

Flowers: June - July

andromonoecious plant

not hairy

adaxial

leaf xs

abaxial

backlit

petiole long (+/- burgundy)

fertile stamen

anther

filament

staminate flower

corolla

spend flower

fertile stamens

vestigial pistil

disk-like nectary

leaf xs (folded)

new growth deep red

developing inflorescence

inflorescence (mostly staminate flowers)

developed flowers

flowers

corolla

fertile stamens

bisexual flower

vestigial pistil

fertile stamens

fertile pistil

developing drupe

ripe drupe

drupes at various stages of development (note few drupes present)

Putative Hybrid PVP Lemonade Berry

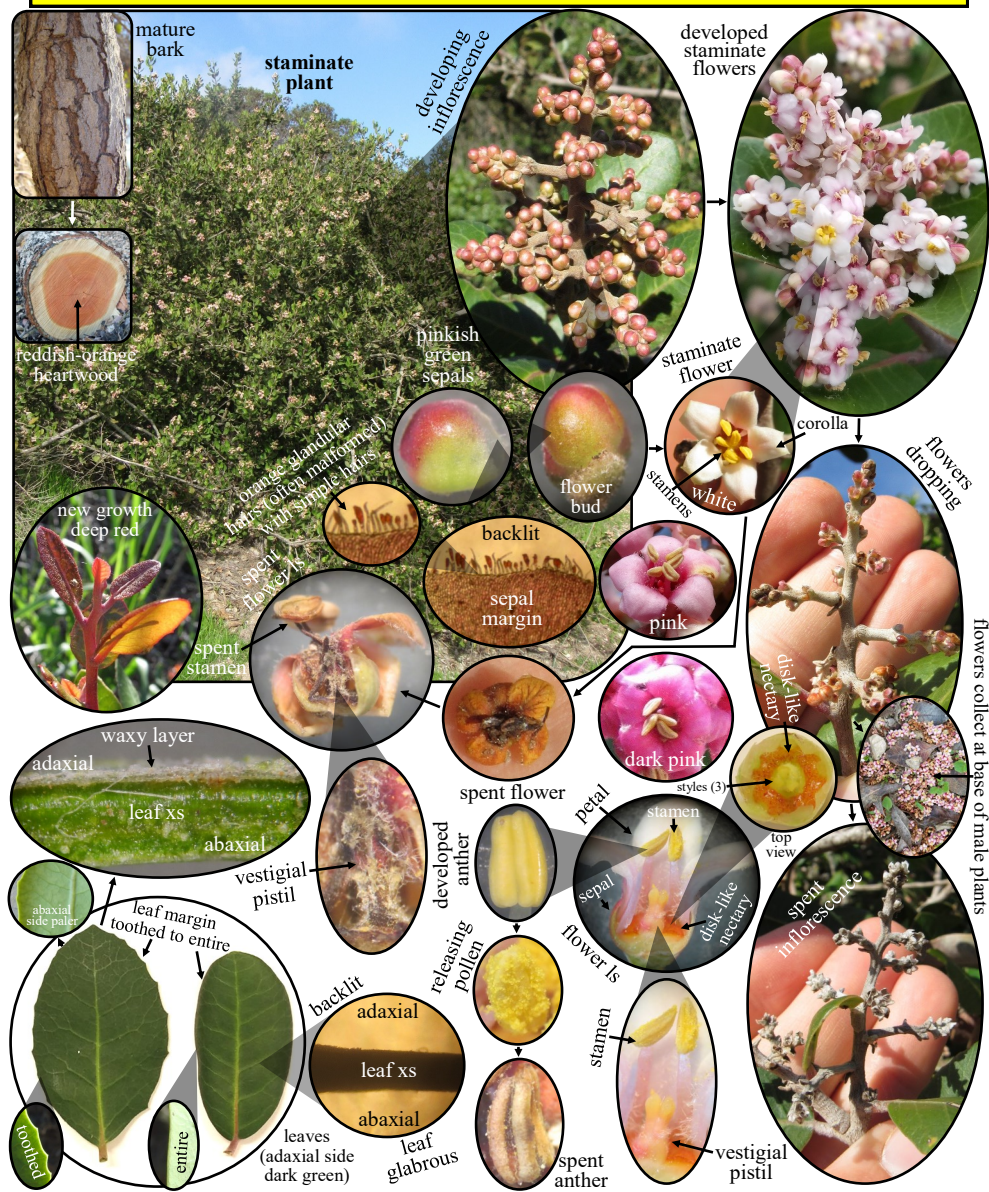
(*Rhus integrifolia* x *Rhus ovata*)

