmental standards required to achieve FSC certification, cork producers in the region are able to ensure the continued protection of their cork oak forests and provide for the families that depend on the cork harvest.



***Quercus vaccinifolia* – Huckleberry Oak**

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree;

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Found in the Sierra Nevada north of Fresno County and in the North Coast and Klamath Ranges at elevations of 3,000 - 10,000 feet (910 – 3,030 meters).

Plant Communities: Huckleberry oaks grow in yellow pine forests, montane chaparral, red fir forests, lodgepole forests, and subalpine forests.

Habitat: Grows on exposed ridges, cliffs, and rocky outcrops,

Size: Huckleberry oak is a 1 - 4 feet tall (30 cm – 1.3 meters) spreading to prostrate shrub.

Bark/Trunk Twigs: Bark is smooth and gray. Twigs are reddish-brown and flexible.

Foliage: Leaves are ½ - 1 ¼ inches (1.25 – 3.1 cm) long evergreen and have dark green, hairless upper surfaces and paler and occasionally hairy lower. They are oblong to elliptical in shape, quite leathery, and arranged alternately. Margins are entire and tips pointed.

Flowers: Slender, yellow to greenish catkins hang downward and hold small pollen bearing flowers. Seed bearing flowers can be either solitary or in small clusters found at leaf bases. Male and female flowers are often found on the same twig.

Fruit: Brown, round to egg-shaped acorns are approximately ½ inch (1.25 cm) long with shallow, cup-shaped, scaly to warty cups enclosing 25% of the nut. Cup scales have fine white hairs.

Site Ecology: It grows on shallow soils and even Serpentine rock and is shade intolerant. Will re-sprout following injury from fire or cutting.

Natural Significance: Leaves provide browse for deer, acorns are a food source for a variety of wildlife species. The dense shrubs are also home for many animal and bird species.

Ethnobotanical Use: Not researched

Commercial Use: Not researched

Propagation: Not researched

Remarks: Occurs at higher elevations than all other California Oaks. Hybridizes with Canyon Live Oak (*Quercus chrysolepis*)

***Quercus wislizeni* – Interior Live Oak**

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; *wislizeni* after German botanist Dr. F.A. Wislizenus)

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Southern Cascade and Klamath Ranges; West slope of Sierras from Siskiyou to Kern Counties; scattered in Coast Range into the inner Transverse and Peninsular ranges.

Plant Communities: Interior live oak is found in northern and southern oak woodland, foothill woodlands and chaparral.

Habitat: Wide spread below 5,000 feet (1,525 meters) in foothills, riparian flood plains, and valleys away from the coast.

Size: Slow grower with height 30 - 75 feet (9 – 23 meters) and trunk diameters from 1 – 3 feet (30 – 90 cm)

Bark/Trunk/Twigs: Smooth and grey on young trees but becomes darker and fissured with age. Mature trees are as wide as tall with numerous horizontal scaffolds that touch the ground.

Foliage: Thick, leathery evergreen leaves oblong to elliptic or lanceolate 1-3 inches long (2.5 – 7.5 cm); margins may be entire, toothed or spiny-toothed. Both leaf surfaces are shiny green but upper surface is darker and the lower may exhibit a yellow green color.

Flowers: Inconspicuous staminate and pistillate flowers produced on same tree.

Fruit: Narrow conical acorns $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches long (2 – 3 $\frac{1}{2}$ cm) that sit deep in cup. Take two years for acorns to mature. Produces seeds at 5 -7 year intervals;

Site Ecology: pH 5.6 -7.5 on dry, shallow, well-drained loams, clay loams, gravelly loams, or gravel tolerates shade when young, adapted to both fire or no fire situations. Interior live oak regenerates vegetatively after disturbance.

Natural Significance: Wildlife habitat and food provided for black-tailed jackrabbit, Audubon cottontail, brush rabbit (endangered), Beechy ground squirrel, Sonoma chipmunk, beaver, porcupine, Columbian Black-tail deer, and elk.

Ethnobotanical Use: Native Americans leached bitter tannins from acorns and then used the acorns for cooking oils, soup, stews, and breads.

Commercial Use: Wood is susceptible to rot and has little commercial value. Live oak can be used as fuel wood and as a landscape tree.

Propagation: Don't allow the acorns to dry and stratify them for 30 – 60 days at 41⁰ F.

Remarks: Named after German botanist, Dr. F.A. Wislizenus, who was one of first collectors of this oak. There is a shrub form of interior live oak, *Q. wislizenii* var. *frutescens* that grows in chaparral. Its leaves are very much like the tree form and is mostly found in southern California. It readily hybridizes with other oaks including California black oak (*Q. kelloggii*) and California live oak (*Q. agrifolia*). The oracle oak (*Q. x morehus*) is believed to be a product of interior live oak and California black oak hybridization.



***Quercus wislizenii* var. *frutescens*- Interior Live Oak (Shrub Form)**

(*Quercus* is Latin for oak, *quer* is Celtic for fine and *cuez* is Celtic for tree; named after German botanist, Dr. F.A. Wislizenius, who was one of first collectors of this oak.

Plant Family: Fagaceae - The Oak Family

Geographical Distribution: Southern Cascade and Klamath Ranges; West slope of Sierras from Siskiyou to Kern Counties; scattered in Coast Range into the inner Transverse and Peninsular ranges.

Plant Communities: The shrub form of interior live oak is found in northern and southern oak woodland, foothill woodlands and chaparral.

Habitat: Wide spread between 300 – 2,000 feet (90 - 600 meters) in foothills, riparian flood plains, and valleys away from the coast.

Size: Slow grower with height 10-30 feet (3 – 9 meters); and trunks that are less than 1 foot in diameter (30 cm).

Bark/Trunk/Twigs: Smooth and grey on young trees but becomes darker and fissured with age. Mature trees are as tall as with numerous horizontal scaffolds that touch the ground. Shrub will regenerate vegetatively after disturbance.

Foliage: Thick, leathery evergreen leaves oblong to elliptic or lanceolate 1-3 inches long (2.5 – 7.5 cm); margins may be entire, toothed or spiny-toothed. Both leaf surfaces are shiny green but upper surface is darker and the lower may exhibit a yellow green color.

Flowers Staminate and pistillate flowers produced on same tree.

Fruit: Narrow conical acorns $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 3.75 cm) long that sit deep in cup. Acorns take two years to mature. Produces seeds at 5-7 year intervals

Site Ecology: pH 5.6-7.5 on dry, shallow, well-drained loams, clay loams, gravelly loams, or gravel tolerates shade when young, adapted to fire or no fire situations

Natural Significance: Wildlife habitat for the following animals: black-tailed jackrabbit; Audubon cottontail, brush rabbit (endangered), Beechy ground squirrel, Sonoma chipmunk, beaver, porcupine, Columbian Black-tail deer and elk.

Ethnobotanical Use: Native Americans leached bitter tannins for cooking oils, soup, stews, and breads.

Commercial Use: Excellent for restoring and stabilizing degraded areas; not a particularly good garden landscape plant;

Propagation: Don't allow the acorns to dry and stratify them for 30 – 60 days at 410 F.

Remarks: Endemic to California, particularly in southern California; however, those in Knights Ferry area of California are definitely a shrub form of interior live oak, but don't quite fit any of the descriptions.



Rhamnus californica - California or Coast Coffeeberry

Plant Family Rhamnaceae- The Buckthorn Family

Geographical Distribution: Occurs in Western California, ranging from south to north and extending into South-western Oregon, and in the foothills of the Sierra Nevada and the Desert Mountains at elevations below 7,500 feet (2,270 meters).

Plant Communities: Commonly found in yellow forests, foothill woodlands, chaparral, and coastal sage scrub.

Habitat: Grow in a variety of habitats; from cooler moister sites, to dry exposed sites, or as an understory shrub.

Size: A large shrub that typically reaches 6 – 15 feet in height (1.8 – 4.5 meters).

Bark/Trunk/Twigs: Bark is light gray or brown. Twigs are flexible and can be hairless or finely hairy. Terminal buds are not covered by scales.

Foliage: The evergreen, ovate to elliptical leaves are 1 – 3 inch long (2.5 – 7.5 cm), hairless, and alternately arranged. Margins are serrate to entire and may be rolled under. Leaves are dark green above and paler green below. The single mid-vein is prominent on lower surfaces.

Flowers Clusters of 1 - 60 small, inconspicuous 5-petaled, fragrant flowers appear in leaf axils and produce large quantities of nectar. The bees love this plant!

Fruit: Black drupes measure approximately ½ inch (1.25 cm) in diameter and hold 2 - 3 stones.

Site Ecology: Tolerates sun to part shade.

Drought tolerant but will withstand regular water; however, continuous regular water will kill the plant.

Natural Significance: Fruits provide a food source for wildlife, particularly birds. Nectar-laden flowers are attractive to butterflies, bees, and other insect pollinators.

Ethnobotanical Use: Native Americans used a steeped brew of dried bark to treat rheumatism and as a laxative.

Commercial Use: Useful as hedging and as a fire break where it receives regular water. Coffeeberry has beautiful deep green lustrous leaves and is highly adaptive, and well suited to pruning and landscape work. Coffeeberry is an excellent plant in erosion control and highly adaptive in degraded and disrupted sites. Numerous cultivars have been developed, with 'Eve Case' being the most popular.

Propagation: This coffeeberry can be started from seeds that have been stratified for 60 days at 40⁰ F or from grafting or cuttings. If there is a mother plant, look around the plant and one will find numerous seedlings emerging.

Remarks: *R.c. ssp. californica* has red twigs, leaves with dark green upper surfaces and paler lower, and occurs to elevations of 6,000 feet (1,820 meters). It does not grow on serpentine soils. *R.c. ssp. occidentales*, in contrast, has brown twigs, both upper and lower leaf surfaces a similar green, and grows on serpentine soils. It is found mostly in Northern California. Subspecies of *R. californica* are known to hybridize in intermediate habitats. It is called coffeeberry because its seeds look like coffee beans.



Rhamnus crocea var. ilicifolia – Hollyleaf Redberry

Plant Family: Rhamnaceae- The Buckthorn Family

Geographical Distribution: Distributed widely throughout California, including the Mojave Desert Region, and extending into Baja California to the south and Arizona to the east, occurring at elevations below 6,000 feet (1,820 meters).

Plant Communities: Frequently occurs in foothill woodlands, coastal scrubs, yellow pine forests, north coastal forests, and chaparral.

Habitat: Given its wide spread distribution, holly leaf redberry grows in a wide range of habitats: heavily vegetated forests to sparsely covered deserts and everything inbetween.

Size: Stiffly branched shrub may reach 15 feet (4.5 meters) in height.

Bark/Trunk/Twigs: Bark is gray and rigid twigs may be hairless to densely hairy and are reddish brown in color. Branches are ascending. Terminal buds are covered with scales.

Foliage: Evergreen, alternately arranged leaves are ovate to round and measure ½ - 1 ½ inches in length (1.25– 3.75 cm). Margins are generally spiny but may occasionally be entire. Leaves may be dull or glossy green depending on habitat. The pinnately veined leaves have 1 large middle vein.

Flowers: Clusters of 1- 6 small, inconspicuous greenish flowers appear in late spring to early summer in leaf axils. Flowers have no petals but are fragrant and produce large quantities of nectar.

Fruit: Bright red drupes are ¼ inch in diameter (6.2 mm) and contain 2 stones each.

Site Ecology: Planted outside of its range, it requires soils with excellent drainage and little to no water in summer. Enjoys growing in full sun but is also shade tolerant.

Natural Significance: Fruits provide a food source for wildlife, particularly birds. Nectar-laden flowers are attractive to butterflies.

Ethnobotanical Use: An important medicinal plant for Native Americans the roots and bark were used to treat colds, sore, and stomach ailments. Mashed ripe berries were used as poultice on sores.

Commercial Use: Excellent landscape plant.

Propagation: Stratify seed for 60 – 90 days at 40^o F.

Remarks: A very closely related and similar species which occurs at elevations to 3,300 feet (1,000 meters) is *R. crocea*. The two can be distinguished by the thorns present on the branches of *R. crocea*. which has a common name of spiny redberry.



Rhamnus purshiana - Cascara

Rhamnus is Greek for the name of a shrub;

Plant Family: *Rhamnaceae* – Buckthorn Family

Geographical Distribution: Cascara has an extensive range that includes the north coastal range, Cascade and Klamath Ranges, Sierra Nevada, and the Transverse ranges up to 6,500 feet (2,000 meters) elevation. Extends north into British Columbia and as far east as Montana.

Plant Communities: Grows in northern coniferous forests, yellow pine forests, foothill woodlands, and chaparral.

Habitat: Cascara has a range of sites that it will occupy. It can be in open areas in coniferous forests or an understory plant in rather dense settings.

Size: Cascara can be a large shrub or a small tree depending on the habitat. Plant normally grows to about 20 feet (6 meters) tall, but there is one in Washington over 37 feet (11.3 meters) tall.

Bark/Trunk/Twigs: The bark is smooth, light gray, and covered with white lenticels and twigs are red to brown.

Foliage: The deciduous leaves are arranged alternately, broadly elliptical shaped, and from 2 – 8 inches (5 – 20 cm) long. The leaves are rich green color and turn to a rich yellow color in the fall. They are pinnately veined and the parallel veins off the midrib vein are very conspicuous. Leaf margins are very fine tooth to entire.

Flowers: The inflorescence is a cluster of up to 25 5 petal flowers in the leaf axils. They produce a lot of nectar.

Fruit: These are black drupes about ½ inch (12 mm) in diameter with three seeds in them.

Site Ecology:

Natural Significance: Pollinators love this plant due to its high nectar production.

Ethnobotanical Use: Like Sierra coffeeberry, cascara has puckery tasting bark that was used as a purgative for digestive problems. Bark and fruit are toxic in large quantities, especially to children.

Commercial Use: Cascara provided an important drug during World War II. Today it is a very useful landscape ornamental.

Propagation: Not researched

Remarks:



Rhododendron occidentale – Western Azalea

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Found from Oregon to Southern California throughout the Sierra Nevada and Coast Ranges at elevations from sea level to 7,000 feet (2,100 meters).

Plant Communities: Grows in a wide variety of plant communities if there is moisture.

Habitat: Grows in moist coniferous forests in bogs, on creek edges, and in wet meadows and springs.

Size: This shrub grows to 3 – 10 feet in height (0.9 – 3 meters)

Bark/Trunk/Twigs: This mult-stemmed, loosely branched shrub has smooth grayish brown bark and twigs are glabrous or have a soft pubescence.

Foliage: Deciduous, elliptical, alternately arranged leaves are 1 ½ - 4 inches long (3.75 – 10 cm) and have broadly pointed tips and wedge-shaped bases. Upper surfaces are green and hairless, while lower are light green and either hairless or covered in fine hair. Margins have small hairs.

Flowers: Inflorescences are large, showy clusters of 1 ½ inch long (3.75 cm) pink or orange tinged white flowers

Fruit: ½ inch long capsule (1.25 cm)

Site Ecology: Re-sprouts vigorously after damage from fire or cutting. Requires consistently moist soil and tolerates pH levels of 4-8. Will grow in full sun to partial shade.

Natural Significance: Adds a great deal of beauty to its habitats when in bloom.

Ethnobotanical Use: Not Researched

Commercial Use: Numerous cultivars have been developed for horticultural use. It is a desirable garden plant because it blooms later than most rhododendrons and has wonderfully scented blossoms.

Propagation: Can be propagated by seed, cuttings, grafting or layering.

Remarks: Foliage is toxic to livestock. Western azalea is renown for its fragrant spring blossoms. There are a number of commercially available cultivars.

Rhus integrifolia – Lemonade Berry

Rhus is derived from *rhous*, an ancient Greek name for Sumac. *Integrifolia* indicates that the leaf margins are entire, uncut, not toothed.

Plant Family: Anacardiaceae – Sumac or Cashew Family

Geographical Distribution: Southwestern and Baja, California; but there are cultivars grow almost everywhere; below 2,500 feet (750 meters) elevation. *Rhus integrifolia* grows closer to the coast than *Rhus ovate*

Plant Communities: Grows mostly in chaparral and coastal sage scrub.

Habitat: Generally found in canyons, valleys, mesas, and foothills most often on north facing slopes.

Size: Medium sized shrub or small tree that ranges from 3+ - 26 feet (1 – 8 meters) tall

Bark/Trunk/Twigs: Stout branching branches and twigs that is reddish in color when young and aging to a gray cracked and scaly bark.

Foliage: Simple, evergreen petioled leaves that are 1 – 2 ½ inches (2.5 – 6 cm) long and ¾ - 1 ½ inches (2 – 4 cm) wide, elliptic to ovate, rounded at both ends; margins may be entire to toothed, a leathery texture and alternately arranged with upper surface a shiny deep green and the lower blade surface a lighter color.

Flowers: The sepals are green and flowers have white to pink petals arranged in clusters that the ends of stems; bloom time is from February – May.

Fruit: Red color drupes (like a very tiny plum) but hairy and about 7 – 10 mm long. The fruit is sticky and displayed in tight clusters at the end of twigs.

Site Ecology: It's a pretty tough plant as it tolerates sandy to medium textured soils, full sun, wind, and dry conditions. It needs a well-drained environment.

Natural Significance: Serves as a pollen and nectar source for many species and birds and mammals relish the berries.

Ethnobotanical Use: Native Americans made a pink lemonade flavored drink from its berries; the drink was quite acidic but very thirst quenching and refreshing.

Commercial Use: *Rhus integrifolia* can also be used as a landscape shrub and is suitable for hedging and espalier. The plant is vulnerable to frost, but often will regrow, after it appears to have been killed by cold. It has also been used for erosion control in its native range.

Propagation: Can be propagated by cuttings or seed, but seed scarification in hot water is necessary.

Remarks: Hybridizes with sugar bush. Most the plants in this genus have trifoliate leaves; Lemonade Berry is an exception with its simple leaves.



***Rhus ovata* – Sugar Bush**

Rhus is derived from *rhous*, an ancient Greek name for Sumac. *Ovata* indicates that the leaves or some other feature of the plant are ovate-shaped.

Plant Family: Anacardiaceae – Sumac or Cashew Family

Geographical Distribution: Southwestern and Baja, California into Arizona; but there are cultivars growing almost everywhere; below 4,000 feet (1,200 meters) elevation. *Rhus ovata* is further inland than *Rhus integrifolia*.

Plant Communities: Grows mostly in chaparral

Habitat: Generally found in canyons, valleys, mesas, and foothills most often on south facing slopes.

