

OTHER CONIFERS OF CALIFORNIA

MEMBERS OF THE CYPRESS AND YEW
FAMILIES, CUPRESSACEAE AND
TAXACEAE

The second largest conifer family in California is the cypress family, Cupressaceae, which now includes the redwoods

- Apart from the redwoods, the cypress family has scalelike leaves (mature plants) in pairs or whorls of 3,
- Tiny pollen cones, often much less than an inch long, and...
- small woody or fleshy seed cones with several seeds per cone scale in some species

For convenience of identification, the cypress family can be split into two parts:

- Genera with flattened branches, the whole branch looking like a coarse fern, or...
- Genera with twigs branched in three dimensions
- Flattened-branch genera include...
- *Calocedrus decurrens* (incense-cedar)
- *Chamaecyparis lawsoniana* (Lawson cypress or Port Orford cedar),
- and *Thuja plicata*, western red-cedar

Incense-cedar is a common tree in the middle-elevation montane conifer forests, growing with white fir, sugar pine, Douglas-fir, and ponderosa pine



The foliage of incense-cedar is a very bright, sometimes a yellow green color. Here you see the tiny pollen cones which develop in late summer and fall



Incense-cedar seed cones are distinctive; when still unripe as seen here, they look like fat duck bills



Here the seed cone is nearly ripe but will eventually turn brown, open, and resemble a bird with wings upswept (from the outermost cone scales)



Incense-cedar cones partially open



The Port Orford cedar, despite its botanical name meaning “ground cypress”, is a tall tree confined to the Klamath Mountains and north Coast Ranges in northwestern California and southwestern Oregon



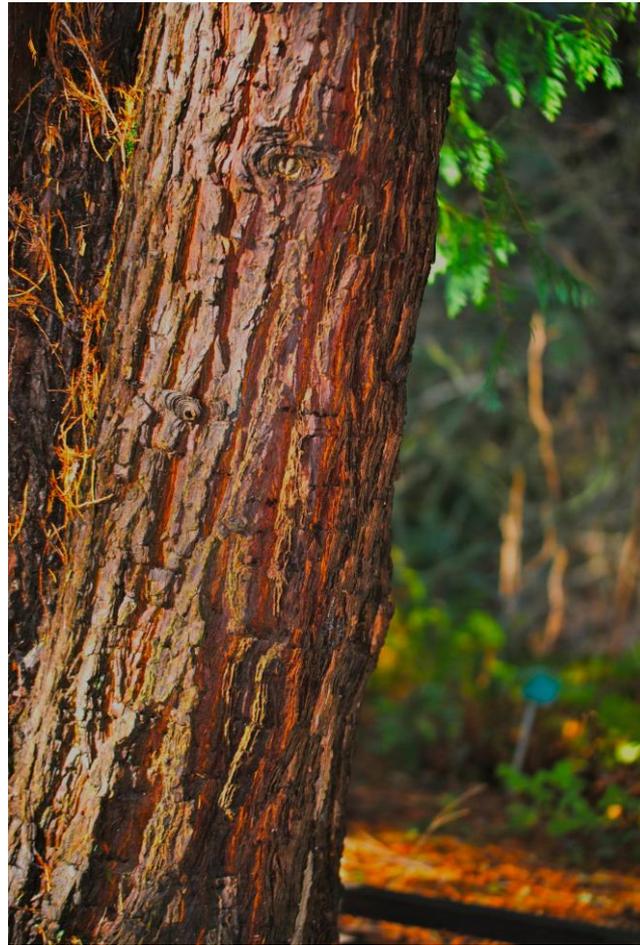
Port Orford cedar branches are bright green to blue-green with the tips often gracefully drooping down



The underside of the leaves bears tiny white x's, representing wax covering the stomates. This trait is useful in comparing this species to the western red-cedar



Port Orford cedar trunks have rich brown bark in fibrous strips as seen here.



Here is a comparison between the foliage of the incense-cedar left, and the Port Orford cedar, right. Usually the two grow in different habitats, the incense-cedar in dry forests, the Port Orford near lakes and streams



The tiny seed cones of Port Orford cedar are about the size of a marble and with shield-shaped cone scales



Western red-cedar is another large tree, growing to huge size in the Pacific Northwest as in the Olympic Peninsula of Washington but just barely entering California's north coastal forests



Western red-cedar branches look similar to Port Orford cedar but...



...the individual leaves are coarser and somewhat larger, and...