Order: Sapindales

Family: Anacardiaceae (Cashew Family)

Flowers: February - May

The Palos Verdes Peninsula's Lemonade Berry (*Rhus integrifolia* x *Rhus ovata*) is a large evergreen shrub to tree. It is found abundantly (historically and present day) throughout the peninsula and is one of the most commonly encountered plants (in some areas, it can cover entire hillsides, such as in the Forrestal Nature Reserve). The author puts forth an hypothesis that the population of *R. integrifolia* on the peninsula



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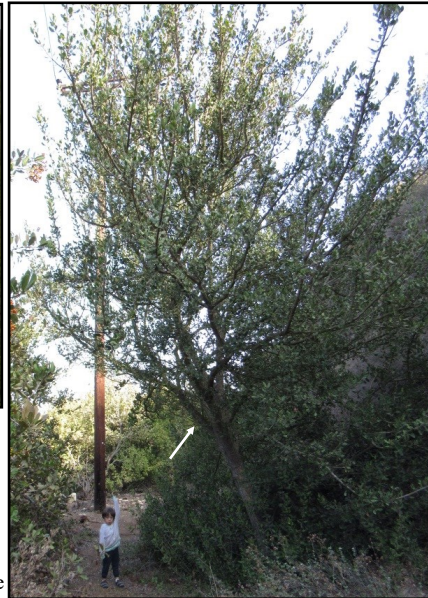
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lia parent characteristics, and less of the *R. ovata* parent characteristics, and these plants are fertile. The peninsula's Lemonade Berry also doesn't fit well with keys for *R. integrifolia*. Furthermore, plants in the field that are putative hybrids where *R. ovata* parent characteristics are more expressed and less of the *R. integrifolia* parent characteristics are expressed have been found, but these putative hybrids are very uncommon (3 total individuals known) and potentially less fertile. The population of Lemonade Berry on the peninsula appears to be mostly dioecious, but some andromonoecious (plants containing staminate flowers and bisexual flowers on the same plant) plants have been found. The andromonoecious plants appear to be uncommon. The leaves of the peninsula's Lemonade Berry are simple, leathery and have a blade that is wide-elliptic to lance-elliptic. The leaves can be flat to wavy-undulated (undulated leaves seen a lot in new growth) and have leaf margins that are entire to toothed. Branches can also sometimes curve inwards. The sepals of the flowers are pinkish green and have sepal margins that have simple hairs intermixed with orange glandular hairs (glandular hairs often malformed). Petal color can range from white to pink to dark pink. Staminate flowers contain vestigial pistils with functional stamens, and the flowers fall off the plant once spent. The pistillate flowers have vestigial stamens with functional pistils and the flowers don't fall off the plant. The fruit is a drupe that is pinkish when young and a reddish-orange color when fully ripe. Developing drupes become covered in a thick whitish exudate that is sour tasting. For fully ripe drupes, the exudate diminishes, becomes transparent, and the drupes are a reddish-orange color. The seed is stony and tannish.

See paper for more information: Young 1974 - Introgressive Hybridization in Two Southern California Species of *Rhus* (Anacardiaceae)). [Link to JSTOR](#) and the paper under the resource page of the website.



in some areas Lemonade Berry is the dominant plant covering hillsides



the peninsula's Lemonade Berry can reach tree like size

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Putative hybrid plants where *R. ovata* parent characteristics are the dominant characteristics expressed are found on the peninsula, but these plants are very uncommon (3 known plants). These putative hybrid plants look more like Sugar Bush but have features of Lemonade Berry as well. The leaves can exhibit margins that are smooth or



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or not as well as leaf undulation or not. There is also leaf lobing present (partial to complete lobing - making leaves 3 leaflet leaves). All these characteristics can be displayed on one individual hybrid plant.