Size: Medium sized shrub or small tree that ranges from 6 1/2 - 33 feet (2 – 10 meters) tall

Bark/Trunk/Twigs: Stout branching branches and twigs that is reddish in color when young and aging to a gray smooth bark.

Foliage: Simple, evergreen petioled leaves that are 1 ½ – 3 ¼ inches (3.8 – 8 cm) long and about the same width, elliptic to ovate and pointed at the tip; margins is entire, a leathery texture and alternately arranged with both surfaces smooth and shiny. The leaves are folded at the midrib.

Flowers: The sepals are green and flowers have white to pink petals arranged in clusters that the ends of stems; bloom time is from February – May. They really don't look like flowers but rather a cluster of green and then later white bumps.

Fruit: Red color drupes (like a very tiny plum) but hairy and about 6 mm long. The fruit is sticky and displayed in tight clusters at the end of twigs.

Site Ecology: It's a pretty tough plant as it tolerates sandy to medium textured soils, full sun to part shade, wind, and dry conditions. It needs a well-drained environment. Sugar bush is more drought tolerant than lemonade berry.

Natural Significance: Serves as a pollen and nectar source for many species and birds and mammals relish the berries.

Ethnobotanical Use: Used a remedy for coughs, colds, and chest pains. Berries eaten fresh, dried, or ground into a flour for mush. The sap is used as sweetener.

Commercial Use: *Rhus ovata* can also be used as a landscape shrub and is suitable for hedging and espalier. Sugar bush is especially tolerant of being pruned and shaped. The plant is vulnerable to frost, but often will regrow, after it appears to have been killed by cold. It has also been used for erosion control in its native range.

Propagation: Can be propagated by cuttings or seed. Soak seeds in water for 24 hours and immediately plant those that swell; scarify the remaining seed in hot water before planting.

Remarks: Hybridizes with lemonade berry. Most of the plants in this genus have trifoliate leaves; sugar bush is an exception with its simple leaves.



***Ribes cereum* var *cereum* – Wax Currant**

Ribes is from the Syrian or Kurdish *ribas*, which was derived from an old Persian word. *Cereum* is from Latin *cereus* for waxy.

Plant Family: *Grossulariaceae* – Gooseberry Family

Geographical Distribution: Klamath Range, high elevations of the Cascades and Sierra Nevada, the southern California mountain ranges, and the desert mountains; also through the great basin states and into British Columbia; 5,000 – 13,000 feet (1,500 – 4,000 meters) elevation

Plant Communities: Yellow pine forests, mixed coniferous forests, mountain chaparral, sagebrush, and Lodgepole pine forests

Habitat: Grows in dry open habitats in the inland mountains; among rocks and forest edges.

Size: A shrub that can grow 3 - 8 feet (1 - 2.5 meters) tall

Bark/Trunk/Twigs: Branches erect with no spines

Foliage: Leaves are from ½ - 1 ½ inches (1.2 – 3.8 cm) wide, round in shape, shallowly lobes, finely toothed with upper surface glossy with a strong spicy odor.

The light green foliage turns yellow in the fall

Flowers: Grow in tubular clusters of 3 – 7, range from white to pink in color and bloom from June – July. There are 5 fused petals in each flower.

Fruit: The bright red berries with dried up flower often attached to end of fruit.

Site Ecology: Dry, rocky soils, in full sun to part shade,

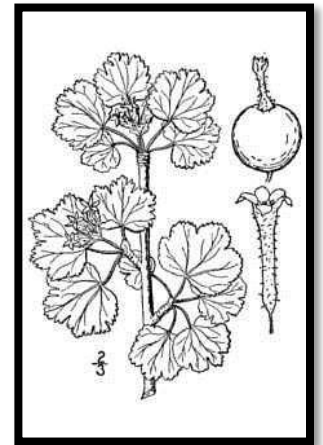
Natural Significance: Many bird and animal species consume the berries and also provides cover for wildlife.

Ethnobotanical Use: The berries were highly valued as a food,. Medical uses include: for stomach pains, inner bark used to wash sore eyes, fruit used as an emetic (vomiting agent), berries eaten for diarrhea, and poultice of plant applied to sores. The stems were made into arrow shafts.

Commercial Use: Has some value as a landscape plant, but remember its natural range is high elevation.

Propagation: Propagated by seed.

Remarks: The other form of wax currant, *R. cereum* var. *inebrians* grows in the highest elevations of the southern Sierra and the White and Inyo Mountains.



***Ribes malvaceum* – Chaparral Flowering Currant**

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word. *Malvaceum* means mallow-like, referring to the shape of the leaves.

Plant Family: *Grossulariaceae* – Gooseberry Family

Geographical Distribution: Inner north Coast Range, Sierra Nevada Foothills, San Francisco Bay Region, South Coast Range, Channel Islands, Transverse Range, Peninsular Range and northern Baja, California; less than 4,950 feet (1,500 meters) elevation.

Plant Communities: Found growing in chaparral, closed-cone pine forest, mixed-evergreen forest, and oak woodland.

Habitat: Quite commonly growing on/in slopes, canyons, woodlands, and chaparral.

Size: Chaparral currant is a tough and durable native shrub 4 - 6 feet (1.2 – 1.8 meters) tall.

Bark/Trunk/Twigs: Deciduous shrub with reddish colored stems.

Foliage: Leaves $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 5 cm) long, margins double toothed and densely hairy; chaparral flowering currant has the densest foliage of all the currants.

Flowers: Flowers early, often midwinter with dangling clusters of up to 25 pink blossoms; bloom time is October – March. Another commonly used name is pink currant.

Fruit: The berries are $\frac{1}{4}$ inch (6 – 7 mm) diameter, dark purple to black in color, with a waxy, powder-like coating.

Site Ecology: Grows in full sun to light shade and is quite drought tolerant, but is more attractive with moderate water.

Natural Significance: Good early nectar source for hummingbirds. Berries attract many birds including grosbeak and mockingbirds.

Ethnobotanical Use: Native Americans used the roots of Chaparral currant for toothaches.

Commercial Use: *Ribes malvaceum* is used in native plant landscapes and as bird feeding and habitat gardens. It thrives under Oaks in bright dry conditions, and in other locations. This is the most attractive of all the currants.

Propagation: Propagated by seed.

Remarks: Rancho Santa Ana Botanic Garden has released 4 excellent landscaping cultivars of flowering currant.



***Ribes montigenum* - Mountain or Alpine Gooseberry**

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word. Montigenum means mountain-born.

Plant Family: Grossulariaceae – Gooseberry Family

Geographical Distribution: Klamath Range, High Cascade Range, Transverse Range, San Jacinto Mountains, Warner Mountains, desert mountains, to British Columbia, Idaho, Nevada, and Arizona; 7,000 – 15,800 feet (2,100 - 4,800 meters); this gooseberry grows to the tree line. Although not noted in Jepson, alpine gooseberry is found in the high elevation Sierra Nevada.

Plant Communities: Sub Alpine and Alpine areas

Habitat: Grows in forest openings and rocky slopes.

Size: Shrub that grows to 2 feet (60 cm) tall in a low or prostrate form depending the degree of site exposure.

Bark/Trunk/Twigs: The reddish branches of this shrub have 1 – 5 spines at each node and twigs may have bristles between the nodes. This plant can cause discomfort should one stumble into it.

Foliage: The deciduous leaves are ½ - 1 inch (1.2 – 2.5 cm) wide, margins are deeply lobed to serrate, and the green upper surfaces have bristly hairs.

Flowers: The saucer shaped flowers are in clusters of 3 – 7, reddish brown to greenish white. The flowers are not showy.

Fruit: Mountain gooseberry has orange-red fruit with glandular bristles and is edible.

Site Ecology: Although drought tolerant, Mountain Gooseberry will do fine in moist conditions, needs shade in inland areas and would probably be short-lived in a central valley landscape.

Natural Significance: Berries consumed by birds and wildlife.

Ethnobotanical Use: Nothing noted.

Commercial Use: Nurseries have cultivars so it must be used in landscaping.

Propagation: Propagated by seed.

Remarks: It's the only dull sticky flowered spiny ribes found at these high elevations.

Ribes quercetorum – Oak Gooseberry

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word.

Plant Family: Grossulariaceae – The Gooseberry Family

Geographical Distribution: It is native to the mountains and hills of California from the San Francisco Bay Area south into Baja California and east into Arizona; below 4,500 feet (1,350 meters)

Plant Communities: Grows in foothill woodlands, mixed evergreen forest, chaparral, and lower yellow pine forests.

Habitat: This species occupies a variety of sites, but almost always at the edges or in open areas of oak woodlands. Oak Gooseberry grows in woodlands, chaparral, and dry desert slopes and canyons.

Size: Oak gooseberry forms a spreading, mounding to prostrate shrub up to 5 feet high (1.5 meters) with arching stems up to 5 feet (1.5 meters) long.

Bark/Trunk: The nodes along the stems bear 1 to 3 spines each up to 0.6 inches (1.5 centimeters) long.

Foliage: The lightly hairy, glandular leaves are up to 1.5 inches (3 centimeters) long and are divided into a few lobes which are toothed or lobed at their tips. Leaves are alternate along the branches.

Flowers: The inflorescence is a raceme of 2 or 3 small flowers. Each flower has five reflexed yellow sepals around a tube-shaped ring of smaller cream-colored petals.

Fruit: The fruit is an edible black berry just under 1/3 inches (1 centimeter) in length.

Site Ecology: After first year needs very little water; soil needs to be well-drained

Natural Significance: A plant of this shape and density provides excellent cover for wildlife and the berries are consumed by both birds and wildlife.

Ethnobotanical Use: Berry were either eaten fresh, dried, or made into a jelly.

Commercial Use: This is a very spiny plant, so if used in landscape isolate if from direct people contact; however, it is not very attractive when it goes dormant.

Propagation: Probably can be propagated by both seeds and cuttings.

Remarks: *R. quercetorum* is called rock gooseberry in numerous sources. The genus, ribes, is the intermediate host for white pine blister rust. Many plants were removed to reduce the spread of the deadly disease to commercial pine forests.



***Ribes roezlii* – Sierra Gooseberry**

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word

Roezlii is after Benedikt (also called Benito) Roezl (1824-1885), a Bohemian Czech born in Prague who collected in Mexico and South America, and also apparently in the Sierra Nevadas.

Plant Family: *Grossulariaceae* – Gooseberry Family

Geographical Distribution: Klamath Range, High Cascade Range, North Coast Range, High Sierra Nevada, Tehachapi Mountains, Transverse Range, Modoc Plateau, Peninsular Range in Oregon; occurs between 3,500 - 9,240 feet (1,000 - 2,800 meters) elevation.

Plant Communities: Red Fir Forest and Yellow Pine Forest

Habitat: Varied, including forests, chaparral, and woodlands

Size: a very showy deciduous shrub that is about 3 1/3 feet (1 meter) tall

Bark/Trunk/Twigs: Has 1 -3 large nodal spines

Foliage: The Sierra Gooseberry leaves are not sticky like the other gooseberries. The leaves are alternate or in alternate clusters; the petioles are about 1/4 - 1 1/4 inches (1/2 - 3 cm) long, while the blades are ovate to roundish in outline, about 1/4 - 1 inch (1/2 - 2.5 cm wide, and cleft into three to five crenately margined lobes.

Flowers: A pendulous, tubular flower with 5 purple petals that have a white tinged base, petals split and curl inward; anthers are longer than petals, and the style sticks out beyond the anther; blooms from April – June.

Fruit: Rather large, 1/2 - 3/4 inch (1.4 – 1.7 cm), egg shaped, red fruit that has stout prickles that make it look rather ominous.

Site Ecology: Similar to alpine goose berry: although drought tolerant, Sierra Gooseberry will do fine in moist conditions, needs shade in inland areas

Natural Significance: Birds and mammals eat the berries.

Ethnobotanical Use: Native American consumed the berries.

Commercial Use: It makes an excellent gooseberry jam

Propagation: Propagated by seed.

Remarks: This species is the alternate host of the white pine blister rust. There are at least 3 varieties of Sierra Gooseberry.

***Ribes sanguineum* var *glutinosium* – Pink Flowering Currant**

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word. Sanguineum means blood red and glutinosium means sticky, referring to the leaves.

Plant Family: Grossulariaceae – Gooseberry Family

Geographical Distribution: North and Central Western California coast ranges to British Columbia; from sea level to 7,200 feet (2,200 meters)

Plant Communities: Grows in chaparral, closed-cone pine forest, mixed-evergreen forest, riparian (rivers & creeks) and oak woodlands.

Habitat: Grows in a wide variety of habitats.

Size: An upright shrub that ranges from 3+ – 12+ feet (1 – 4 meters) tall.

Bark/Trunk/Twigs: The twigs are hairless and branches have no spines and range from gray to brown in color.

Foliage: Leaves are 1 – 2 inches (2.5 – 5 cm) wide with shallow lobes; heavily veined with a palmate like venation; shiny green.

Flowers: Pink flowering currant has long showy pink flower clusters that are 2 – 8 inches long (5 – 20 cm) and cover the plant from January – March. The flower clusters are droopy. There are numerous cultivars of this plant so the flower color ranges from silver pink to red carmine.

Fruit: The bluish-black berries have a waxy covering and are from ¼ - ½ inch (6 – 12 mm) in diameter.

Site Ecology: Grows in shade to part shade and requires occasional to moist water needs, however is also drought tolerant. Recommended that you try it as an understory plant with oaks.

Natural Significance: Berries eaten by birds and wildlife; flowers attract hummingbirds.

Ethnobotanical Use: Noting noted

Commercial Use: There are numerous cultivars available at nurseries for landscape purposes.

Propagation: Propagated by seed.

Remarks: There are two varieties of red flowering currant, *R. s. var. sanguineum*, the one not describe here, grows at higher elevations and has upright inflorescences. The variety described here is grows along the coast at lower elevations and has pink to white flowers.



***Ribes viburnifolium* – Evergreen Currant**

Ribes is from the Syrian or Kurdish ribas, which was derived from an old Persian word. Viburnifolium means with leaves like genus *Viburnum*.

Plant Family: Grossulariaceae – Gooseberry Family

Geographical Distribution: Native to San Diego County, Channel Islands, and Baja, California; between 100 – 1,000 feet (30 – 300 meters) elevation; not found naturally in northern California.

Plant Communities: Grows in chaparral and coastal sage scrub.

Habitat: Hillside and canyons

Size: Their red stems are about 2 - 3 feet (60 – 90 cm) tall and about 3 - 5 feet (90 – 150 cm) wide

Bark/Trunk/Twigs: Evergreen currants are low, mounding, spreading plants that are good for knitting together a hillside.

Foliage: Blades are $\frac{3}{4}$ - 1 $\frac{1}{2}$ inches (2 – 4 cm) long and obovate to sometimes nearly round, leathery, shiny green leaves on surface and lighter green to yellow underneath; the leaves have glands that exude a citrus scented sap on their underside.

Flowers: This currant has the smallest of all the currant flowers. They are deep red in color, but even with this color they are rather inconspicuous.

Fruit: 5 – 6 mm, red and glabrous berries

Site Ecology: They prefer partial shade and are fine with a wide range of watering conditions. It may be frost damaged at temperatures below 20⁰ F.

Natural Significance: Birds consume the berries

Ethnobotanical Use: Noting noted

Commercial Use: Evergreen Currant which keeps its dark leathery leaves, has tiny flowers, and forms an excellent cross between a shrub and groundcover ideal for hillsides. This is an excellent understory plant for oaks or other lower water use trees.

Propagation: Evergreen currant is propagated by seed and will readily take root where stems touch the ground.

Remarks: Unlike the other currants, evergreen currant does not drop its leaves in the summer, hence the name evergreen currant. The name Catalina perfume is in reference to the spicy fragrance that is produced by the resin glands on leaf undersides.



Robinia pseudoacacia – Black Locust

(for Jean Robin, herbalist for Henry VI of France, 1550-1629; false acacia)

(not native, naturalized)

Plant Family: Fabaceae – Legume Family

Geographical Distribution: Black locust's native range follows the Appalachian Mountains from Pennsylvania to Alabama, and a secondary population exists primarily in the Ozark Mountains. It has naturalized throughout the United States, including California. In California it is found from sea level to 6,000 feet (1,800 meters).

Plant Communities: Black locust is found in all plant communities from the yellow pine forest and lower; it does not grow in the desert communities.

Habitat: Black locust is wide spread along streams, lower disturbed slope and along road cuts. It can be found everywhere in the state except the deserts.

Size: Trees are commonly 40 – 60 feet tall (12 – 18 meters) with trunk diameters of 1 – 3 feet (30 – 90 cm).

Bark/Trunk/Twigs: The bark of black locust is deeply furrowed and is dark reddish-brown to black in color. A pair of sharp thorns grows at each twig node. They are ½ to ¾ inches long, and very stout.

Foliage: The deciduous, pinnately compound leaves are 8 to 14 inches long (20 – 35 cm), with 7 to 19 short stalked leaflets. These dull green leaflets are ovoid or oval, 1 to 2 inches long (2.5 – 5 cm), thin, scabrous above and pale below.

Flowers: The separate male and female plants have sweetly fragrant flowers hang in clusters and are creamy white with five petals (bean-like) arranged in a pyramidal spike. They usually bloom in May or June and are quite showy. Commercially developed cultivars have lavender and purple flowers.

Fruit: The legume type seed is produced in a flat, brown to black pod, which is 2 to 4 inches long.

Site Ecology: Black locust is adapted to a wide variety of soil types, but grows best on sites that are deep, well drained, and derived from limestone. This tree tolerates a pH range of 4.6 to 8.2. As a legume it fixes atmospheric nitrogen in the soil.

Natural Significance: It has limited value in wildlife food plots, but provides excellent cover when planted in spoiled areas.

Ethnobotanical Use: Wood was used for posts and pegs. Bark used to make a tea and as a seasoner for medicines. Roots were used to ease the pain of toothaches.

Commercial Use: Ornamental varieties have been developed which are available from commercial nurseries. Since the wood of black locust is strong, hard, and extremely durable, it is extensively utilized for fencing, mine timbers, and landscaping ties. This tree also serves as a good erosion control plant on critical and highly disturbed areas, due to its ease of establishment, rapid early growth and spread, and soil building abilities.

Propagation: Black locust is easily started from either seeds that can be directly seeded or cuttings taken from ½ ripened wood in the summer, treated with IBA#1, and placed in vermiculite.

Remarks: This plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. The western native species, *R. neomexicana* grows in the mountains of the eastern Mojave Desert.