...the underside displays bow-tie-shaped white stomatal bands
unlike the x's of Port Orford cedar



Western red-cedar bark is also similar to Port Orford cedar although perhaps a bit more reddish



Western red-cedar seed cones look like tiny woody bells turned upside down



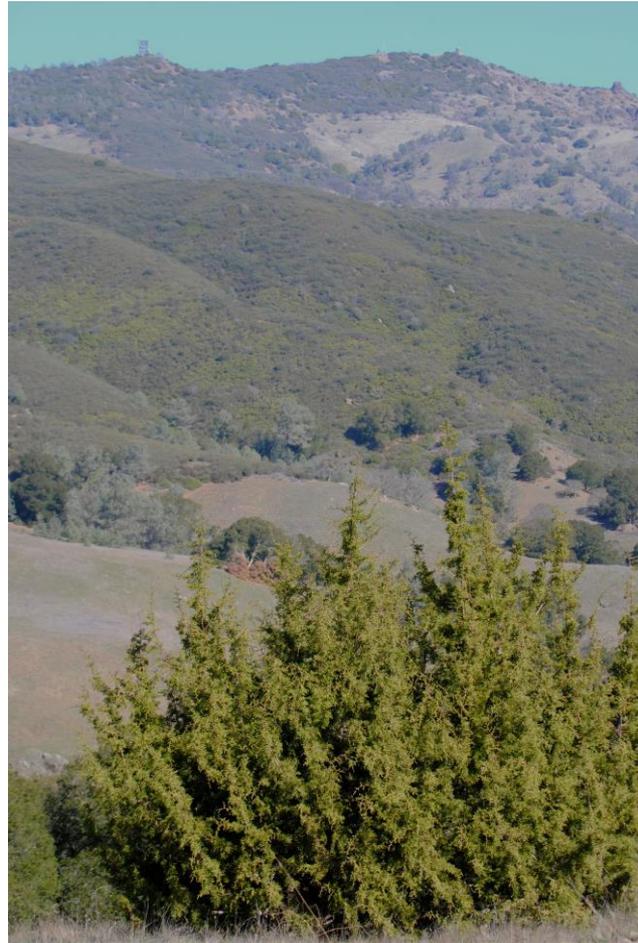
The other genera of the cypress family (minus the redwoods) have ordinary, 3-dimensionally displayed twigs

- Cypresses, (*Hesperocyparvus* spp.; formerly *Cupressus*) have egg-shaped to globe-shaped woody cones, while...
- Junipers (*Juniperus* spp.) have fleshy, berrylike seed cones
- Both genera have similar looking, tiny, scalelike leaves and are difficult to differentiate without the cones
- California has 9 or 10 species of cypress, mostly restricted to serpentine-based soils or other nutrient-poor soils;
- California has 5 species of juniper, most of which grow on sandy or rocky soils but not necessarily those low in nutrients

We'll start with the junipers first. As mentioned, junipers have berrylike seed cones attractive to birds, which are the main dispersal agent of the seeds

- The five native junipers are...
- California juniper (*J. californicus*), a large shrub,
- Sierra juniper (*J. grandis*), a Sierra tree with red bark,
- Western juniper (*J. occidentalis*), a northern tree with brown bark,
- Utah juniper (*J. osteosperma*), another tree with brown bark from the easternmost desert mountains, and...
- Mat juniper (*J. communis* and varieties) a sprawling woody ground cover widely scattered on rock outcrops, mostly in the high mountains, and with needlelike leaves

Here you see the California juniper with its multiple trunks in the high desert mountains of Joshua Tree National Park. This juniper also occurs in rocky mountains in the driest parts of the inner Coast Ranges, as on Mt. Diablo



California juniper roots are capable of finding crevices in rocks



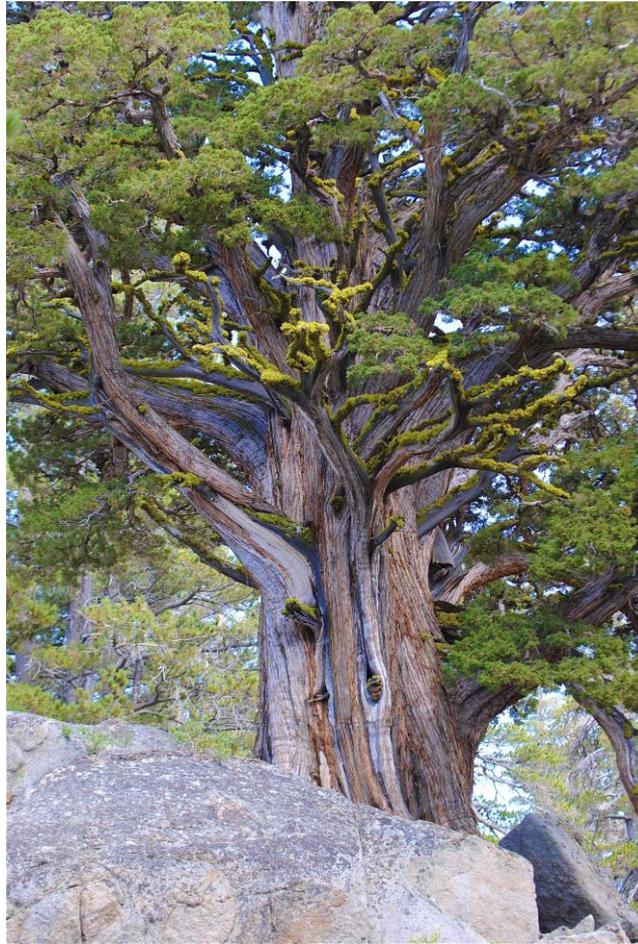
California juniper is dioecious, only the female trees bearing the pale purple, fleshy seed cones