range of leaf lobing
seen in *R. ovata* x *R. integrifolia*
putative hybrid

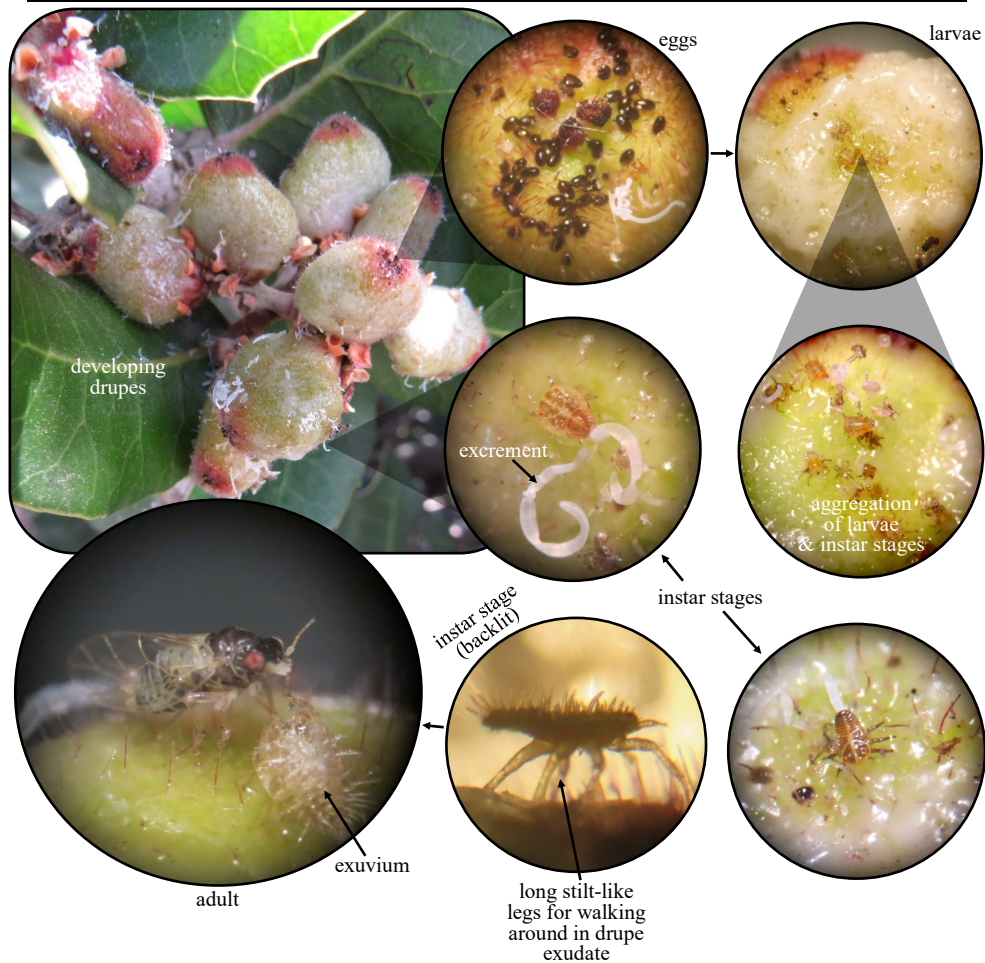


Lemonade Berry Psyllid

Calophya californica

Calophya californica is a native and endemic plant licein that is associated with *Rhus* species in California. For this species, there are leaf limited generations and fruit limited generations. Below are pictures of the fruit limited generations that can be found in abundance when the drupes are forming on Lemonade Berry on the peninsula. Eggs are deposited on terminal ends (area lacking exudate) of developing drupes and then the larvae migrate out on the exudate and then submerge in it. Once submerged, the larvae probe down through the exudate to make contact with the pericarp of the drupe to begin feeding. The rest of the instars take place in the exudate and by eclosion, the adult emerges out of the raised and anchored exuvium to fly off.

See paper for more information: Nicholas 2011 - Host induced polyphenism in the psylloid, *Calophya californica* Schwarz (Hemiptera: Calophyidae). Link to BioOne Complete and the paper under the resource page of the website.