***Romneya coulteri* - Matilija Poppy**

Romneya: The namer of the plant *Romneya coulteri*, the matilija poppy, wished originally to name it for Dr. Thomas Coulter (see coulteri) who first collected it, but the name *Coulteria* was an already established genus, so he decided to honor him instead by selecting the name of his great friend and fellow Irishman Dr. Thomas Romney Robinson (1792-1882),

Plant Family: Papaveraceae – Poppy Family

Geographical Distribution: Southern California and Peninsular Ranges; from sea level to 4,000 feet (1,200 meters)

Plant Communities: Chaparral and Coastal Sage Scrub

Habitat: Dry washes and canyons in coastal mountains.

Size: A large shrub that grows from 3 ¼ - 8 ¼ feet (1 – 2.5 meters) tall and just as wide

Bark/Trunk/Twigs: Many upright branches that are woody below and gray-green above; sends out new plants via rhizomes. The upright stems are more herbaceous than woody in nature.

Foliage: Gray-green glaucous leaves with 3 – 5 deep lobes, 2 – 8 inches (5 – 20 cm) long, pinnately veined.

Flowers: Huge white flowers that are from 4 – 7 inches (10 – 18 cm) wide, each having 6 crinkly, fan-shaped petals with a mass of yellow stamen forming a ball in the center. The flowers are carried at the ends of the multi-branched stems; flowers from May – July.

Fruit: Dark brown seed that has a nipple-like protuberance.

Site Ecology: Thrives in full sun and really well drained soils; tough to keep alive in heavy soils or areas that get a lot of water.

Natural Significance: Pollinating insects are attracted to the blossoms.

Ethnobotanical Use: Watery substance in the stalk used as a beverage

Commercial Use: This somewhat tough to grow plant is a striking ornamental when in bloom. If the site is right, plant can become invasive with rhizomes sending up multiple new stalks.

Propagation: Can be propagated from cuttings and rhizomes. If propagated by seed, it takes the plant a few years to bloom.

Remarks: Has the largest flowers of any native plant in California. It was nominated as the state flower in 1890, but the California Poppy won the title in a landslide.



Rosa Californica – California Wild Rose

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: Throughout California, southern Oregon, and northern Baja; below 5,300 feet (1,600 meters)

Plant Communities: Grows in just about all plant communities from the yellow pine forests and lower; does not grow in the desert.

Habitat: Grow along woodland edges associated with streams and seasonally moist areas.

Size: Thicket forming shrub from 2 ½ - 8 ¼ feet tall (0.8 – 2.5 meters)

Bark/Trunk/Twigs: Thicket forming shrub w/ stems that have stout, straight and/or curved prickles; tends to be kind of scraggly looking.

Foliage: Deciduous and compound with 5-7 leaflets, leaflets are elliptical and 1- 2 inch long (2.5 – 5 cm) with one or two sets of teeth on their margins, they have fine hairs.

Flowers: Many branched clusters of 5 petal, bright rose to light pink flowers, showier than *R. woodsii*,

Fruit: Red berry-like rose hips fruit that are round in shape, have long tapering sepals, and ½ - ¾ inch across (1.25 -1.8 cm).

Site Ecology: Needs more moisture than *R. woodsii*, and a less well-drained soil, but like *R. woodsii* prefers full sun

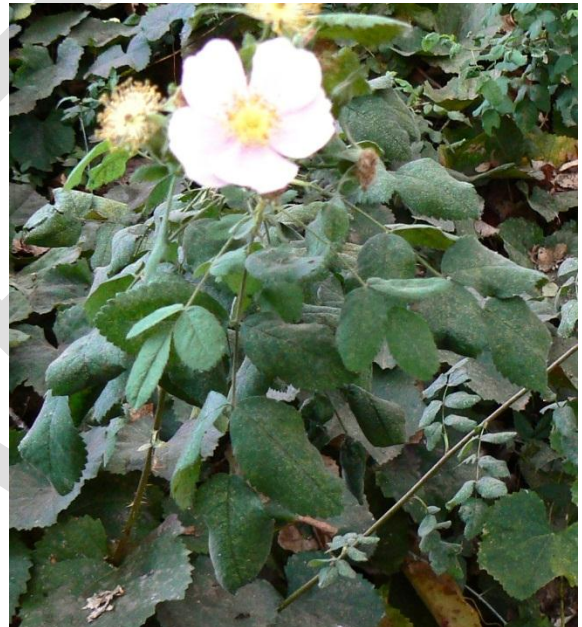
Natural Significance: Rose hips are food for some birds and mammals and pollinators visit the flowers for pollen and nectar. When CA wild rose forms a dense thicket, many birds will make it a habitat site.

Ethnobotanical Use: Tea from the fruit is an excellent source of vitamin A and C. Tea also made from tender roots by native Americans as a medicinal drink. Old straight wood was used for arrow shafts. Spanish-Californians also used wild rose hips for jelly and leaves and petals as medicinals.

Commercial Use: Used for streambank and ditch stabilization in revegetation projects. This is also a very easy to grow landscape garden plant. This is a very useful plant for barrier plantings and hedgerows. A popular cultivar of CA wild rose is 'Plena'.

Propagation: Stratify seed for 60 – 120 days at 40⁰ F or can also grow from cuttings.

Remarks: A very common, abundant native wild rose. There are 9 species of wild rose native to California. They all hybridize freely with each other.



Rosa woodsii, var *ultramontana* – Interior Wild Rose

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: Interior wild rose occurs for the Eastern Cascades, eastern Sierra Nevada, and desert mountains into British Columbia, Nevada, and Montana; 2,650 - 11,200 feet (800 – 3,400 meters); obviously at higher elevations than *R. californica*, but they do overlap.

Plant Communities:

Habitat: Generally found in moist areas including open meadows and shaded water ways.

Size: Loose thicket forming shrub from 2 - 10 feet tall (0.5 – 3 meters). *R. w. ultramontana* has a “wilder” more weedy look than *R. californica*

Bark/Trunk/Twigs: Stems that have slender, straight prickles and are gray to red-brown; young shoots very bristly. Generally this plant forms a thicket in conjunction with the moist site.

Foliage: Deciduous and compound with 5 - 7 pinnately veined leaflets, leaflets are round and 1 - 2 inches long (2.5 – 5 cm) with one set of teeth on their margins

Flowers: Grow in clusters of 1 – 5 with rose to light pink petal, of which there are 5; very attractive when blooming;

Fruit: Red rose hips fruit with long, tapering sepals from flowers persisting on the fruit. The rose hips are filled the flattened light colored seeds.

Site Ecology: Although interior or mountain rose thrives in moist sites, it is adaptable to dry conditions as well. Whatever the moist regime, the soils must be well-drained. It prefers full sun.

Natural Significance: Rose hips are food for some birds and mammals. Pollinators also visit the flowers during the May – June bloom time.

Ethnobotanical Use: Tea from the fruit is an excellent source of vitamin A and C. Assume that the same uses for *R. californica* could be applied to *R. woodsii*. Tea also made from tender roots by native Americans as a medicinal drink. Old straight wood was used for arrow shafts. Spanish-Californians also used wild rose hips for jelly and leaves and petals as medicinal.

Commercial Use: Cultivars that have flowers that range in color from white to red to yellow have been developed for landscape purposes.

Propagation: Interior wild rose will regenerate from seed or from cuttings. It sends out rhizomes that emerge and creates thicket.

Remarks: There are 9 species of wild rose native to California and they hybridize freely. This is the only species found in the interior ranges. There are 4 varieties of *R. woodsii*. Obviously the habitats of the two species noted here overlap, but *R. woodsii* grows at much higher elevations than *R. californica*.

***Rubus armeniacus* - Himalayan Blackberry**

Rubus is the ancient Latin name for bramble. (formerly *Rubus discolor*)

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: Very common, throughout California (except deserts) and to British Columbia. Himalayan blackberry grows below 5,000 feet (1,500 meters) in all habitats except the desert.

Plant Communities: Grows primarily in valley and foothill woodlands, valley grassland and almost any other plant community below 5,000 feet (1,500 meters) elevation.

Habitat: Disturbed areas such as roadsides, fencerows, ditch banks, drain ditches and other moist areas. Most of the central valley waterways, creeks, stream, rivers, etc., are populated by this invasive vine.

Size: A straggly plant with canes that may reach 20 feet (6 meters). Canes are much stouter than *R. ursinus*; also displays mounding characteristics of *R. ursinus*.

Bark/Trunk/Twigs: Canes are thick and show a midrib with spines that are wider based and curving. Where canes touch the ground, they will root and create huge blackberry thickets that are almost impossible to control.

Foliage: Semideciduous; compound w/ 3-5 leaflets 3-6 inch long; egg shaped, toothed but much finer than *R. ursinus*; lower surface have covering of thin white hairs; pinnately veined w/ midribs and veins prickly

Flowers: 5 petal white or pink flowers, ¾ - 1 ¼ inches across (1.8 – 3.1 cm) and bloom from January to May.

Fruit: Fruit is red, then purple, and finally a black berry and very sweet and tasty when ripe.

Site Ecology: Needs moisture, otherwise very adaptable. Seems to do better on poorly drained, heavy textured soils. Grows in full sun to partial shade, and is an invasive understory plant to many riparian ecosystems.

Natural Significance: Very important habitat and food source for many birds and mammals. Coyotes especially like these berry jungles as whelping sites.

Ethnobotanical Use: People also seek out and eat this fruit.

Commercial Use: Most people consider this plant a nuisance and a weed. Goats will eat blackberry canes to the ground. People will harvest the very tasty berries for a variety of food uses.

Propagation: This blackberry is easily started by cuttings as it will root at nodes that come contact with the soil in it occupied habitat.

Remarks : This is an introduced species (native to Eurasia) that has become a pest. Quite invasive; is a spiny briar patch for those trying to go through it; much habitat is being lost to this aggressive plant. Difficult to distinguish between the native California blackberry, however, the CA blackberry is mostly a 3 lobed leaf plant and the Himalayan is a 5 lobed leaf.



Rubus parviflorus – Thimbleberry

Rubus is the ancient Latin name for bramble. *Parviflorus* means small flowered, which is kinda strange since thimbleberry has about the largest flower of any *rubus*.

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: California floristic province, except central valley and the desert, Modoc Plateau to Alaska, eastern Canada, and New Mexico; from 3,000 - 8,250 feet (910 - 2,500 meters).

Plant Communities: Grows in yellow pine forests, north coast coniferous forests, redwood forests, Douglas fir forests, mixed evergreen forests, and montane coniferous forests.

Habitat: Generally grows in moist shady areas; can dominate the bluff of California's tree-less northern coast line.

Size: Grows to tall multi-stemmed shrub, up to 6 feet tall (1.8 meters) and 3 – 6 feet wide (0.9 – 1.8 meters), at lower elevations, but winter frost and heavy snowpack kills back plants and montane plants are distinctly shorter.

Bark/Trunk/Twigs: Canes may grow to 6 feet (1.8 meters) on this erect shrub, have gray-brown bark that peel off in thin strips, no prickles or spines. It is a much smaller plant at higher elevations as snow breaks the taller stems.

Foliage: Deciduous; simple, palmately lobed with 5 - 7 lobes, 2 - 7 inches long (5 – 17.5 cm) and green on both surfaces. Petioles 1 - 2 inches long (2.5 – 5 cm) and margins are sharply toothed with upper and lower surfaces covered with soft hairs resulting in the leaves feeling soft to the touch. Leaves turn a light yellow before falling in the fall.

Flowers: Clusters of 4 - 7 white or pink flowers up to 2 inches across (5 cm) and very showy. Flowers have 5 petals and yellow stamen and pistils in the center. Bloom time is April to June.



Fruit: Raspberry-like and red fruit is from ½ - ¾ inches across (1.25 – 1.8 cm) and ¾ of inch long (1.9 cm). fruit is edible but does have a small seed in its center.

Site Ecology: Needs moisture, does well under tree canopy, usually on edge of forest.

Natural Significance: Berries are an important food source for many birds

Ethnobotanical Use: The large, thin-pulped berry are edible and a tart jelly was made from them. The berries are not too tasty raw. In addition to the fruit, Native Americans used the leaves, young shoots, and roots for food, drink, and medicinal applications.

Commercial Use: nothing noted.

Propagation: Scarify seed then stratify for 120 days at 40⁰ F before planting.

Remarks: Unlike many *Rubus* species, thimbleberry has a simple, rather than a compound leaf that are maple-like in shape.

***Rubus ursinus*- California Blackberry**

(The Latin name for brambles; after Johannes Ursinus (1608-67))

Plant Family: Roseaceae – The Rose Family

Geographical Distribution: Very common, throughout California (except deserts) and to British Columbia and Idaho.

Plant Communities: Grows in valley grasslands, valley and foothill woodlands, chaparral fresh water marsh, and riparian woodlands.

Habitat: Grows below 5,000 feet (1,500 meters) in all habitats except the desert.

Size: A straggly plant with canes that may reach 20 feet (6 meters). Forms a mound building thicket because first year canes are vegetative but produce fruit the 2nd year then they die. New canes grow over these dead canes from a bramble like thicket that can many feet wide and tall

Bark/Trunk/Twigs Canes are narrow with thin straight prickles; in the wild it is a truly “bad hair day plant”!

Foliage: California blackberry leaves are semideciduous; compound w/ 3-5 leaflets 3 - 6 inches long (7.5 – 15 cm) and light green in color; oblong to triangular, doubly toothed; pinnately veined w/ midribs and veins prickly. Unlike the Himalayan blackberry (*Rubus discolor*) the leaves are the same color on upper and lower surfaces in California blackberry.

Flowers: 5 petal white flowers ¾ - 1 ¼ inches (1.8 – 3.1 cm) across and blooms from January to May.

Fruit: Fruit is red, then purple, and finally a black berry that is very sweet and tasty when ripe.

Site Ecology: Needs moisture

Natural Significance: Very important habitat and food source for many birds and mammals. Coyotes especially like these berry jungles as whelping sites.

Ethnobotanical Use: Worth seeking their tasty fruit to put on your cereal in the morning or making a pie (pies are a little juicy). Native Americans use the fruit both fresh and dried.

Commercial Use: None today, as they have be replaced by commercial blackberry varieties.

Propagation: This spiny shrub is easily propagated by cuttings and will establish new plants where its nodes come in contact with the soil. California blackberry can still serve as genetic seed stock for new commercial varieties.

Propagation: California blackberry can readily be started from cutting, or laying or by stratifying the seed for 60 – 90 days at 40^o F.

Remarks: Quite invasive; is a spiny briar patch for those trying to go through it. There are 700 species worldwide in this genus w/ 11 native to CA. Calif. Blackberry is a variable species in both flower and vegetative characteristics, however, descriptions above are most common. This berry is an ancestor to both the loganberry and boysenberry.



Willows Descriptions

1. *Salix lasiolepis* – Arroyo Willow *Stem:* twigs yellowish to brownish; *Leaves:* tomentose to velvety; young leaves hairy; mature leaves slightly rolled under, 1 1/3 – 5 inches (3.5–12.5 cm) long, broad lanceolate, shiny above, glaucous below; *Infl:* flower bract dark brown, tip broadly rounded; *Staminate Flr:* stamens 2



2. *Salix laevigata* – Red Willow - Tree <15m; *Stem:* twigs red- to yellow-brown, hairy, becoming glabrous; *Leaves:* mature blade 2 1/2 - 6 inches (67-150 mm), shiny to highly glossy above, glaucous below, midrib vein above and below yellow; *Infl:* 35-110mm; *Staminate Flr:* stamens 5; *Pistillate Flr:* ovary glabrous



3. *Salix gooddingii* – Gooding's or Black Willow Tree <30m; *Stem:* twigs yellowish; *Leaves:* bright green on both side, narrow, serrated, slightly curved at tip; *Staminate Flr:* stamens 4-8; *Pistillate Flr:* ovary glabrous or hairy



4. *Salix exigua* – **Narrow Leaf Sandbar Willow** Syn: *S. hindsiana*; Shrub; Stem: twigs brownish; Leaves: silky, about 10 times longer than wide; Infl: flower bract tawny; Staminate Flr: stamens 2; Pistillate Flr: ovary glabrous, silky



5. *Salix lucida* ssp. *lasiandra* - **Shining or Pacific Willow** Shrub, tree, <10m; Stem: twigs brownish, glabrous or soft-shaggy-hairy; Leaves: stipules glandular-lobed; petiole with glands; mature blade 53-170mm, lanceolate, long-acuminate, finely serrate, shiny above, glaucous or not below; Infl: 20-90mm



6. *Salix hookeriana* – **Hooker Willow** Shrub, tree <10m; leaves are up to 11 cm long, generally oval in shape, wavy along the edges, and hairy to woolly in texture with shiny upper surfaces. The inflorescence is a catkin of flowers up to 9 cm long, with the female catkins growing longer as the fruits develop.



7. *Salix sitchensis* – **Sitka Willow - Leaf**: Alternate, simple, deciduous, obovate to oblanceolate, widest above the midpoint and tapering to a narrow base, 1 1/2 to 3 inches long, edges smooth or with tiny glandular teeth, petioles are short and velvety with half-oval stipules that fall off early in the growing season on slow-growing twigs but remain throughout the growing season on rapidly growing twigs; shiny green on top, with silky, flattened hairs underneath; underside is noted for a satiny sheen



***Salix exigua* – Sandbar Willow (Valley Willow, Narrowleaf Willow, Coyote Willow)**

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae

Geographical Distribution: Found in nearly all parts of California, extending into Texas and British Columbia, at elevations from sea level to 8,000 feet (2,400 meters)

Plant Communities: Grows in riparian woodlands, red fir forests, Douglas fir forests, subalpine forests,

Habitat: Wet soils, especially river and stream banks, sand bars, roadside ditches, sloughs, and silt flats; forms thickets quickly.

Size: 3 - 20 feet high (0.9 – 5 meters) forming a multi-stemmed shrub

Bark/Trunk/Twigs: Slender twigs are light yellow to orange and glabrous (without hairs); bark is gray and smooth or fissured.

Foliage: Linear 1 ½ - 5 inches long (3.75 – 12.5 cm), ½ inch wide (1.25 cm) leaves may be hairless or have scattered or thick hair. Upper and lower surfaces are gray to green. Margins are entire to coarsely toothed. Blades are nearly stalkless.

Flowers: The plant is dioecious so male and female flowers are on different plants. Terminal catkins are 1- 2 ½ inches long (2.5 – 6.25 cm) have hairy, yellow scales and appear during or after leaf-out.

Fruit: ¼ inch (6 mm) light brown capsule, usually hairy.