A closer view of California juniper cones and branches



The Sierra juniper often appears to grow out of pure granite rocks in the Sierran high country. Here you see the massive trunk with orange-brown bark



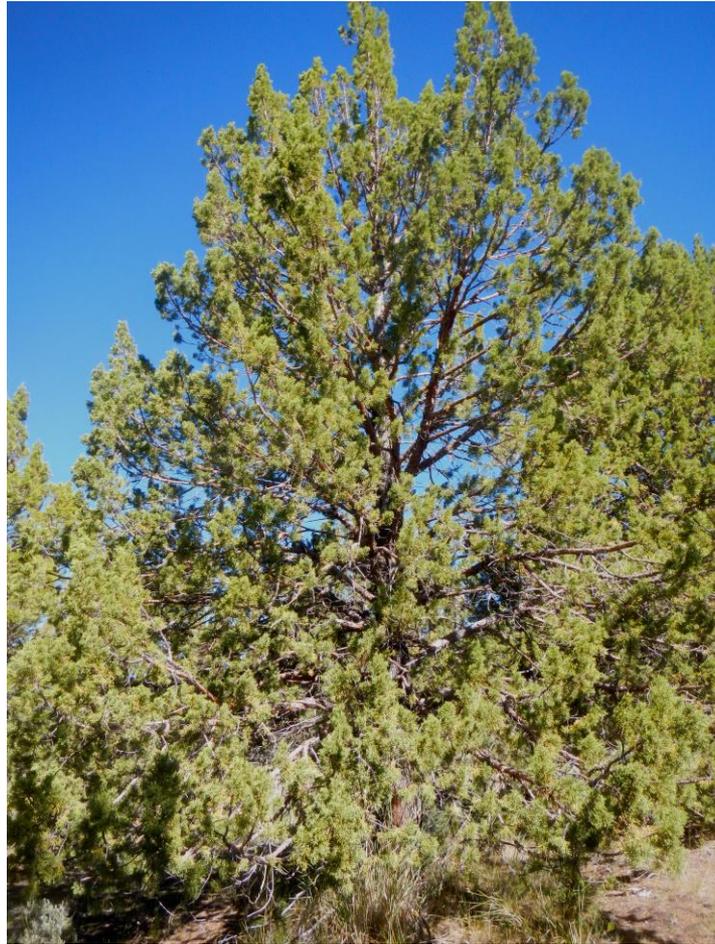
Sierra juniper can live well over 1,000 years, taking on many shapes according to heavy snows and severe winds



Here you see an old Sierra juniper loaded with young seed cones



The closely related western juniper is generally less picturesque than the Sierra juniper but has similar leaves and cones. The bark is not red, however. This tree is common in the high desert country in the northeastern corner of the state.



Here you see a typical juniper woodland near Mt Shasta dominated by western junipers.



The Utah juniper is mainly in the desert mountains east of California but enters the state in the White Mountains and other far eastern desert mountains. It produces massive trunks with brown bark and bright green leaves



Here's a close view of the seed cones of Utah juniper. Details of the seed cones are often helpful in separating western and Utah junipers



By far the most distinctive juniper is the prostrate mat juniper, which varies enough to be divided into 3 different varieties. Here is its typical habitat, coarse rock scree in the high mountains



In some forms of mat juniper, the branchlets are more upright, and the foliage may be more of a blue-green color



In this form of mat juniper, the undersides of the needles are silvery



Mat juniper is dioecious and slow growing. Here you see the minute pollen cones on a male plant. Also note that the leaves retain their juvenile, needlelike form rather than being scaly as in other junipers



Here are the fleshy seed cones of the female mat juniper



The best known of the cypresses is Monterey cypress, *Hesperocyparuss macrocarpa*, widely planted around coastal areas. Note the deep green foliage and horizontally trending branches



Natural stands of Monterey cypress occur in only two places: Pt. Lobos State Park and the Seventeen-Mile Drive in Carmel



Like many other cypresses, Monterey cypress has strips of fibrous gray-brown bark