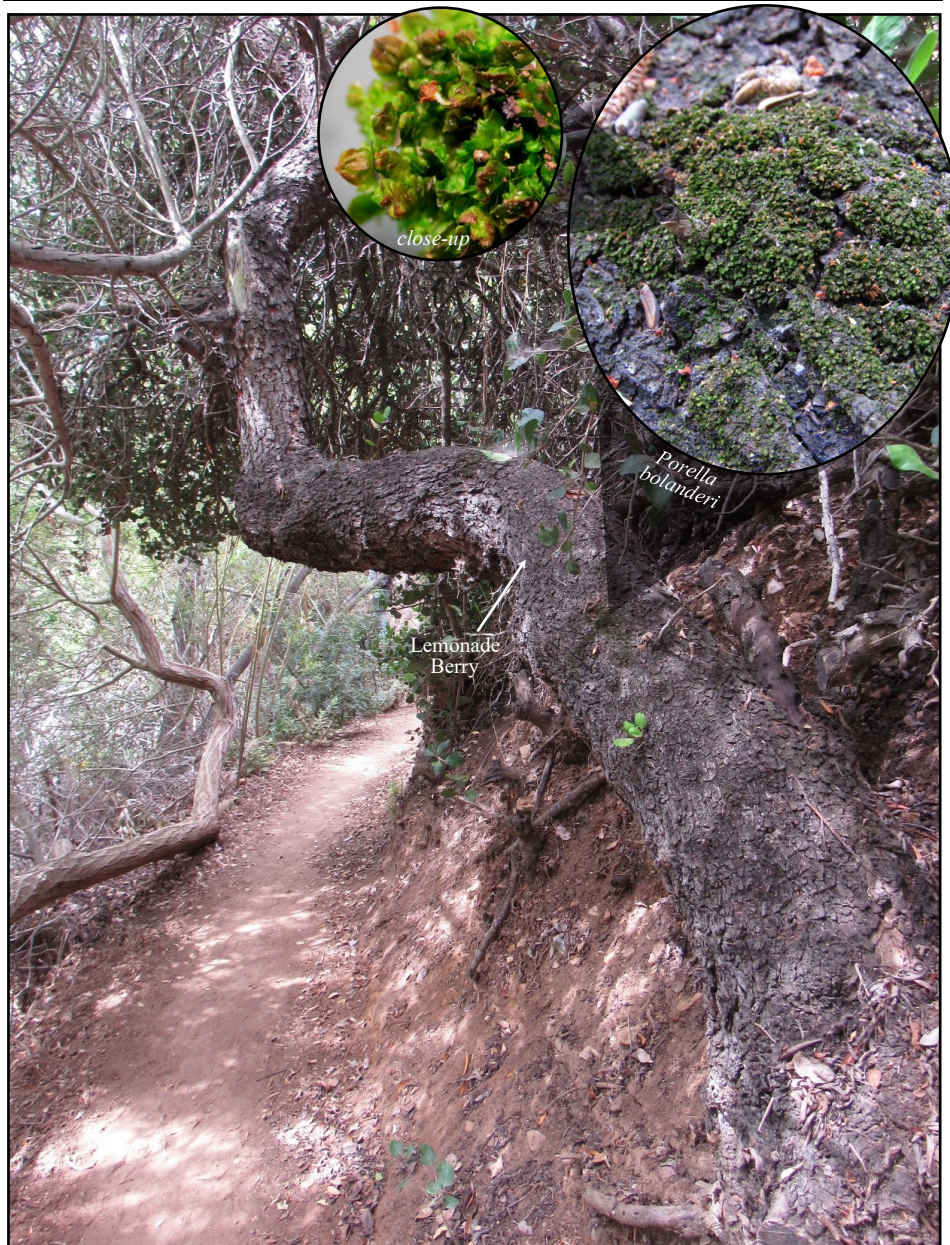
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Old growth bark of Lemonade Berry on the peninsula can support corticolous liverworts such as *Porella bolanderi*. This was seen in the Forrester Nature Reserve.