Site Ecology: Tolerant of many soil types but most common on wet sandy soils.

Natural Significance: This plant provides wood and shelter for many game birds and forage for deer.

Ethnobotanical Use: The bitter inner bark of any willow

may be eaten raw as an emergency food. It is more palatable when dried and ground into flour. Poles used for framework of "sweat tepee" for colds and rheumatism, twigs used to make baskets, and other plant parts for a variety of uses. Leaves, bark, and roots used widely in treating various maladies.

Commercial Use: Erosion control, stream bank and lake shore stabilization and riparian area development or restoration. It is recommended for deep wet lowland, overflow areas, wet meadows, and other areas with high water tables.

Propagation: Can definitely be propagated by cuttings and also probably by seed.

Remarks: Quickly forms thickets along sand and gravel bars, roadside ditches, sloughs, and other places subject to flooding. Species has many forms over its broad range, and some of these forms have been considered to be separate species. Plant can become weedy or invasive.



Salix Gooddingii – Gooddings Black Willow

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth and *gooddingii* is after Leslie Newton Goodding (1880-1967), botanist and collector, one of the first to explore the southern Arizona area.

Plant Family: Salicaceae – Willow Family

Geographical Distribution: Goodding willow is distributed from northern California to southern Utah, southeast through New Mexico to the Texas panhandle, and west to Arizona and southern California. It is also found in river valleys of northern Mexico; below 1,650 feet (500 meters) elevation.

Plant Communities: A wide variety from mid elevations to the desert.

Habitat: Stream sides, washes, marshes, wet boggy areas, meadows, you get the picture.

Size: A tree up to 100 feet (30 meters) tall

Bark/Trunk/Twigs: A substantial, furrowed trunk and young twigs yellow and hairy.

Foliage: The deciduous leaves are narrowly lanceolate, with a strong central vein. They are green on both sides and never glaucous underneath although the underside may be slightly lighter. The long narrow blades range from 2 ½ - 5 inches (6.7 – 13 cm) long and are finely serrate.

Flowers: Dioecious; flowers are tiny, green, borne on catkins, 1 - 3 inches (2.5 – 7.5 cm) long, present late spring to early summer

Fruit: A capsule

Site Ecology: Tolerates both flooding and long hot summers; tends to do better in medium to heavy textured soils

Natural Significance: Willows (*Salix* spp.) provide excellent browse and cover for wildlife and

domestic animals. They are a preferred food of beaver and are often used as building material for beaver dens. Mature willows provide valuable shade in hot environments. [1,16].

Ethnobotanical Use: Willow shoots and bark

were used by early Americans to make baskets and fish traps, and for fence posts, shelters, and firewood. These plant parts were also used to make teas. All willows produce salacin, a chemical related to aspirin. A decoction of Goodding willow leaves is used in Mexico for treating fevers.

Commercial Use: Goodding willow is used for streambank stabilization and erosion control.

Propagation: Black willow can easily be propagated by cuttings. The seeds remain viable for only a few days and therefore need to be harvested and planted. You can keep them viable for about a month under refrigeration.

Remarks: *Salix gooddingii* and *S. nigra* are closely related. *S. nigra* is the eastern species of black willow.



***Salix hindsiana*- Valley Willow (Hinds Willow)**

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Found in all parts of California below 300 feet (90 meters) elevation, extending into Oregon and Baja California.

Plant Communities: Grows in riparian, valley and foothill woodlands.

Habitat: Moist soils of stream banks, sand bars, and ditches

Size: Valley willow ranges in height from 7 – 23 feet (2 – 7 meters), with a trunk diameter to 10 inches (25 cm).

Bark/Trunk/Twigs: Bark is gray and furrowed; twigs are silvery gray and covered with fine hairs when young; multi-trunked

Foliage: The deciduous leaves are linear, gray, and 1 ½ - 3 inches long (3.75 – 7.5 cm), 1/8 – 3/8 inches wide (3 – 9 mm) and covered with silky hairs on both surfaces, usually entire margins.

Flowers: The ¾ - 1 ½ inch (1.9 – 3.75 cm) catkins have yellow, densely hairy scales and appear on leafy twigs after leaf-out.

Fruit: the ¼ inch (6 mm) light brown, hairy capsules are nearly stalkless and appear late spring.

Site Ecology: Tolerates seasonal flooding and soils lacking drainage.

Natural Significance: The shade valley willow provides over streams enhances stream fish habitat. Many birds and small mammals seek refuge in this willow. Vegetation is consumed by deer, elk and other browsers.

Ethnobotanical Use: The bitter inner bark of any willow may be eaten raw as an emergency food. It is more palatable when dried and ground into flour.

Commercial Use: Useful in stream bank stabilization and habitat restoration.

Propagation: Like most willows can easily be propagated by both seeds and cuttings.

Remarks: Species has a tendency to clog irrigation ditches.

Salix laevigata – Smooth or Red Willow

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae

Geographical Distribution: Wide spread in California, except Modoc Plateau and Sonoran Desert; elsewhere in southern Oregon, northern Nevada, Arizona, Mexico and further south; sea level to 5,600 feet (1,700 meters).

Plant communities: Grows in wet areas in all plant communities from yellow pine forests and lower.

Habitat: Wet areas such as riverbanks, seepage areas, canyon, ditches, and lake shores, including alkaline and brackish waters.

Size: Shrub to small tree 10 - 25 feet (3 – 10 meters)

Bark/Trunk/Twigs: Bark roughly furrowed and dark reddish-brown; twigs red to yellow-brown, hairy.

Foliage: Deciduous, simple and alternate; 3 - 6 ½ inches long (7 – 15 cm); lanceolate shape, crenate margins, upper surface glabrous and shiny and lower surface glaucous; long conspicuous yellow midvein;

Flowers: Catkin 1 ½ - 4 inches long (4 – 10 cm); yellow; blooms from March to May

Fruit: Dry, 2 part fruit, length ¼ - 1/3 inch (6 – 8 mm), contains many tiny seeds. Seeds disperse by wind and water.

Site Ecology: Tolerates full sun, coarse soils, and seasonal flooding

Natural Significance: Habitat and food source for wildlife and insects

Ethnobotanical Use: The bitter inner bark of any willow may be eaten raw as an emergency food. It is more palatable when dried and ground into flour. Native Americans used stems in basketry and bow making.

Commercial Use: good for stream stabilization and habitat restoration.

Propagation: Red willow can easily be grown from either seeds or cuttings.

Remarks: Willows produce salicin, a chemical similar to acetylsalicylic acid (aspirin). The bud scale margins of red willow are not fused. The only other willow like this is black willow. Red willow has shiny leaf upper surfaces and black willow does not.



Salix lasiolepis – Arroyo Willow

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Native to most of California, extending into Idaho and Alaska, at elevations to 7,500 feet (2,272 meters). This willow can become established anywhere throughout the state if there is a wet area.

Plant Communities: Grows in riparian woodlands, red fir forests, Douglas fir forests, subalpine forests, and other plant community wet areas below 7,500 feet (2,272 meters).

Habitat: Wet soils along streams or gullies in valleys, foothills, and mountains.

Size: To 30 feet tall (9 meters), with a potential trunk diameter of 6 inches (15 cm). Arroyo willow can grow as a thicket or individual tree.

Bark/Trunk/Twigs: Bark is pale grey brown with whitish areas. Smooth young bark becomes darker and furrowed into broad ridges with age. Twigs are yellow to brown and finely hairy.

Foliage: Deciduous, narrow, oblanceolate leaves are 2 ½ - 4 inches long (6.25 – 10 cm), dark green and hairless above, whitish and usually hairy below. Blades are widest above the middle, thick and leathery, and have entire or slightly wavy margins with sparse teeth.

Flowers: 1- 2 inch (2.5 – 5 cm) catkins have black or brown scales and dense whitish hairs, are nearly stalkless and appear in early spring with or before leaf-out.

Fruit: Crowded ¼ inch (6 mm) pale reddish-brown, hairless capsules appear in late spring.

Site Ecology: Grows in moist to wet sandy soils in partial to full sun; is shade intolerant.

Natural Significance: Essential for wildlife habitat in its range, especially when growing as a thicket.

Ethnobotanical Use: The bitter inner bark of any willow may be eaten raw as an emergency food. It is more palatable when dried and ground into flour. An infusion of the bark has been used in the treatment of colds, chills, fevers, measles and various diseases where sweating can be beneficial. A decoction of the bark has been used as a wash for itchy skin. An infusion of the leaves has been used in the treatment of colds and diarrhea. A decoction of the catkins has been used in the treatment of colds. Stems have been used in basket making and the tough inner bark has been used to make rope and clothing.

Commercial Use: Planted to stabilize stream banks restore habitats that are being reclaimed as natural areas.

Propagation: Can definitely be propagated by cuttings and also probably by seed.

Remarks: Usually appears as a thicket forming shrub, but is occasionally seen as an erect tree with a narrow, irregular crown. Species is often a pioneer species in disturbed wet areas. Arroyo willow hybridizes with Hooker Willow along the North Coast. The fresh bark contains salicin, which probably decomposes into salicylic acid (closely related to aspirin) in the human body.

Salix lemmonii – Lemmon’s Willow

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: This is a high elevation willow that occurs throughout eastern California, extending north-east through Northwestern Nevada and into Idaho.

Plant Communities:

Habitat: Found in wet mountainous areas.

Size: Most often Lemmon willow is a multi-stemmed shrub that ranges up to 15 feet (4.5 meters) tall.

Bark/Trunk/Twigs: The older bark is a dark, dull gray in color and smooth. The twigs are yellowish brown, growing with age.

Foliage: Leaves are alternately arranged, 1 ½ - 4 inches (3.75 – 10 cm) long and about 1 inch wide (2.5 cm). Upper surfaces are dark green and the lower are dull light green as a result of a covering of fine white hair. Leaves are elliptical shaped, tapering at both tip and base.

Flowers: Male- to 1 ½” long- are borne on separate spikes from female-to 2 ½” long-, both appearing as leaves unfold in spring.

Fruit: 1/3”, oblong, hairy capsules have short stalks (1/10”)

Site Ecology: Tolerates many moist to wet soil types; re-sprouts after fire.

Natural Significance: Young shoots are browsed by deer and elk. Useful in wetland restoration and to stabilize stream banks.

Ethnobotanical Use:

Commercial Use:

Propagation:

Remarks: Young leaves are more likely to be toothed, whereas older leaves tend to have smooth margins. Foliage: Alternate, lanceolate to oblanceolate leaves up to 4” long and 1” wide can have entire to serrate margins, and are pubescent in youth, becoming hairless. Stipules are present. Deciduous.



***Salix lucida var lasiandra* – Pacific Willow or Shining Willow**

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Found throughout 10 of the 11 western states (not Wyoming) through Canada to Alaska at elevations from sea level to 8,900 (0 – 2,700 meters).

Plant Communities: Grows in riparian and wet areas of valley and foothill woodlands, and yellow pine, and mixed evergreen forests.

Habitat: Wet areas: riverbanks, floodplains, wet meadows, and lake shores

Size: Tall slender large shrub or small tree from 15 – 45 feet (3.3 – 13.5 meters) tall

Bark/Trunk/Twigs: Bark is rough and brown. Twigs are reddish to brownish and glabrous (soft, shaggy, and hairy). The leaf stalk (petiole) have "bumps" (glands) on them and stipules at petiole/stem junction.

Foliage: Deciduous long lanceolate leaves from 2 – 6 inches (5 – 15 cm) long with finely toothed margins and long tapered sharp tip (acuminate). Leaves are shiny on top and usually glaucous (whitish film) below. The buds in the axils of the upper leaves are obviously rounded at the tip, as opposed to being sharp pointed like *S. laevigata*, Red Willow.

Flowers: Male catkins are 2 ½ inches (6 cm) long Female flowers are 4 ½ inches (11 cm) long flowers from March to May

Fruit: The fruit capsules are about 1/3 inch (85 mm) long and are lance shaped.

Site Ecology: Usually found in close association with moisture; either a body of water or a high water table. Pacific willow prefers a damp soil that can range in texture from gravelly to clayey.

Natural Significance: Pacific willow is an excellent food source and habitat for wildlife; browsed by deer, elk, and cattle. In California, nests of the endangered Least Bell's Vireo are commonly found in Pacific willow branches.

Ethnobotanical Use: The bitter inner bark of any willow may be eaten raw as an emergency food. The bark as a poultice was also used for bleeding and sores, asthma, for headaches, etc. The wood was used for making mallets, fish weirs, baskets, water jugs, etc. The bark was also dried and used as a substitute for tobacco. The wood was made more palatable when dried and ground into flour. It's used list is extensive!

Commercial Use: Pacific willow's ability to rapidly colonize disturbed sites makes it very useful for stream bank stabilization projects. Pacific willow is excellent for use in screening, windbreaks, and landscaping.

Propagation: Like most willows can easily be propagated by both seeds and cuttings.

Remarks: Pacific Willow is fast growing but short-lived. All willows produce salicin, which chemically is closely related to acetylsalicylic acid, commonly known as aspirin. This is probably why Native Americans used various preparations from willows to treat toothache, stomach ache, diarrhea, dysentery, and dandruff.



Salix lutea – Yellow Willow

Salix is a Latin name for the willow and meaning to leap or spring in reference to its fast growth

Plant Family: Salicaceae – The Willow Family

Geographical Distribution: Wide spread throughout northern United States and Canada. In California it is ranges between 5,000 - 9,500 feet (1,524 - 2,896 meters) in elevation.

Plant Communities: Yellow willow occurs in Douglas-fir, Ponderosa pine, Lodgepole pine, Sagebrush, yellow pine forests, and subalpine forests.

Habitat: Grows on banks of rivers or streams or in washes that have periodic moisture.

Size: A shrub that will grow to 15 feet (4.5 meters) tall

Bark/Trunk/Twigs: The bark of the trunk and older twigs is silver gray. Younger twigs are yellow to brown and hairless.

Foliage: The leaves are alternate, simple, pinnately veined, mostly lanceolate shaped leaves range in size from 1 ¼ - 5 inches (3 -12.5 cm) long and have either fine toothed or entire margins. The upper part of the leaf is shiny dark green and the lower surface is covered with fine white hairs. There are rounded stipules at the leaf axils.

Flowers: Male and female flowers occur on separate plants as catkins. Flowers usually come out before the leaves appear and are on short leafy stems. The fruiting catkins are 1 ¼ to 2 ¾ inches (3 – 7 cm) long.

Fruit: The fruit is borne in hairless capsules.

Requirements: Yellow willow is riparian in nature, found growing along stream and river edges, moist ditches, and moist alluvial terraces. However, it requires a coarse textured well drained soil.

Natural Significance: Willows in general are a preferred food of moose and beaver, and elk browse yellow willow during both summer and winter. Dense stands of yellow willow provide excellent thermal and hiding cover for many wildlife species. Songbirds frequently use the stand for nesting. Because of its soil binding properties and its close proximity to water, yellow willow holds together and helps stabilize stream banks, protecting the bank from erosion.

Ethnobotanical Use: The presence of salicin (chemical related to the active ingredient in aspirin) is probably why Native Americans used various preparations from willows to treat toothache, stomach ache, diarrhea, dysentery, and dandruff. Native Americans also used the stems for basketry and bow making, and the bark for tea and fabric making.

Commercial Use: Yellow willow can be used to revegetate disturbed riparian areas by planting cuttings.

Propagation: Most commonly reproduced by cuttings, but also can be grown from seed.

Remarks: Yellow willows wide range has caused variation in form and names. Think of it as the montane willow with shiny leaves. All willows produce salicin, which chemically, is closely related to acetylsalicylic acid commonly known as aspirin.

Salvia apiana – White Sage

Salvia: comes from the Latin salveo, "I am well," and an herb, Salvia, used for healing.

Plant Family: Lamiaceae – The Mint Family

Geographical Distribution: California south coast, peninsular and transverse ranges to the desert edge and into Baja; up to 5,800 feet (1,750 meters)

Plant Communities: Grows in coastal sage scrub, chaparral, and yellow pine forest.

Habitat: Normally occupies dry slopes and flats

Size: Subshrub, less than 3 feet (1 meter) tall; may get to 8 feet tall (2.5 meters) in ideal conditions.

Bark/Trunk/Twigs: Branches are white covered with tightly pressed hairs

Foliage: Evergreen leaves that start out crinkly gray-green and turn white; crowded at base of a few straight stems; lance shaped from 1 ½ - 3 inches long (4 – 8 cm) and covered both upper and lower surfaces with fine white hairs; has the typical sage odor

Flowers: emerge in summer and are white with a little lavender on spikes up to 3 ½ feet (1 meter). These spikes really stick out from the main plant body and distinguish this species.

Fruit: Nutlet (2 ½ - 3 mm); light brown and shiny

Site Ecology: Tolerates a wide variety of soil on dry slopes in full sun with no extra water.

Natural Significance: Animals browse white sage in winter; also a great bee, wasp, and hummingbird plant.

Ethnobotanical Use: Not Researched.

Commercial Use: Plant is dramatic in the landscape when planted amongst green like dwarf coyote bush or a low growing manzanita. White sage provides dramatic foliage, bold floral displays and powerful scent.

Propagation: Collect seeds in the fall, immerse in hot, not boiling, water and allow them to cool and soak overnight.

Plant them directly in the soil. Two to four node cuttings taken from young shoots that are beginning to harden are treated with a rooting hormone and placed in a moist, shaded, wind protected area until rooted. Because white sage leaves are so large, make sure to remove them from the cutting or it may dry out too much.

Remarks: White sage hybridizes with seven other sage species.



Salvia clevelandi – Cleveland Sage

Salvia: comes from the Latin **salveo**, "I am well," and an herb, Salvia, used for healing; The plant was named in 1874 by [Asa Gray](#), honoring plant collector Daniel Cleveland.

Plant Family: *Lamiaceae* – Mint Family

Geographical Distribution: In wild *S. clevelandi* is found from Riverside County into Northwestern Baja California at elevations below 3,000 feet (900 meters).

Plant Communities: Coastal scrub and inland chaparral

Habitat: Dry hill sides and bluffs in southern California

Size: A dome-like mass of branches from 2 – 5 feet (60 cm – 1.5 meters) tall and about the same width.

Bark/Trunk/Twigs: A closely branched woody base on older specimens. Because there are so many cultivars and hybrids, Cleveland sage is difficult to identify. True Cleveland Sage has redder stem, darker flowers, and stiffer branches.

Foliage: The leaves are oval to elliptic in shape and are about 2 inches (5 cm) long; gray-green above and paler beneath. The leaves have the sweetest odor and taste of any of California's native sages. The leaves have a rugose (rough) texture as illustrated by the picture to the right.