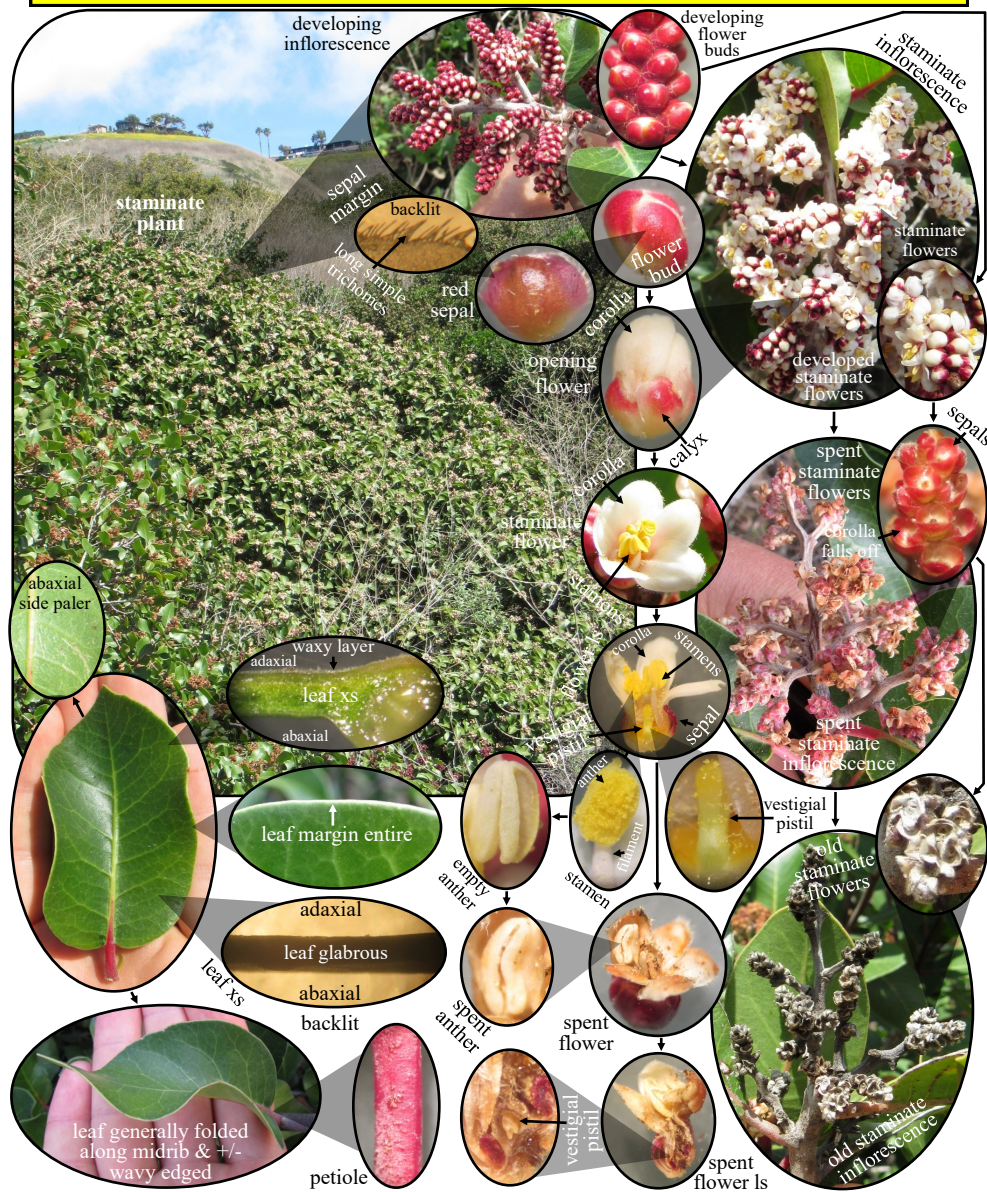
Sugar Bush (*Rhus ovata*)

Order: Sapindales

Family: Anacardiaceae (Sumac Family)

Flowers: March - May

Rhus ovata is an evergreen large shrub. It is uncommon on the peninsula and is found in a few locations. The leaves are simple, wide-ovate to elliptic, leathery, covered in a thick waxy layer, evergreen, generally folded along the midrib, and margins may be wavy-edged. Plants are generally dioecious but gynomonoecious plants can be present. Flowers have deep red sepals that have margins with long simple trichomes.