Flowers: Cleveland Sage is a prolific flower producer. The $\frac{3}{4}$ inch (2 cm) blue-violet blossoms are in ball like whorls scattered up the flowering stalk. This sage blooms a little later than most with a 3 - 4 week blooming period in May and June.

Fruit: A seed

Requirements: These plants are garden tolerant but particular. They need fast drainage, full sun, good air circulation and very little water after established.

Natural Significance: Butterflies and hummingbirds are attracted to its flowers, making it a good choice for a pollinator garden.

Ethnobotanical Use: Not researched

Commercial Use: This sage is short lived with most lasting from 5 – 10 years.

Propagation: Although the seed is viable, the usual method of propagation is by cuttings taken in the spring before flowers and new wood has formed.

Remarks: There are numerous cultivars of Cleveland Sage; each offering or needing a slightly different circumstance. 'Allen Chickering' is more cold tolerant; 'Winifred Gilman' may be the toughest to grow as it needs a really well drained soil and most sensitive to cold; 'Poza Blue' withstand more water and is longer lived; etc. Check which is best for you in 1 or 2 sources: Betty Clebsch has a fantastic book on sages – *The New Book of Salvias*, Timber Press – and Bert Wilson's Las Pilitas Nursery web site has tremendous detail on numerous sage



Salvia leucophylla – Purple Sage

Salvia: comes from the Latin salveo, "I am well," and an herb, Salvia, used for healing; *leucophylla* means white leaved.

Plant Family: Lamiaceae – The Mint Family

Geographical Distribution: Monterey County south into Baja from 165 – 2,650 feet (50 - 800 meters).

Plant Communities: Grows in chaparral, foothill woodlands, and coastal sage scrub.

Habitat: Dry, open hills of coastal scrublands, and steep slopes in woodland and forests of coastal mountains.

Size: A prostrate to erect shrub that may grow to 6 ½ feet tall (2 meters), depending on the site.

Bark/Trunk/Twigs: Branches are covered with tightly pressed grayish white hairs.

Foliage: The apple green leaves are produced in the spring. These leaves are replaced by smaller gray to almost white as the weather heats up. Leaves have a smooth margin and sometimes rolled under; lance shaped from ¾ - 3 inches long (2 – 8 cm) and both upper and lower surfaces are finely wrinkled and covered with fine white hairs;

Flowers: Flowers are in groups of 2 to 3 and alternating clusters spaced on bare stalks; they are a light purple color.

Fruit: Whorls of bracts containing a 2 ½ - 3 mm nutlet persist; that nutlet (seed) is brown to dark gray

Site Ecology: Most often occupies dry, exposed, well-drained sites.

Natural Significance: Purple sage attracts hummingbirds and bees during bloom and after seeds are formed small birds perch on the seed stalks to feed.

Ethnobotanical Use: Not researched.

Commercial Use: Plants growing the steeper slopes are excellent for erosion control. There are numerous cultivars of this sage that have been developed for landscaping. Study them and choose the one that is best for your situation.

Propagation: Collect seeds in the fall, immerse in hot, not boiling, water and allow them to cool and soak overnight. Plant them directly in the soil. Two to four node cuttings taken from young shoots that are beginning to harden are treated with a rooting hormone and placed in a moist, shaded, wind protected area until rooted.

Remarks: This is the largest of California's native sages and can reach 6 feet tall (1.8 meters) in the wild. Purple hybridizes with black and white sage. Aromatic



Salvia mellifera – Black Sage

Salvia: comes from the Latin salveo, "I am well," and an herb, Salvia, used for healing and *mellifera* means honey producing

Plant Family: Lamiaceae – The Mint Family

Geographical Distribution: Normally found from Central and south western California to northern Baja; sea level to 2,000 feet (600 meters). This is the most commonly occurring sage in California.

Plant Communities: Grows in coastal sage scrub, chaparral, and foothill woodlands.

Habitat: Mostly occurs dry exposed rocky, gravelly hillsides and slopes; usually on slopes of any aspect.

Size: An erect shrub (rarely prostrate) that grows to 5 by 5 feet tall and wide (1.5 meters)

Bark/Trunk/Twigs: Branches are with sharp, tightly pressed glandular hairs

Foliage: Evergreen oblong leaves 1 – 2 ¾ inches long (2.5 – 7 cm) with scalloped margins and a mid-green color. The leaf veins are indented giving their surfaces a finely puckered or textured appearance, and hairless above, and hairy below.

Flowers: Flowers are in alternating clusters spaced on bare stalks; they are a pale blue, lilac, or white colored; blooms from April to July.

Fruit: Nutlet (2 ½ - 3 mm); Dark brown

Site Ecology: Thrives in full sun on a wide variety of soil types but they must be exceptionally well drained. It is quite drought tolerant. I have one growing in the front yard that has never been watered!

Natural Significance: Important butterfly and hummingbird plant and quail love the seeds. It is also important to species of native bees as a food source.

Ethnobotanical Use: Native Americans had a wide variety of uses for black sage including: green leaves chewed for gas pains; poultice of heated leaves applied to the ear for earache pain; decoction of plant taken for coughs, sore throat, and bronchial problems; and an infusion of green leaves were taken for heart disorders. Leaves and stalks were used as a food flavoring and parched seeds ground into a meal for food.

Commercial Use: Very useful landscape plant. The flowers add color to a garden. It can be pruned for a more traditional manicured look or allowed to grow into its natural wild and woody self.

Propagation: Black sage can be propagated from seed, rooted cuttings or divisions from a parent plant.

Remarks: Black sage is one of the best sources of honey in California. Black hybridizes with purple and white sage. It is highly aromatic. It is called black sage because it develops a dark color when in drought conditions.



Salvia spathacea – Hummingbird Sage

Salvia: comes from the Latin **salveo**, "I am well," and an herb, Salvia, used for healing; *spathacea*: means "with a spathe," referring to the large, colored bracts that enclose the flower cluster

Plant Family: *Lamiaceae* – Mint Family

Geographical Distribution: Endemic to California, Hummingbird Sage can be found at low elevations from San Bruno Mountains in the north to Orange County in the south; under 2,000 feet (600 meters) elevation.

Plant Communities: *S. spathacea* grows in chaparral, coastal strand, southern oak woodland, foothill woodland and central oak woodland.

Habitat: Grows on chaparral hillsides, under oak woodlands, along streamlets, and other organic rich sites.

Size: The plant is 1 foot (30 cm) tall, but produces floral spikes that are additional 1 – 2 feet (30 – 60 cm) in length.

Bark/Trunk/Twigs: This sage is a robust perennial that has creeping rhizomes that form dense mats.

Foliage: *S. spathacea* has large leaves, being up to 8 inches (20 cm) long and 4 inches (10 cm) wide. The leaf surface is a rich green color with the underside covered with short hairs that give a pastel green color. Veins on the underside of the leaf are prominent. The leaves are lance shaped with a scalloped margin. The leaves give off a fruity fragrance when disturbed.

Flowers: The flowers are on stalks from 1 – 3 feet (30 – 90 cm) tall that appear in early spring. The dark magenta to purple flowers are preceded by a ruby red hairy calyx and bloom time is from February through June.

Fruit: Although not the fruit, it is appropriate to note here that the calyces and bracts remain intact and these up lemon sized structures add both color and character to the plant.

Requirements: In the wild it needs light shade to full sun, but is drought tolerant. However, in the Central Valley it will respond better to 2 week interval watering. It needs a humus rich well drained soil. The organic matter content encourages the plant to colonize.

Natural Significance: Obviously with a name like Hummingbird Sage, this plant is frequently visited by Hummingbirds during its blooming period. It is also used by native bees.

Ethnobotanical Use: Fragrant leaves can be dried and used in tea.

Commercial Use: Crimson sage makes a good cut flower that lasts in either fresh or dry arrangement.

Propagation: Propagation is by division of rootstock, cuttings, or seeds.

Remarks: Nevin Smith of Wintergreen Nursery has introduced a clone called 'Kawatre' that has more intensely colored flowers. Bert Wilson of Las Pilitas Nursery has a selection called 'Power Pink' that is 3 feet (1 meter) tall and has flowering stalks that are additional 3 feet (1 meter). Crimson, orange, and yellow flowered cultivars have been found and may be available.



Sambucus mexicana – Blue Elderberry

Sambucus: Greek "Sambuca" a stringed instrument made from elder wood; *Mexicana*: native to Mexico)

Plant Family: - Adoxaceae (Previously Caprifoliaceae) – The Moschatel Family

Geographical Distribution: Grows throughout California, except the deserts, and north into western Canada, east to Utah, and south to New Mexico and Mexico; common from sea level to 10,000 feet (3,000 meters) elevation.

Plant Communities: Grows in almost all plant communities except the desert-like settings.

Habitat: Usually found along stream banks and other wet area, but also grows in forest open places and disturbed areas such as roadsides.

Size: Large shrub or small tree, although usually doesn't have a main trunk, from 6 ½ - 26 feet tall (2 – 8 meters) and generally as wide.

Bark/Trunk/Twigs Stems are brown colored and filled with pith. Twigs are long and slender, colored from light tan to an orange brown.

Foliage: Deciduous, with 3 – 9 pinnately compound leaflets each 1 – 8 inches long (2.5 – 20 cm) and arranged opposite. Leaflets are finely serrated, oblong to ovate shaped and attached with a very short to no petiole. Leaves are bright green turning yellow in the fall.

Flowers: Numerous ¼ inch (6.25 mm) creamy white flowers are arranged in a flat topped cluster at the ends of long curving stems. Each flower has five petals and bloom time is from April to September.

Fruit: Berries are actually ¼ inch (6.25 mm) drupes and nearly black but a white glaucous covering make them appear bluish.

Site Ecology: Has a wide range in its moisture regime. Elderberry thrives in well watered situations but can also be drought tolerant once established. Prospers in full sun but also does well in light shade.

Natural Significance: Many bird and mammals consume the berries.

Ethnobotanical Use: ; Native Americans had many uses for the elderberry. The fruit was eaten after cooking. Berries were dried for use later in the year. A medicinal tea was made from the leaves. The stems were made into flutes, musical bows, and clapper sticks. A dye from the berries was made to color baskets. Elder wood was also made into bows and arrow shafts.

Commercial Use: People still collect berries today to make jellies, pies, and wine.

Propagation: Scarify seeds and then stratify for 90 days at 40⁰ F before planting.

Remarks: The roots, bark, leaves, and stems are all toxic. Shrubs are a habitat for endangered long horned elderberry beetle. Some taxonomists include a *S. cerulea* classification of plants that have over 5 leaflets and grow in higher elevations. There is also a red elderberry, *S. racemosa* that grows in the upper portions of the same range (above 6,000 feet (1,818 meters)).



Sambucus racemosa – Red Elderberry

Sambucus: Greek "Sambuca" a stringed instrument made from elder wood; *racemosa* means with flowers in racemes.

Plant Family: - Adoxaceae (Previously Caprifoliaceae) – The Moschatel Family

Geographical Distribution: Grows throughout California, except the deserts, and from Alaska south into the western mountains, it also grows in the eastern United States, Europe, and Asia; sea level to 12,000 feet (3,636 meters)

Plant Communities: Grow in the upper montane and sub alpine belts.

Habitat: Usually found along stream banks and other wet area, but also grows in open forest places and disturbed areas such as roadsides.

Size: Large shrub that grows up to 25 feet tall (7.5 meters) and generally as wide.

Bark/Trunk/Twigs Stems are brown colored and filled with pith.

Foliage: Deciduous, with 5 – 7 pinnately compound leaflets each 1.5 – 5 inches long (3.75 – 12.5 cm) and arranged opposite. Leaflets margins are finely serrated, lanceolate shaped and attached with a very short to no petiole.

Flowers: The blossom cluster is from 1 ½ - 2 ½ inches long (4 – 6 cm); has a dome shape and comprised of many small blossoms.

Fruit: Berries are actually ¼ inch (6.25 mm) drupes and bright red or blue or black and lack a waxy white covering that is found on the blue elderberry. Berries are unpalatable and may even be toxic to humans.

Site Ecology: Has a wide range in its moisture regime. Elderberry thrives in well watered situations but can also be drought tolerant once established. Prospers in full sun but also does well in light shade.

Natural Significance: Many bird and mammals consume the berries.

Ethnobotanical Use: Native Americans had many uses for the elderberry. A medicinal tea was made from the leaves. The stems were made into flutes, musical bows, and clapper sticks. A dye from the berries was made to color baskets. Elder wood was also made into bows and arrow shafts.

Commercial Use: The berries from this plant are not palatable and even toxic to humans.

Propagation: Elderberry can be propagated by cuttings and seed.

Remarks: This plant shows great variation with coastal plants tree like with leaflet hairs on the lower surface and red berries: *Sambucus racemosa* var. *arborescens*. Mountain plants have hairless leaflets and red berries: *Sambucus racemosa* var. *microbotrys* or black berries: *Sambucus racemosa* var. *melanocarpa*. There is also a blue elderberry, *Sambucus mexicana*, that grows within the same range to 10,000 feet (3,030 meters).



Schinus molle - California Pepper Tree

Schinus is from the Greek name of a mastic producing plant and *molle* is Peruvian 'mulli' in reference to the pepper tree.

Plant Family: Anacardiaceae – Sumac or Cashew Family

Geographical Distribution: Native to the Peruvian Andes, naturalized in California probably introduced by the missionaries.

Plant Communities: Grows in California central valley and throughout southern California; has become naturalized in those areas.

Habitat:

Size: Small tree that grows to 25 – 40 feet tall (7.5 - 12 meters); rapid growth

Bark/Trunk: Mature trees have gnarled bark with knots and burls; drooping branches that can become leggy. Branches are brittle and have a tendency to break, especially in high winds.

Foliage: Evergreen compound bright green leaves, narrow leaflets 2 inches long (5 cm) by ¼ - ½ inches wide (0.6 – 1 ¼ cm), aromatic.

Flowers: Both male and female trees have 4 – 6 inch clusters (10 – 15 cm) of whitish-yellow flowers during summer.

Fruit: Females trees only produce clusters of green berries that turn rose colored in fall and winter. Some trees have mostly male flowers and thus produce very little fruit.

Requirements: Drought tolerant to moderate water, full sun and very heat tolerant

Natural Significance:

Ethnobotanical Use: Probably first brought to California from Peru by the Spanish, as it was found around the coastal missions. Virtually all parts of this tropical tree, including its leaves, bark, fruit, seeds, resin, and oleoresin (or balsam) have been used medicinally by indigenous peoples throughout the tropics.

Commercial Use: Exclusively as landscape tree; great in parks, play or picnic areas, gravel driveways, etc. Today, herbalists and natural health practitioners in both North and South America use peppertree mostly for colds, flu, and other upper respiratory infections; as a remedy for hypertension and for irregular heartbeat; for fungal infections and Candida; and as a female balancing herb for numerous menstrual disorders, including menstrual cramps and excessive bleeding.

Propagation: New plants can be produced by either seeds or cuttings.

Remarks: Produces much litter, greedy roots that can invade sewers or drains. There are two other trees in the same genera also called pepper trees: *Schinus aroeira*, and *Schinus terebinthifolius*



Sequoia sempervirens - Coast Redwood

Sequoia is for the Native American Sequoiah (1770 – 1843) who invented the Cherokee alphabet and *sempervirens* means always green.

Plant Family: Taxodiaceae – The Bald Cypress Family

Geographical Distribution: A narrow coastal band from Curry County Oregon to Monterey County, a coastal strip 5 – 35 miles wide (8 – 56 km) from sea level to 3,000 feet (900 meters).

Plant Communities: Redwoods grow in northern coastal forests that includes redwood forests, Douglas fir forests and mixed evergreen forests.

Habitat: Mostly alluvial soils on benches and terraces; coastal coniferous forests; the fog belt to inland where there is sufficient summer soil moisture (Napa and Del Norte Counties).

Size: Very very tall tree 200 – 325 feet (61 – 99 meters) with trunk diameters from 10 – 15 feet (3 – 4.6 meters); matures in 400 – 500 years and oldest recorded tree is 2,200 years.

Bark/Trunk/Twigs: Long clear trunks with thick, fibrous and spongy, fissured reddish brown bark.

Foliage: Evergreen, needle-like leaves, two ranked & arranged in flat sprays from ¾ - 1 inch long (2 – 2 ½ cm), sharp pointed and dark green above and whitish below. Leaves on cone-bearing branches may be scale-like.

Flowers: Monoecious; both males and females are very small and occur near the ends of shoots; males are oblong; females more egg-shaped.

Fruit: Produces tiny pollen-bearing male cones and small semi-woody seed cones on the same tree. Females cones ½ - 1 ½ inches long (1.2 – 3.7 cm), elliptical, reddish-brown, with many flat, short-pointed cone scales and hanging down at end of leafy twig.

Site Ecology: Cannot tolerate salt spray and low temperatures (seedlings are killed by frost). Shade tolerant but does best in full sunlight. Needs a moist environment provided by high winter rainfall and summer fogs to mitigate the lack of rainfall.

Natural Significance: Many species make the redwoods their homes: juncos, winter wrens, Stellar's jay, woodpeckers, banana slugs, red salamander, snakes, moles, and shrews. Environmentalists have made redwood forests a hot button concern because they are home to endangered species such as the spotted owl and the marbled murrelet.

Ethnobotanical Use: Redwoods are probably the most “visited” of California’s entire flora.

Commercial Use: Redwood lumber is used in decking, siding, fencing, outdoor furniture, shakes, and for souvenirs. Redwoods are the most productive in annual biomass production of any plant species in the world; capable of producing more than 1,400 tons (1,273 metric tons) per acre per year. Many cultivars have been developed for landscaping purposes and as a result trees are used extensively in California’s central valley.

Propagation: Collect half ripe cutting in spring or summer, treat with IBA#3, and place in vermiculite with bottom heat and upper mist. Stratify seed for 70 – 90 days at 40⁰ F.

Remarks: Only North American conifer to possess basal buds on its roots that can sprout when a tree is dead or dying. World’s tallest tree, the record is the “Stratosphere Giant” at 374 feet (113.3 meters). Another tree in Jedediah Smith State Park is the national champion tree on California’s big tree registry (based on a point system), has a diameter of over 25 feet (7.7 meters). Bark acts as a fire protectant. The species itself is not endangered, but old growth redwood forests are a dwindling habitat. Of all conifers, produces the 2nd largest amount of biomass per unit area; only exceeded by the Giant Sequoia.