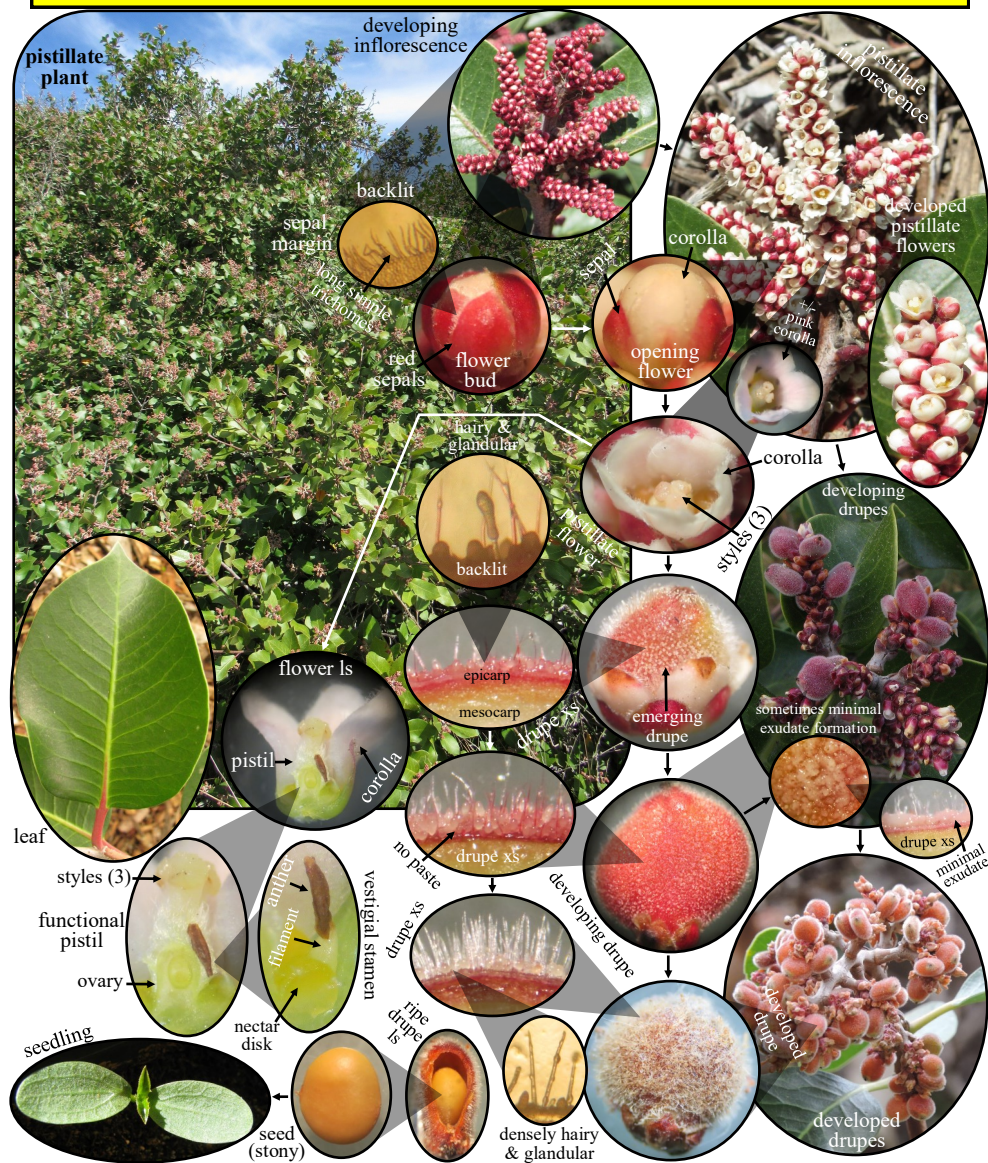
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The corolla is white but can be +/- pink. Pistillate flowers have fertile pistils and vestigial stamens. Staminate flowers have fertile stamens and vestigial pistils. Bisexual flowers have fertile pistils and stamens. The fruit is a +/- red, +/- flat drupe that is covered with many simple hairs and minimally glandular. Maturing drupes typically do not produce the whitish paste as seen in *R. integrifolia* drupes. Fully ripe drupes are fuzzy (densely hairy) in appearance. The seed is stony and tannish brown.