Sequoiadendron giganteum - Giant Sequoia

Sequoiadendron means a Sequoia tree in size and *giganteum* means extremely large, massive.

Plant Family: Taxodiaceae – The Bald Cypress Family

Geographical Distribution: Limited to 72 groves on the western slopes of the Sierra Nevada; from 4,500 – 7,500 feet (1,370 – 2,290 meters); occasionally down to 3,000 feet (914 meters) and up to 8,900 feet (2,713 meters).

Plant Communities: With a few minor exceptions, Sequoias grow in the yellow pine forest.

Habitat: Granitic and other rocky soils in moist mountain sites; usually canyon or slopes; in coniferous forests.

Size: Very very large trees 150 – 250 feet tall (46 – 76 meters) with trunks 20 feet in diameter and larger (6 meters). Giant Sequoias are one of the world's older living organisms with ages between 3,200 – 3,300 years.

Bark/Trunk/Twigs: Reddish-brown to cinnamon red trunk, very fibrous up to 2 feet (60 cm) thick! The fire resistant bark is deeply furrowed and buttressed at base but quickly narrow into tapered trunks. Mature trees have a bare trunk (free of limbs) for many feet. Young trees will have foliage almost to the ground.

Foliage: Evergreen, crowded and overlapping, 1/8 – 1/4 inch long (3 – 6 mm), scale like; awl-like, sharp-pointed, blue-green with 2 whitish lines. Lines fall as sprays.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Cones 1 3/4 - 2 3/4 inches long (4.5 – 7 cm), elliptical, green at first then turning to reddish-brown, many flat, short-pointed cone scales, hanging down at the end of leafy twigs. The cones may hang on the tree for many years.

Site Ecology: Grows on a variety of soils but needs a stable source of moisture; therefore, it often grows at the base of slopes where moisture collects. Shade intolerant and does not reproduce well without canopy openings. Fire suppression has harmed the viability of this rare tree. Prescribed burns that provide for mineral soils have increased the survivability of the Giant Sequoia.

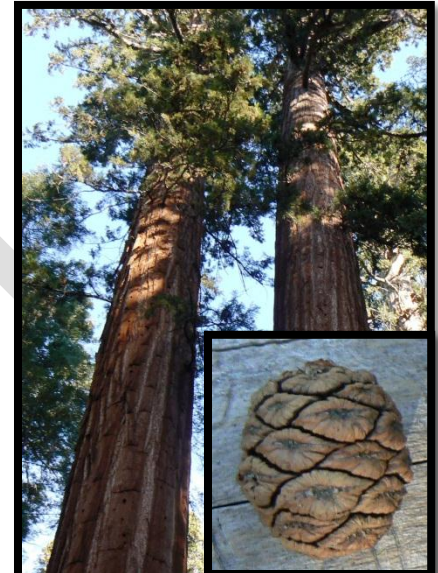
Natural Significance: Douglas squirrels cache and feed on green sequoia cones. These giants provide shelter and habitat for a wide variety of birds and arboreal mammals.

Ethno Botanical Use: Not researched

Commercial Use: Because it is a rare tree, its use is limited. Useful as an ornamental and Christmas tree. Because more 90% of the trees are in protected parks, it is no longer used as a source of lumber. Sequoia wood is not as desirable as coast redwood because the wood tends to shatter when the massive trees are felled. Sequoias are now being grown on lowland plantations and may offer Sequoia wood products in the late 21st century.

Propagation: Collect cuttings from twig tips in the fall, treat with IBA, insert in perlite with bottom heat and upper mist. Stratify seeds for 60 – 90 days at 40^o F.

Remarks: The largest living thing in the world (total volume) is the General Sherman giant sequoia. This tree is at least 275 feet tall (83.3 meters) and has a breast height diameter of 27 feet (8.2 meters).



Smilacina racemosa - False Solomon Seal

Smilacina is a diminutive of Smilax, a genus of greenhouse plants which it resembles. *Racemosa* means it has flowers in racemes.

Plant Family: Liliaceae – The Lily Family

Geographical Distribution: Wide spread in California and beyond; Cascade Range, Sierra Nevada, and Transverse Range, north to Alaska and into eastern North America; below 6,600 feet (2,000 meters).

Plant Communities: Grows in yellow pine forests and mixed evergreen forests.

Habitat: Shady, moist woods and adjacent to water ways; needs a source of moisture, however; once established can tolerate extended periods of limited or no moisture (see remarks below).

Size: Stems 1 - 3 feet (30 – 90 cm) from horizontal rootstock

Bark/Trunk/Twigs: This plant is basically a creeping stem with leaves attached; spread by rhizomes.

Foliage: Deciduous, green, alternate, clasping stem at base, 3 – 5 ½ inches (7.5 – 13.75 cm), ovate to oblong with a pointed tip, feels rough with short hairs. Leaf distinguished by 3 – 5 main parallel veins emanating from base.

Flowers: Panicles on a stalk that grows out of the end of the main stem with 2 - 4 inch (5 – 10 cm) white star-shaped flowers, stigma 3-lobed. Blooms from April to June and produce a very pleasant aroma.

Fruit: Spherical red berry with purple dots about 5 – 7 mm that matures into a black seed.

Site Ecology: Grows under oaks and other shady woodlands; needs a constant source of moisture to establish, but can tolerate dry situations after established.

Natural Significance: The berries are eaten by a numerous bird and mammalian species.

Ethnobotanical Use: Traditional medicinal uses for this plant include root tea used for constipation and upset stomach, as well as leaf tea to quiet coughs and aid in contraception. The leaf tea can also be applied topically to reduce discomfort associated with itching or a rash.

Commercial Use: A very adaptable landscape plant that offers a low maintenance addition to a variety of garden types. Seeds are available commercially. Possibly invasive, but controlling moisture should control its spread.

Propagation: False Solomon seal is most easily started anew by dividing the plant and its rhizomes and replanting them. It can also be grown from seed.

Remarks: Goes dormant in summer if no rain and is killed back to ground level by frost, but resprouts in spring. There are two varieties to this species: var. *amplexicaulis* and var. *glabra*. Called false Solomon seal because it does not have the medicinal properties of true Solomon seal which is in the genus *Polygonatum*.



***Sorbus californica* –Mountain Ash**

Sorbus is an ancient Latin and *californica* means found in California

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Found in Klamath and Cascade Ranges, high north coast ranges, high Sierra Nevada, and San Francisco bay region, from 5,000 – 11,000 feet (1,515 – 3,333 meters) elevation.

Plant Communities: Grows in yellow pine forest, mixed evergreen forests, red fir forests, and lodgepole forests, and subalpine forests.

Habitat: Occurs in forest clearings at mid to high elevations in California, and in the Coastal Ranges in the Northern part of its range in moist sites.

Size: This shrub ranges in height from 3 to 10 feet (0.9 – 3 meters) with a trunk diameter to 6 inches (15 cm).

Bark/Trunk/Twigs: Mountain ash has an erect, many branched trunk with smooth dull red to gray bark. Young twigs have rust-colored hairs and become stout as they age.

Foliage: Deciduous pinnately compound leaves with 7-9 leaflets, 1 – 2 inch (2.5 – 5 cm) long and ½ - 1 inch (1.25 – 2.5 cm) wide; leaflets are dark green above, paler beneath and sharply serrate for ¼ - ½ inch (0.6 – 1.25 cm) the length of the leaflet measured from the apical end. Leaflets are oblong to ovate shaped.

Flowers: Round-topped inflorescences contain 15-80 small 5 petaled white flowers with 15-20 stamens each. Blooms in June or July.

Fruit: Elliptical to round ½ inch (1.25 cm) bluish-red fleshy fruits resemble small apples and are clustered into groups of several.

Site Ecology: Adapts to many soil types wherever it is moist; intolerant of fire, drought and shade, and requires some winter chill to bloom.

Natural Significance: Fruit provides a food source for birds that serve to spread the seeds.

Ethnobotanical Use: Not researched.

Commercial Use: Nothing noted.

Propagation: Stratify seeds for 90 days at 33 – 40⁰ F.

Remarks: Jepson lists four mountain ash species. *S. aucuparia* and *S. sitchensis* grow out of our general area. *S. scopulina*, with two subspecies, overlap the area of the species described here. *Scopulina* tends to have more leaflets (9 – 13) than *californica*. Not all sources agree on this description of each species range.

Spiraea douglasii- Western Spiraea

Spiraea is Greek is refers to a plant used for wreath or garlands. *Douglasii* is after David Douglas (1798 – 1834) who was a Scottish collector sent to America three times to collect plants that could be grown in English gardens.

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Found along the Pacific Coast Ranges where is occurs most frequently in Northern California and the Pacific Northwest into British Columbia including, the Cascade and Klamath Ranges, north coast range, and Modoc Plateau at elevations below 2,000 feet (600 meters).

Habitat: Grows along moist coniferous forest edges and in wet meadows in mountains and foothills **Size:** 3 – 6 feet (0.9 – 1.8 meters) in height forming broad thickets.

Bark/Trunk/Twigs: Twigs are brown and covered with fine hairs. and hairy below. Margins are serrate other than at the base where they are entire. Deciduous.

Flowers: Terminal, pyramid-shaped clusters to 8 inch (20 cm) in length bear rose-pink, 5 petaled flowers each with numerous stamens and pistils.

Fruit: 5 follicles breaking along one side.

Site Ecology: Grows on moist to wet, acid soils.

Natural Significance: Nothing noted

Ethnobotanical Use: Not researched

Commercial Use: Easily grown as an ornamental in naturalistic settings where moisture is ample.

Remarks: Showy summer flowers lend the plant to landscaping use. Western spirea suckers freely, therefore, can be invasive where grown as an ornamental. *S. densiflora*, mountain spirea, occurs above 2,000 feet (600 meters)



***Spiraea densiflora* – Mountain Spiraea**

Spiraea is Greek is refers to a plant used for wreath or garlands. *Densiflora* means densely flowered.

Plant Family: Rosaceae – The Rose Family

Geographical Distribution: Found from the Central Sierra Nevada north to British Columbia including, the Cascade and Klamath Ranges, and the high Sierra Nevada at elevations from 2,000 - 11,000 feet (600 – 3,333 meters).

Habitat: Grows along coniferous forest edges and in moist meadows in mountains away from the coast.

Size: Measures between 8 inches and 3 ½ feet tall (0.20 – 1 meter).

Bark/Trunk/Twigs: Twigs are brown and may or may not have hairs.

Foliage: The deciduous, alternate, thin leaves are egg-shaped and ½ - 2 ¾ inches (1 – 7 cm) long. Margins are serrate for approximately 85% of the length of the leaf, but entire at the base. Pubescence is highly variable and may or may not be present. Unlike *S. douglasii*, the leaves are the same green color on top and bottom surfaces.

Flowers: Terminal flat-topped inflorescences measure 2 inches (5 cm) across and hold numerous rose pink flowers.

Fruit: Fruits are 5 follicles breaking along one side.

Site Ecology: Requires distinctly colder winter temperatures to bloom. Soil must be well-drained so rocky sites are preferred, as well as serpentine based soils.

Natural Significance: Nothing noted

Ethnobotanical Use: Not researched

Commercial Use: Flower clusters are showy and plants lend themselves to ornamental use where winter chill is sufficient to produce bloom.

Remarks: Plants bearing branches covered in fine hair are *S.d.* var. *splendens*.

***Stachys bullata* – California Hedge Nettle/Wood Mint**

Stachys is Greek and stachus for "ear of grain" or "a spike," in reference to the spike-like form of the flowers.
Bullata means having a blistered or puckered surface, as in leaves.

Plant Family: Lamiaceae - menthes, mints

Geographical Distribution: Grows from coastal areas above San Francisco Bay south to Baja California at elevations less than 1,600 feet (500 meters).

Plant Community: Grows in chaparral, mixed evergreen forests, redwood forests, and coastal sage scrub.

Habitat: Commonly occurs on dry slopes near coast

Size: Erect stems from 1 ½ - 2 ½ feet (40 – 80 cm) tall

Bark/Trunk/Twigs: An erect square stem rises from a procumbent base. The hairs on the angles of the stem are stiff and reflexed; those on the sides are soft and glandular

Foliage: The pinnately scaly veined patterned leaf blades 1 ¼ - 7 inches (3 – 18 cm) long, ovate to oblong-ovate shaped with serrate toothed margin and covered with soft hairs.

Flowers: Pink to light purple flowers occurs from April – September and is borne on 1 – 2 feet (30 – 60 cm) tall spikes. The flowers are two lipped with the 3 lobed lower lips about twice as long as the single lobed upper lip.

Fruit: No comments

Requirements: Shade to ½ shade, occasional moisture to dry

Natural Significance: Both hummingbirds and butterflies seek nectar from the flowers

Ethnobotanical Use: Poultice of plant parts applied for sores, boils, earaches, stomach aches, and sore throats.

Commercial Use: If used in inland landscapes, requires summer watering

Propagation: Not researched

Remarks: The species and photographed at the Consumnes River Preserve was Great Hedge Nettle (*Stachys cooleya*). California hedge nettle is not one of the stinging nettles and has a pleasant lemon scent when rubbed.



Symphoricarpos albus – Common Snowberry

Symphoricarpos is: from the Greek word symphorein, which means borne together, and karpos, which means fruit, and so meaning "fruit borne together" because of the clustered berries. *Alba* means white.

Plant Family: Caprifoliaceae – Honeysuckle Family

Geographical Distribution: Cascade Range, Sierra Nevada Foothills, Central and Southwestern California, to Alaska and Montana; below 4,000 feet (1,200 meters) but usually below 2,000 feet (600 meters) elevation.

Plant Communities: Grows in chaparral, mixed-evergreen forests, riparian (rivers & creeks), yellow pine forests and oak woodlands.

Habitat: Snowberry is most often found in shaded woods, stream banks, and on north facing slopes.

Size: A deciduous shrub that is 3 – 6 ½ feet (1 – 2 meters) tall and wide; densely branched and bushy to the point of forming a rounded shape.

Bark/Trunk/Twigs: Multi stemmed Plant can gradually form a thicket by rhizome spreading; twigs are slender and brown when young but age to a shreddy gray or dark brown color.

Foliage: The blue green leaves are deciduous, simple, and alternate; they are ovate to round and range from ¾ - 2 inches (2 – 5 cm) long and may be hairy underneath.

Flowers: Clusters of tiny pinkish urn-shaped flowers from 4 – 6 mm long, bloom time is May - June

Fruit: The fruit is a brilliant round white berry about ½ inch (1.25 cm) that is persistent on plant from September – November.

Site Ecology: Snowberry likes sun to shade, some summer water and doesn't care about soil texture as long as drainage is good.

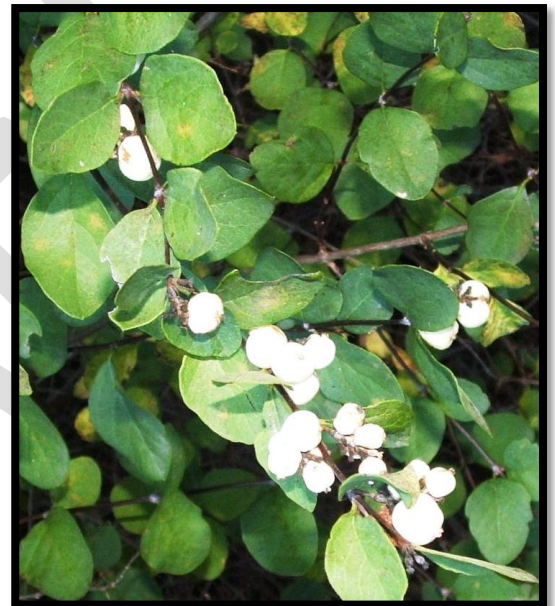
Natural Significance: Hummingbirds like the flowers. Berries are palatable to hermit thrush, Swainson's thrush, robins and other species; makes good cover for birds. Snowberry is the larval host for Vashti Sphinx moth pictured to the right.

Ethnobotanical Use: Berries used for the hair. Poultice of chewed leaves applied or infusion of leaves used as a wash for injuries. Decoction of root bark taken for venereal disease and a wide variety of physical disorders. Berries rubbed on skin for rashes, sores and burns.

Commercial Use: Responds well to shearing; a good choice for under native oaks but give it some room because it spreads by rhizomes. It is still very ornamental.

Propagation: Can be regenerated by both cuttings and seeds.

Remarks: Naturalized in eastern United States



***Symphoricarpos rotundifolius* – Mountain or Roundleaf Snowberry**

Symphoricarpos is: from the Greek word symphorein, which means borne together, and karpos, which means fruit, and so meaning "fruit borne together" because of the clustered berries. *Rotundifolius* mean with rounded leaves

Plant Family: Caprifoliaceae – Honeysuckle Family

Geographical Distribution: In California Mountain Snowberry is found in the Cascade Range, Sierra Nevada Mountains, Southwestern California, Great Basin Floristic Province (north eastern California and the eastern Sierra Nevada), and the Desert Mountains between 3,630 – 10,890 feet (1,100 – 3,300 meters) elevation.

Plant Communities Grows in lodge pole pine forests, sub-alpine forests and yellow pine forests, pinyon-juniper woodland, and red fir forests.

Habitat: Most often found growing on slope and ridges, especially rocky areas, and open places in forests.

Size: A deciduous shrub that is 4 feet (1.2 meters) tall and about the same width. The plant could be erect, spreading or trailing.

Bark/Trunk/Twigs: A straggly shrub with rhizomes and shredding old bark. The young twigs are slender and brown colored.

Foliage: The blue green leaves are deciduous, simple, and alternate; they are ovate to round and range from ¾ - 2 inches (2 – 5 cm) long and may be hairy underneath. Leaf margin appear to be entire to somewhat wavy.

Flowers: Singles or pairs of bell-shaped flowers from 6 – 10 mm long, and are white to pinkish in color. Their bloom time is May to June.

Fruit: The fruit is a brilliant round to oval white berry about ½ inch (1.25 cm) that is persistent on plant from September – November and even the entire winter.

Site Ecology: It grows in full sun in fairly dry sites on granite-based soils.

Natural Significance: This plant is attractive to bees, butterflies and/or birds; the former two for the flowers and the latter for the fruit.

Ethnobotanical Use: Nothing noted

Commercial Use: Nurseries offer Mountain Snowberry for xeriscape gardens.

Propagation: By dividing rhizomes, tubers, corms or bulbs (including offsets) or from seed; direct sow outdoors in fall.

Remarks: There are 2 varieties of Mountain Snowberry; *S. rotundifolius* var. *rotundifolius* is found in Colorado, New Mexico, and Texas while *S. rotundifolius* var. *parishii* is grows in California, Nevada, Arizona, Utah and Idaho.

***Taxus brevifolia* – Pacific or Western Yew**

Taxus is the Latin name for the yew tree and *brevifolia* means with short leaves.

Plant Family: Taxaceae - The Yew family

Geographical Distribution: Pacific Yew range is from southeastern Alaska in the north, south through British Columbia, Washington, Oregon and into Northern California, and east into northern Idaho and western Montana. In California, its range includes the Klamath Mountains, western Sierra Nevada to the southern limit in Calaveras County. There are isolated occurrences in Marin and San Mateo Counties; from sea level in coastal areas to as high as 8,000 feet (2,440 meters) in the Sierra Nevada.

Plant Communities: Given the geographical description above, Pacific yew grows in a wide range of plant communities.

Habitat: Pacific yew is most often growing in forested areas.

Size: A small to medium-sized tree that typically grows very slowly, Pacific Yew rarely exceeds 50 feet (15 meters) in height with a trunk diameter of 24 inches (60 cm).

Bark/Trunk/Twigs: Trees have thin, reddish brown, scaly bark. The inner bark is reddish-purple. Twigs are round, slender, and remain green for many years. relatively few lateral branches.

Foliage: The evergreen leaves are lanceolate, flat, dark green, and measure ½ - 1 ¼ inches (1-3 cm) long and 2-3 mm broad. They are arranged spirally on the stem, which is apparent on erect leading shoots. On lateral branches, however, the leaf bases are twisted to align the leaves in two flat rows on either side of the stem, making the spiral arrangement less obvious.

Flowers: Gymnosperm, not a flowering plant. Pacific Yew is dioecious. Male strobili are stalked, bud-like, and pale yellow. They are abundant on the underside of branch sprays and usually appear in May or June. Female strobili are less abundant, greenish, and composed of several scales. They also are borne on the underside of branches.

Fruit: The fruit is an egg-shaped or oblong seed measuring approximately 1/3 inch (8 mm) long and ¼ inch (6 mm) in diameter. It appears partially enveloped by a fleshy, berrylike, scarlet, cup-shaped disk called an aril.

Site Ecology: Pacific Yew tolerates shade, and in undisturbed stands is usually found as an understory tree. It can be found growing on deep, rich soils which are often rocky or gravelly. The species requires an abundant source of moisture from either precipitation or adjacent waterways.

Natural Significance: Birds devour the fleshy fruit, while chipmunks and squirrels often consume the seeds. Both then void the seeds which remain viable, creating naturally occurring clusters of the species.

Ethnobotanical Use: Among Native Americans, a red paint was made from ground yew wood mixed with fish oil, and several tribes smoked dried yew needles. Women used Pacific Yew to remove underarm hair. Yew was valued as an item of trade and used in making instruments for hunting, fishing, and warring, for tools, such as mauls and splitting wedges, and for household utensils, such as bowls and spoons. The species was used medicinally for a broad range of ailments.

Commercial Use: The bark of Pacific Yew contains a drug, known as taxol, which is being used in cancer research, dramatically increasing the demand for yew bark by the National Cancer Institute in recent years. Taxol appears to be effective against a wide range of tumors, and particularly good results have been obtained in the treatment of ovarian cancer. The wood is used in many specialty items, including archery bows, canoe paddles, tool handles, gunstocks, boat decking, furniture, musical instruments, carved figurines, and miscellaneous novelty items. It is naturally resistant to decay, making it useful for such items as fence posts.

Propagation: By seeds

Remarks: The largest specimen of Pacific Yew on record measured 60 feet (18 meters) in height with a trunk diameter of 56 inches (142 cm).

Torreya californica – California Nutmeg

Torreya is after John Torrey (1796 – 1873), chemistry professor who taught at West Point, as well as numerous other institutions. He was one of the giants of North American botany who describe 100's of plants.

Californica means it is from California.

Plant Family: Taxaceae – The Yew Family

Geographical Distribution: Coast Range from Trinity to Monterey Counties; Cascades and Sierra Nevada from Shasta to Tulare Counties; between 100 – 7,000 feet (30 – 2,100 meters).

Plant Communities: Most often found growing in moist sites in communities from the yellow pine forest elevation and below.

Habitat: Grows on diverse sites from riparian zones to hot dry chaparral. It does best on moist sites in the redwood zone. In tough environments, like serpentine soils, nutmeg grows as a shrub. Never forms a continuous forest, but rather grows as an isolated tree or in small groves. Not a commonly occurring species.

Size: Small to medium tree usually 15 to 50 feet tall (4.5 – 15 meters) and 8 – 20 inches in diameter (20 – 50 m); can grow to 100 feet (30 meters).

Bark/Trunk/Twigs: Pale reddish or grayish brown with narrow ridges separated by shallow furrows. Twigs are reddish brown.

Foliage: Evergreen leaves needle-like 1 – 2 ½ inches (2.5 – 7 cm) long with very sharp tips and a deep yellowish green color with shiny surfaces; usually arranged in flat sprays. Leaf (needle) undersides have 2 rows of distinct stomatal bands. Foliage and bruised fruit have very offensive odor.

Flowers: Gymnosperm, not a flowering plant.

Fruit: Borne in the fall on female trees is a pale yellowish green, plum-like resinous fleshy fruit with grooved seed that resembles nutmeg; becomes wrinkled with age. Fruit is about 1 – 2 inches long (2.5 – 5 cm).

Site Ecology: Extremely shade tolerant tree, usually growing under the canopy of pines and other conifers. Top is readily killed by fire but quickly resprouts from roots.

Natural Significance: Stellar's and Scrub jays feed on the seeds.

Ethnobotanical Use: Wood used by native Americans to make bows and they also roasted the rich, oily seeds; early settlers used timbers in bridge building. Pomo Indians used roots in basket weaving.

Commercial Use: Grown as ornamental tree. Wood is very durable and has been used to make cabinets, novelties, for fuel and fence posts.

Propagation: Stratify seed for 60 – 90 days at 40° F before planting.

Remarks: No biological relationship between California nutmeg and the spice nutmeg; foliage resembles that of the yews. Nutmeg's infrequent occurrence results in it being misidentified as Douglas fir and/or white fir. Four features distinguish nutmeg from other conifers: 1) the blue-green rounded fruit are very different from cones, 2) needles are more sharply pointed than all other conifers, 3) its irregular shape is different than the symmetry of firs, and 4) it stinks. Nutmeg is also called stinking cedar due to an unpleasant smelling substance in the needles and fresh shoots.



***Toxicodendron diversiloba* – Poison Oak**

Toxicodendron means poison tree and *diversilobum* means diversely-lobed.

Plant Family: Anacardiaceae – Sumac or Cashew Family

Geographical Distribution: California Floristic Province and from British Columbia to Baja, California; below 5,500 feet (1,650 meters) elevation

Plant Communities: Grows in chaparral, oak woodlands and lower elevations of the yellow pine forest.

Habitat: Occurs in a variety of places including, canyons, slopes, forests and woodlands

Size: A deciduous shrub 3 – 7 feet (1 – 2 meters) tall

Bark/Trunk/Twigs: Form ranges from shrub to small tree to climbing vine with twigs that are orange-brown, turning to gray with black mottling.

Foliage: Leaves pinnately compound with 3 leaflets, each leaflet is rounded, obtuse, with a glossy upper surface, margin entire or irregularly toothed, may be highly colored (red and gold) in fall. Leaflet size is 1 ½ - 4 inches (3.5 – 10 cm) long but are extremely variable in both size and shape, depending on environmental conditions – soil type, water, shade, competition, site disturbance, etc.

Flowers: Flowers small, inconspicuous, yellowish-green, in loose clusters (panicles).

Fruit: 1.5 – 6 mm diameter slightly compressed sphere, white or cream colored, ribbed, in clusters, remain after leaf fall.

Site Ecology: It is found in damp, semi-shady areas near running water, but thrives in direct sunlight and only requires water in early spring. However, it has been observed in very dry tough conditions

Natural Significance: Plant is spread by birds that have eaten seeds. Deer graze on poison oak leaves.

Ethnobotanical Use: Nothing noted

Commercial Use: Approach is to eradicate or control poison oak, methods include: physical removal, herbicides, and mob grazing by goats.

Propagation: Primarily by seed but also creeping rootstocks

Remarks: All parts of the plant are toxic, an allergic contact dermatitis. About 70% of adults who contact poison oak will develop a rash in a delayed fashion from about 8 hour minimum to 2 weeks later. The rash is due to allergic reaction to urushiol resin on leaves or stems. Indirect contact via smoke or animals with the resin on their fur can also cause the rash to appear.



Trentepohlia aurea – *Trentepohlia*
Aurea means golden

Plant Family: *Trentepohliaceae*

Geographical Distribution: Occurs in association with Monterey Cypress, *Cupressus macrocarpa* along the central coast of California. It is also found world wide.

Plant Communities: Coastal strand

Habitat: Grows on the trunk and branches of Monterey Cypress. It may also be found on the soil and rocks in close proximity to the trees.

Size: This is a green algae that appears red due to the presence of carotenoid pigments. It is a colony of microscopic organisms.

Bark/Trunk/Twigs: None

Foliage: None

Flowers: None

Fruit: None

Site Ecology: Appears to need the Monterey Cypress in order to survive; however, it is also growing on rocks in the same area. The climate obviously has an influence on *Trentepohlia*'s existence.

Natural Significance: Not sure

Ethnobotanical Use: Nothing noted

Commercial Use: None

Propagation: By algal hyphae

Remarks: Its unique relationship with the area makes the algae special. It offers more photo options in an already photogenic site.



***Trichostema lanceolatum* – Vinegar Weed or Common Blue Curls**

Trichostema: from **trichos**, "hair," and **stema**, "stamens," and alluding to the hair-like stamens. *Lanceolatum* means lance-like, referring to the shape of the leaves.

Plant Family: Lamiaceae – Mint Family

Geographical Distribution: California Floristic Province, Oregon, and Baja, California; grows from sea level to 3,300 feet (1,000 meters)

Plant Communities: Pinyon-Juniper Woodland, Shadscale Scrub, Chaparral and Oak Woodlands and Grasslands.

Habitat: Dry, open and generally disturbed habitats.

Size: This rather upright growing plant is from 1 – 3 feet (30 – 90 cm) tall

Bark/Trunk/Twigs: Stem covered with hairs; the short hairs are appressed (parallel to and lying flat against the stem) while the longer hairs are soft and spreading.

Foliage: The green foliage of this deciduous shrub has a very strong vinegar smell. The thin, lanceolate to narrowly ovate shaped leaves are about 3 times longer than wide and from $\frac{3}{4}$ - 2 $\frac{3}{4}$ inches (2 - 7 cm) long. The lateral veins are prominent near the base of the leaf blade.

Flowers: The pale blue to lavender flowers are displayed in long clusters at leaf axils. The flowers are slender tubes, 5 to 10 mm long, with five lobes and long arched stamens (13 to 20 mm) that protrude out of the flower. Bloom period is July - October

Fruit: The seeds are four tiny nutlets that are joined at the base.

Site Ecology: Full sun, well drained conditions; this plant grows in very tough sites that often times have been disturbed by cultivation, overgrazing or other activities.

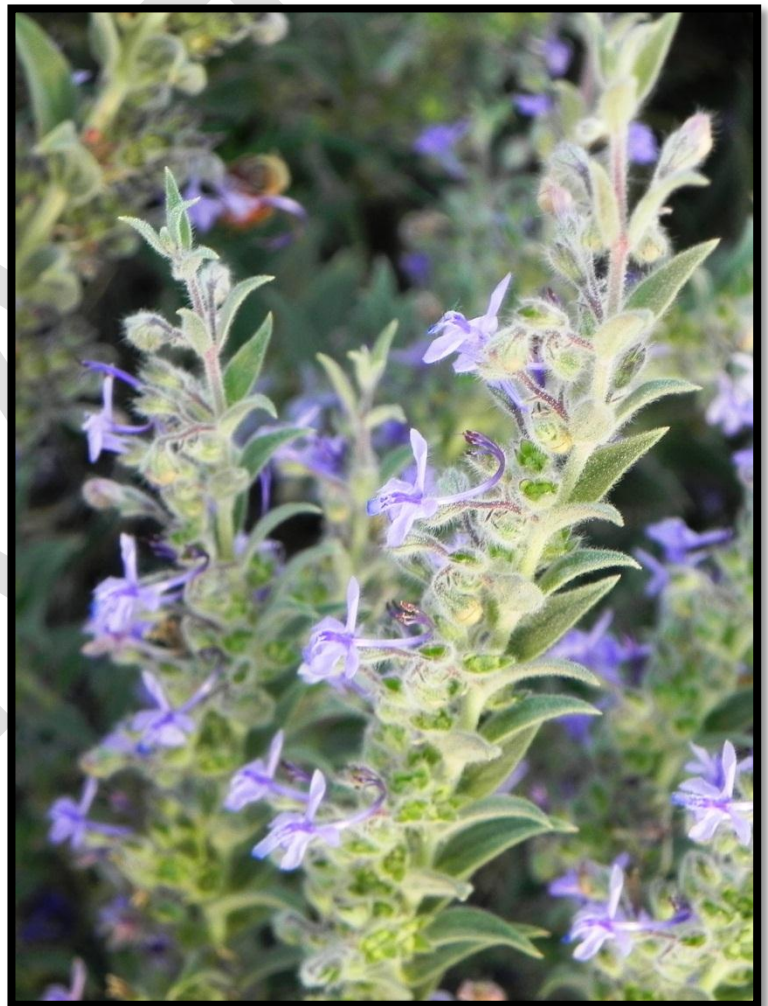
Natural Significance: When in bloom, vinegar weed is visited by a number of kinds of native pollinators.

Ethnobotanical Use: Infusion of leaves used as a wash for feverish headaches, typhoid fever, skin pain, sores, and toothaches. Put into bedrolls to discourage fleas and also used as a fish poison.

Commercial Use: Vinegar weed is considered a weed, wouldn't guessed that from the common name.

Propagation: Easily started from seed.

Remarks: Entire plant turns a grey brown in the fall. The oils from vinegar weed are phytotoxic, which enables it to compete for space by killing other plant species.



Tsuga mertensiana – Mountain Hemlock

Tsuga is from a Japanese name for their native hemlocks and *mertensiana* is after Karl Heinrich Mertens (1796-1830), German botanist and naturalist.

Plant Family: Pineaceae – Pine Family

Geographical Distribution: Found on both sides of the Sierra Nevada in moist soils between 6,000 - 11,000 feet, (1,980 – 3,630 meters) north of Kings Canyon. Mountain Hemlock is most commonly observed in Klamath and Cascade Ranges, with sparse stands in the Sierras down to Tulare County. Outside of California the species ranges from Oregon to Alaska and also in Idaho and Montana.

Plant Communities: In California, it inhabits only the high, snowy country. Found in upper margins of montane forests, red fir forests, lodgepole forests, and sub alpine forests.

Habitat: Found in areas with heaviest snowfall, and northern facing slopes. Often found on rocky ridges or in basins on coarse soils low in organic matter.

Size: Medium sized tree, 30 – 100 feet (9 - 30 meters). Shape is slender conical crown, with pronounced drooping top. Trees at timberline grow more horizontally as a prostrate shrub. Slow growing, some trees live 400-500 years.

Bark/Trunk/Twigs: Bark gray to dark brown and develops deep fissures with age. Twigs are slender, light reddish brown and have slight pubescence.

Foliage: Needles are blue-green and blunt; 0.5 – 1 inches (0.7 - 2.7 cm) long. Needles are attached at base to tiny wooden projections that usually grow upward on all sides of branches. They are semicircular and can be rolled between thumb and forefinger.

Fruit: Cylindrical cones 1 – 3 inches (2.5 - 7.5 cm) long. Immature cones are soft and purplish, turning brown with age. Cones hang downward and a prolific seed producer. Seeds have large wings, easily dispersed by wind. Scales of cones bend back toward base of cone after opening.

Site Ecology: Shade tolerant and shallow rooted; prefers a moist environment but will tolerate some dryness in a garden setting. Moist sites must be well-drained. Mountain hemlock is easily killed by fire.

Natural Significance: Provides cover for many species of birds and mammals.

Ethnobotanical Use: Bark used for tanning hides, chewed leaves applied to burns, warm gum applied to cuts, bark used in ritual to make children as light-skinned as the inner bark, boughs steamed or rubbed on furniture and used as a room deodorizer and disinfectant, and fragrant branches and leaves used for bedding.

Commercial Use: Due to the tree's slow growth it works well in smaller landscape settings.

Propagation: Layering has proven successful, as has propagation by seed and cuttings. Cuttings must be treated and kept under mist. Seed should be stratified for 60 – 120 days at 40° F.

Remarks: Hemlock has woody projections at the base of each needle, and has a drooping top, which helps distinguish from California Red Fir (*Abies magnifica*). No other western conifer of high elevations has drooping leaders and branch tips. Largest tree is in Alpine County and is 113 feet (34 meters) tall and 88 inches (2.5 meters) in diameter.



***Typha angustifolia* – Narrowleaf Cattail and *Typha latifolia* - Broadleaf Cattail**

Typha is the Greek name for this plant and *Angustifolia* means having narrow foliage and *Latifolia* means having wide leaves.

Plant Family: Typhaceae – Cattail Family

Geographical Distribution: Worldwide and probably naturalized in California

Plant Communities: Riparian

Habitat: Marshes, bogs, still waterways, drain ditches, seeps, and just about any wet area

Size: Up to 3 - 9 feet (1 - 3 meters) tall

Bark/Trunk/Twigs: This herbaceous plant is basically just foliage.

Foliage: Leaves alternate, sheathing, linear, narrow leaf blades are ½ - 1 inch (1.25 – 2.5 cm) wide and broad leaf blades are ¾ - 1 ½ inches (2 – 4 cm) wide, deep green, convex on the outer surface.

Flowers: Borne on terminal branches, brown cylindrical spikes with male flowers above the female flowers and separated by a short distance, see diagram. Bloom time is May – July. The flower heads of *T. latifolia* are noticeably larger, both longer and broader, than those of *T. angustifolia*.

Fruit: Fruit dry, 1 mm. long, ellipsoid and dispersed as fluffy brown hairs that float in the wind and on water in the fall of the year.

Site Ecology: Full sun, wet to moist, muddy soil, tolerates alkaline conditons.