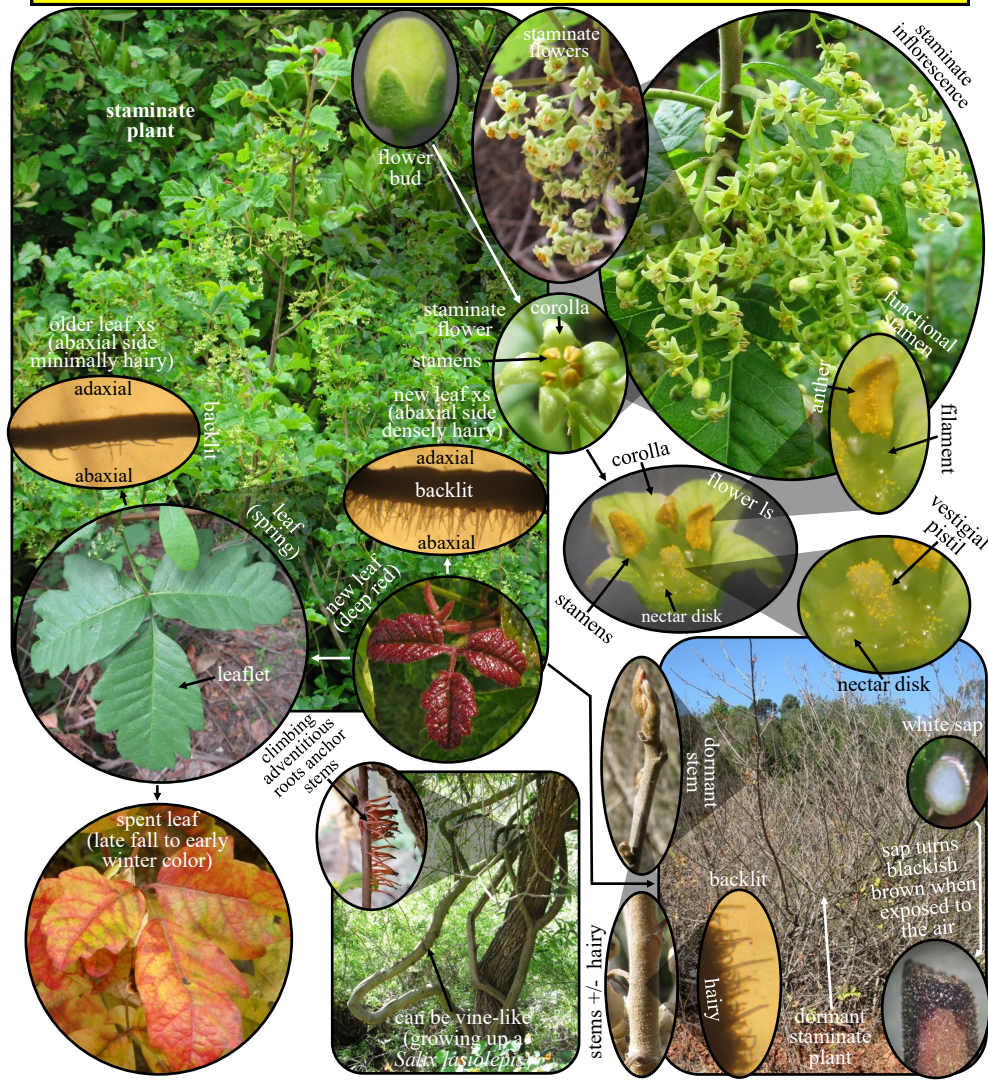
Poison Oak (*Toxicodendron diversilobum*)
Order: Sapindales
Family: Anacardiaceae (Sumac Family)
Flowers: April - June

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Toxicodendron diversilobum is a perennial shrub or vine-like plant. It is found throughout the peninsula mostly within canyons. It is dioecious. The leaf (which contains urushiol that causes severe contact dermatitis) is made up of 3 leaflets (rarely 5, 7, or 9) that are resinous (giving it a shiny appearance) and generally resemble the leaves of an oak. New leaves in early spring, start out a deep red color and have an adaxial side that is glabrous while the abaxial side is densely hairy. Leaves by mid-spring, progress to a shiny green and the adaxial side is glabrous while the abaxial side is +/- sparsely hairy. This plant is a late fall to winter deciduous plant with leaves turning reddish yellow to yellowish orange color by fall. The stems are gray to



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reddish brown and are generally glabrous. The sap is milky white but dries to a blackish color when exposed to the air. Staminate flowers have a calyx that is green and a corolla that is yellowish to white-green. Staminate flowers contain functional stamens and vestigial pistils. Pistillate flowers have a calyx that is green and a corolla that is yellow to white-green. Pistillate flowers contain functional pistils and vestigial stamens. The fruit is a drupe that is spherical and compressed with an exocarp (outer skin) creamy white, glabrous to fine-bristly (papery and +/- wrinkled when dry). The mesocarp (pulp) is white to black-striated. The seed is stony and tannish brown.