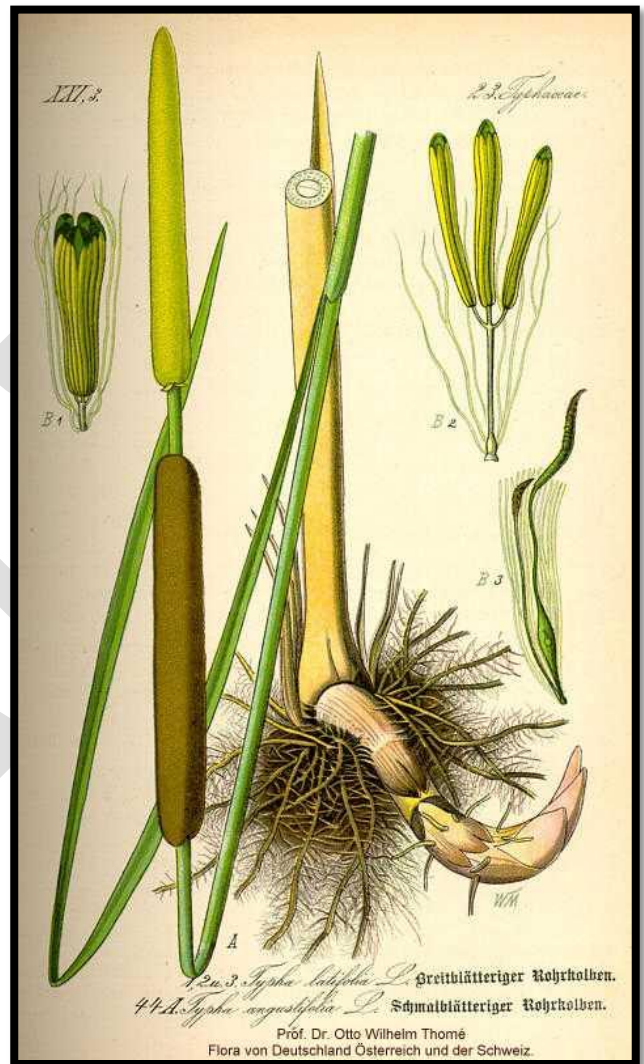
Natural Significance: A great cover plant for a wide variety of birds and wildlife. Birds also consume the seeds and use the downy seeds as nesting material. The three species of blackbirds, the blackbird, the red wing black bird and the tri-colored black bird all use patches of cattails as nesting sites.

Ethnobotanical Use: Mature heads chewed with tallow as gum. Pollen baked into brownish biscuits and used for food. Plant boiled and made into gruel. The roots were eaten raw. The leaves were woven into baskets, mats, and roofing material. Downey heads were used a pillow stuffing. The yellow pollen was used for face painting.

Commercial Use: Although not practiced much in the United States, Several parts of the plant are edible. The edible stem is called *bòn bòn* in Vietnam.

Propagation: Spread from rhizomes, could potentially become invasive.

Remarks: These two species easily hybridize with each other as *Typha x glauca* (*Typha angustifolia* x *T. latifolia*).



Umbellularia californica – California Bay

Umbellularia is pertaining to umbrells and *californica* mean the plant is from California.

Plant Family: Lauraceae - The Laurel Family

Geographical Distribution: Cascade and Sierra Nevada foothills, outer Coast Range, and San Francisco bay area, scattered in Transverse and Peninsular ranges and throughout southern Oregon; sea level to 5,300 feet (0 – 1,600 meters); all areas except the high mountains and desert.

Plant Communities: Grow in closed cone pine forests, northern coastal coniferous forests, redwood forests, Douglas fir forests, foothill woodlands, chaparral, and yellow pine forests.

Habitat: Most commonly found canyons and valley

Size: Slow growing tree from 30 – 80 feet tall (9 – 24 meters) and a 1 – 3 foot diameter trunk (0.3 – 0.9 meters). However, when exposed to a coastal environment or serpentine soils takes on a shrubby form.

Trunk /Bark/Twigs: Smooth light to dark gray bark develops furrows and exfoliating scales with age. Twigs are slender and green turning grayish brown with age.

Foliage: Evergreen, simple, alternate, leathery and medium to yellowish green leaves are 1 - 5 inches long (2.5 – 12.5 cm) with a glossy upper surface. Leaves are elliptical to lanced shaped with entire margins. Crushed leaves emit a strong spicy or peppery odor.

Flowers: Small fragrant flat topped clusters of yellow green flowers that often go unnoticed.

Fruit: Plump and green, fruit resembles tiny olives or avocados. They are about $\frac{3}{4}$ - 1 inch in diameter (2 – 2.5 cm) and turn to a purple color as they mature.

Site Ecology: Tolerates shade but susceptible to fire. Also tolerates a wide variety of soils as long as soils have moisture retentive capacity.

Natural Significance: Foliage palatable to deer and birds and small mammals eat its pulpy fruit.

Ethnobotanical Use: Native Americans used it as an insect repellent and to treat headaches and rheumatism. Thin shelled nuts may be parched and eaten or ground into flour and baked into bread.

Commercial Use: Quite diversified: wood used to make furniture, cabinets, bowls, and plates; bay leaves in cooking; great specimen tree in the landscape.

Propagation: Stratify seeds for 60 days at 33 – 40⁰ F before planting.

Remarks: In Oregon it is referred to as myrtle. If the time of the year is right and there is a grove of bays present, the strong spicy odor they emit can fill the air.



***Vaccinium ovatum* – Evergreen Huckleberry**

Vaccinium is the ancient Latin name of the bilberry and *ovatum* indicates that the leaves or some other part of the plant are ovate shaped.

Plant Family: Ericaceae – The Heather Family

Geographical Distribution: Found throughout the Pacific Coastal Region, from Santa Barbara in the south to British Columbia in the north, at elevations below 2,500 feet (760 meters). It also grows in the Klamath Range and the Channel Islands. It is not found in the Sierra Nevada.

Plant Communities: Grows in mixed evergreen forests, redwood forests, Douglas fir forests, and north coast coniferous forests.

Habitat: Found in forest edges and clearings and may be the dominant shrub species in north coast forests.

Size: Reaches 2 - 3 feet in height (60 – 90 cm) in sunny exposures or up to 8 – 10 feet in height (2.4 – 3 meters) and width in shade.

Bark/Trunk/Twigs: Twigs are reddish brown to gray, slender, and round in cross-section.

Foliage: Leathery, thick evergreen leaves measure ½ - 1 ½ inches long (1.25 – 3.75 cm) and are elliptical or broadly egg-shaped. Margins are finely serrate and dark green in color; waxy.

Flowers: Pink, bell-shaped, 4-5 lobed flowers grow in umbel clusters of 1-5 in leaf axils.

Fruit: A ¼ - ½ inch (0.625 – 1.25 cm) berry is black with a white, waxy, coating.

Site Ecology: Tolerates full sun to part sun exposures and sandy to clay soils, so long as they are acidic.

Natural Significance: Edible fruit is prized by people and wildlife for its high sugar content.

Ethnobotanical Use: Edible fruit is prized by people and wildlife for its high sugar content.

Commercial Use: Foliage is used in floral arrangements.

Propagation: Grown from seed that has received no special treatment.

Remarks: Difficult to grow outside of its native climate range. There are seven species native to California. An eight specie, *V. macrocarpon* – the cranberry, has become naturalized in an abandoned placer mine in Nevada County. Blueberries are also in this genus.

***Verbascum thapsus* – Common or Woolly Mullein (nonnative Eurasia)**

Verbascum is corrupted form of *Barbascum*, the ancient Latin name for this plant and *Thapsus* is from *Thapsus* in ancient Africa.

Plant Family: Scrophulariaceae – Figwort Family

Geographical Distribution: This plant is found throughout the California Floristic Province below 7,250 feet (2,200 meters). It also found in every state and all Canadian Provinces.

Plant Communities: Grows in almost any plant community

Habitat: Woolly Mullein most frequently grows as a colonist of bare and disturbed soil, usually on sandy or chalky ones. It grows best in dry, sandy or gravelly soils, although it can grow in a variety of habitats, including banksides, meadows, roadsides, forest clearings and pastures

Size: Starts as a basal rosette the first year and grows into a single upright stalk that ranges from 1 – 6 feet (30 – 200 cm) tall as a second year plant. It is biennial.

Bark/Trunk/Twigs: This a herbaceous plant that basal leaves and an upright stalk that is densely hairy.

Foliage: Basal leaves are quite large; ranging from 3 – 20 inches (8 – 50 cm) long and oblanceolate in shape. The upper leaves are cauline (borne on the stem) and much smaller; ranging in size 2 -12 inches (5 – 30 cm) long and lanceolate in shape.

Flowers: The 5 petal flowers are sessile (attached to the stem) and a bright yellow color. Inside the corolla are 5 prominent stamen with orange colored pollen on the anthers.

Fruit: The plant produces small ovoid ¼ inch (6 mm) capsules that split open by way of two valves, each capsule containing large numbers of minute brown seeds less than 0 .04 inches (a millimeter) in size.

Site Ecology: Most often found in a disturbed area that has open space.

Natural Significance: Common Mullein hosts a number of insects and diseases, including both pests and beneficial insects. The agricultural pests and diseases make the plant a potential reservoir for overwintering pests. The plant's ability to host both pests and beneficials makes it potentially useful to maintain stable populations of insects used for biological control. Its value probably needs more research.

Ethnobotanical Use: It is widely used for herbal remedies with emollient and astringent properties. It is especially recommended for coughs and related problems, but also used in topical applications against a variety of skin problems. All preparations meant to be drunk have to be finely filtered to eliminate the irritating hairs. The flowers provide dyes of bright yellow or green, and have been used for hair dye. The dried leaves and stems were made into candle wicks and torches respectively. Mulleins have been widely used as poison for fishing.

Commercial Use: Nothing noted and as a non-native it probably has not commercial value.

Propagation: Easily establishes itself by seeds. *Verbascum thapsus* seems to be one of the first plants to regenerate after a fire. The seeds are long lived in the soil.

Remarks: Although the plant has a wide variety of uses and potential uses, it has not been cultivated because it is considered a weed.



***Vitis californica* – California Wild Grape and *Vitis californica* var Roger's Red**

Vitis is the Latin name for the grapevine and *Californica* is native to California.

Plant Family: Vitaceae – Grape Family

Geographical Distribution: North Western and Central Western California, foothills of Cascade Range and Sierra Nevada, Great Central Valley, Eastern Sierra Nevada into Oregon; from sea level to 3,300 feet (1,000 meters)

Plant Communities: Wild grape is found in Oak woodlands, Grasslands, Chaparral, Yellow Pine Forests, and Redwood Forests.

Habitat: Usually occurs near stream sides, springs, and moist canyons

Size: The canes of wild grape can grow up to 33 feet (10 meters) in length

Bark/Trunk/Twigs: A deciduous woody vine that climbs on other plants or forms a thicket on the ground. Stems become shreddy with age.

Foliage: A large palmately veined leaf green color leaf with 3 lobes and 4 – 6 inches (10 – 15 cm) across. The Roger's Red variety turns a bright red color in the fall.

Flowers: Rather inconspicuous but fragrant, greenish-yellow flowers are produced in panicles from May – June.

Fruit: A pulpy, purple berry, spherical shaped from 3/8 - 3/4 inches (8 – 19 mm) with a sour taste. The fruit are in loose, drooping bunches.

Site Ecology: Full sun to partial shade on moist sites, but able to withstand dry conditions like most California plants that have a range outside the northwestern part of the state.

Natural Significance: Wild grape is one of the most important riparian habitat plants. It is an important food plant for many birds and mammals. It also provides habitat and cover for numerous species.

Ethnobotanical Use: Wild grape had three main uses: the fruit was eaten fresh or preserved for later consumption; the vine was use for lashing, rope, and other fastening materials; it was also used as basketry material.

Commercial Use: European grapes, *Vitis vinifera*, are grafted onto wild grape rootstock. *Vitis californica* saved the European grape industry that was being ravaged by leaf- and root-attacking grape phylloxera aphids, (*Daktulosphaira vitifoliae*). California's wild grape is resistant to this disease. Roger's Red is a beautiful and vigorous vine used to cover fences, trellises, arbors, or used as a ground cover.

Propagation: Can be propagated easily from both seed and cuttings.

Remarks: The cultivar 'Roger's Red' (named for noted horticulturist Roger Raiche) turns brilliant red in fall and is a hybrid with a wine grape, *Vitis vinifera*; 'Walker Ridge' turns yellow in fall.



Woodwardia fimbriata – Giant Chain Fern

Woodwardia is named after Thomas Jenkinson Woodward (1745-1820), a British phycologist and botanist. *Fimbriata* means fringed.

Plant Family: Dryopteridaceae – Wood Fern Family

Geographical Distribution: California Floristic Province, except the Great Central Valley into British Columbia, Washington, Oregon, Nevada, Arizona, and Northwestern Mexico; from sea level to 7,600 feet (2,300 meters)

Plant Communities: Grows in many plant communities including yellow pine forests, foothill woodlands, chaparral, redwood forests, Douglas fir forests. and wetland-riparian

Habitat: Most commonly found in wet, damp foggy environments such as bogs, seeps, and streamsides,.

Size: The largest and most statuesque of our native ferns, the leathery, arching fronds growing 4 - 12 feet (1.2 – 3.6 meters) tall

Bark/Trunk/Twigs: This, like all ferns, does not have a trunk and therefore no bark (of bite for that matter). The plant is woody, stout, and glossy green colored. It spreads by rhizomes.

Foliage: The evergreen, bipinnate frond segments are coarse and large, generally from 3 ¼ - 10 feet (1 – 3 meters) long, coarse; leaflets 6 – 12 inches (15 – 30 cm), often glandular, and deeply lobed to midrib.

Flowers: Is not a flowering plant, therefore, produces no seeds.

Fruit: The sori, fruiting bodies, are under the frond in two rows on either side of the midrib; they look like a small chain (hum, I wonder how this plant got its common name.)

Site Ecology: Full sun to shade on coast but must have shaded conditions inland. Giant chain fern needs moisture and a somewhat wet soil.

Natural Significance: Nothing noted, but probably is a cover plant for birds and mammals living in its native habitat.

Ethnobotanical Use: Leaf fiber were dyed red from elderberry bark and used to make baskets and textiles. The long leaves used to line the top and bottom of earth oven for baking acorn bread and other foods.

Commercial Use: It is a beautiful, almost prehistoric looking plant, commanding a real space in the garden; however it may not look that good in the Central Valley's hotter dryer climate.

Propagation: Propagated by spores or transplanting sporelings that are produced under the plant when there are shaded and wet conditions.

Remarks: If you are going to landscape with chain ferns, plant them on the north sides of structures and if you have redwoods, plant them underneath.



***Wyethia mollis* – Mule Ears**

Wyethia is named for Nathaniel Jarvis Wyeth (1802-1856), an American plant collector and explorer who discovered these plants and sent samples to his friend Harvard botanist Thomas Nuttall. *Mollis* means smooth, or with soft velvety hair.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: Klamath Range, high North Coast Range, Cascade Range, north and central Sierra Nevada, Modoc Plateau, east of Sierra Nevada, and Oregon and Nevada; 3,000 – 11,200 feet (900 – 3,400 meters) elevation

Plant Communities: Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, and Subalpine Forest

Habitat: Open forest, meadows, dry rocky slopes, and sagebrush scrub

Size: 12 – 15 inches (30 – 40 cm) tall

Bark/Trunk/Twigs: The leaves emanate from a stem that is not visible due to the mass of large erect leaves.

Foliage: Basal blade 8 – 15 inches (20 – 40 cm) long, oblanceolate to widely obovate, whitish to gray or green in color, margins entire, densely tomentose, becoming glabrous with age (nearly bald – I can identify with that)

Flowers: Borne in heads of 1 – 3; the 6 – 15 rays in flowers are a striking yellow color and $\frac{1}{2}$ - $1\frac{3}{4}$ inches (1.5 – 4.5 cm) long; the stamen and pistil portions of the flower are a yellow mass in the center; blooms May - August

Fruit: Four sided to flattened seed slate colored with a pappus; therefore, probably wind dispersed.

Site Ecology: Dry, exposed, full sun slopes on mostly granitic soils; a pretty tough environment.

Natural Significance: Mule ears stabilize steep, highly erosive soils. When in bloom the flowers are visited by high elevation native pollinators.

Ethnobotanical Use: Stems and seeds eaten raw and seeds eaten as a meal. Decoction of plant parts taken for a variety of ailments: swelling, venereal diseases, tuberculosis, fever, colds, and as a pain killer.

Commercial Use: Nothing noted

Propagation: Probably by seed.

Remarks: *W. amplexicaulis* is also called mule ears, but it is not native to California (CO, MT, NV, WA, and UT), but its leaves are shiny smooth. When mule ears forms a dense carpet of plants on a slope, that may be an indicator that the area has been heavily overgrazed by livestock.



***Xanthum strumarium* – Cocklebur**

Xanthium is from a Greek word meaning yellow and *strumarium* pertains to tumors or ulcers.

Plant Family: Asteraceae – Sunflower Family

Geographical Distribution: Found in every state of the Union except Alaska.

Plant Communities: A weed species that is opportunistic in disturbed places; between 0 – 1,640 feet (0 – 500 meters)

Habitat: Roadsides, ditches, valley bottomlands, pastures, cultivated crop fields, orchards, riparian areas, seasonal wetlands and disturbed, unmanaged places.

Size: This annual grows up to 5 feet (1.5 meters) tall

Bark/Trunk/Twigs: Stems are thick, and may branch many times, and have purple or black spots.

Foliage: Leaves alternate with one another along the stem, are lobed, triangular, coarsely toothed, and have long stalks. They are palmately veined and have a distinctive scent.

Flowers: Flowers bloom from July through October. Clusters of small green to rusty red male flower heads develop where the upper leaf stalk meets the stem (leaf axil). Female flowers develop below the male flower heads in oval-shaped burs with short stalks.

Fruit: Their most notable characteristic is their annoying abundance of spiny burs. The hard, prickly burs are initially green in color, drying to brown with hook-tipped spines that easily attach to fur, wool, or woven clothing like sweaters or socks. Each bur contains two seeds.

Site Ecology: Dry or wet areas that have a variety of soil types, full sun; not normally found in higher elevations.

Natural Significance: Common cocklebur seeds and cotyledon leaves are poisonous to all classes of livestock, but poisoning is rare. Mourning doves eat common cocklebur seeds to a limited extent.

Ethnobotanical Use: Nothing noted.

Commercial Use: None noted

Propagation: But of course, by seed

Remarks: In some states cocklebur is considered a noxious weed, but not so in California. It is easily controlled by mechanical means. One should not allow it to go to seed.



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