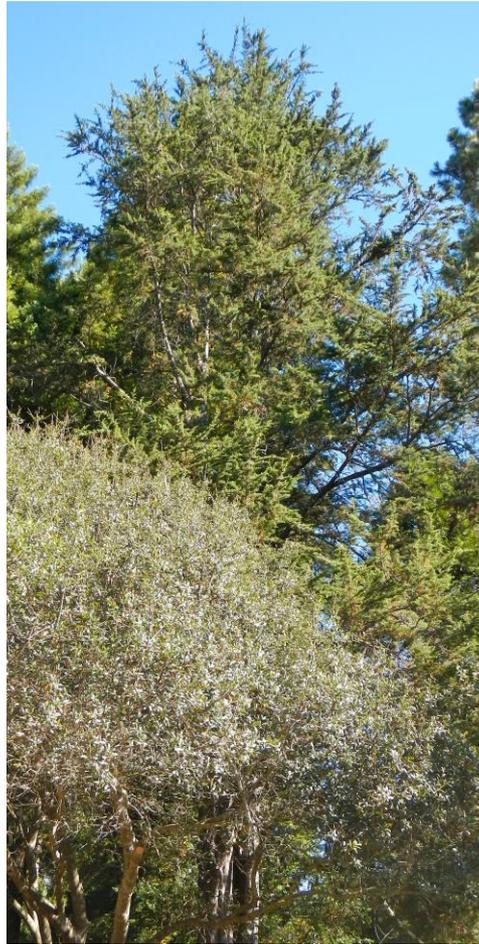
Monterey cypress produces relatively large woody seed cones that vary from globe- to egg-shaped. The name *macrocarpa* means large cone. Note the cones are tightly closed and like the closed-cone pines, open after fire



Many of our native cypresses are difficult to distinguish, the differences being relatively small, but several stand out, and native range also helps in identification. Here are some of the other native cypresses:

- The pygmy cypress (*H. pygmaea*) occurs on the Mendocino coast on old marine terraces,
- The Gowen's cypress (*H. goweniana*) is found in two small areas on the Monterey Peninsula,
- Sargent's cypress (*H. sargentii*) occurs on serpentine islands in several parts of the Coast Ranges,
- Macnab's cypress (*H. macnabiana*) is found in the inner north Coast Ranges and northern Sierra,
- Tecate cypress (*H. forbesii*) is a rare species from the mountains of San Diego County, and...
- Santa Cruz cypress (*H. abramsiana*) occurs in 4 or 5 small stands in the Santa Cruz Mountains

In addition, there are at least 3 other cypresses in California. The pygmy cypress is a miniature tree on old marine terraces in infertile white soils but when cultivated grows to large size as seen here



As well, on fertile soils pygmy cypress grows large trunks with the typical fibrous bark of most cypresses



Closely related to pygmy cypress is the much shorter tree called Gowen's cypress with bright yellow-green foliage. Its main occurrence is at Huckleberry Preserve on the 17 Mile Drive near Carmel



Sargents cypress has the greatest range, growing on serpentine soils from Lake County in the north to San Luis Obispo County in the south. Here you see a stand on Carson Ridge in Marin Co.



Sargent cypress leaves vary from dark to slightly gray green



Sargent cypress displays the tiny pollen cones typical of cypresses. Pollen is shed mostly in the fall.



Sargent cypress seed cones are globular with roughly textured scales but the cones are not as large as Monterey cypress



One of the stands of the rare Santa Cruz cypress occurs on old stabilized sand hills near Bonny Doon. Note the pale color of the leaves and the broad tapered outline of the crown.



Santa Cruz cypress has a bark pattern much like most other cypresses.



Santa Cruz cypress produces large clusters of relatively small, globular seed cones as seen here



A closer view of Santa Cruz cypress seed cones



We turn now to the redwood component of the cypress family.
Formerly redwoods belonged to their own separate family,
Taxodiaceae

- DNA and other studies have established the close relationship with this group and the cypresses, resulting in lumping them with that family
- However, redwoods differ in usually have needlelike leaves,
- Leaves attached singly or alternately to twigs (not pairs or whorls),
- And woody seed cones with diamond-shaped scales

California has two native redwoods, the giant sequoia (*Sequoiadendron giganteum*) and the coast redwood (*Sequoia sempervirens*)

- Both redwoods require superlatives to describe them:
- Coast redwood at over 370 feet high is the world's tallest tree
- Giant sequoia, although reaching merely 200 to 280 feet high, has the greatest volume of wood and among the greatest girth of any tree in the world
- Both redwoods live for at least a couple of thousand years
- Both redwoods shade out the competition by their sheer size
- Both redwoods have pitch-free bark that resists burning
- Both redwoods are fast growing

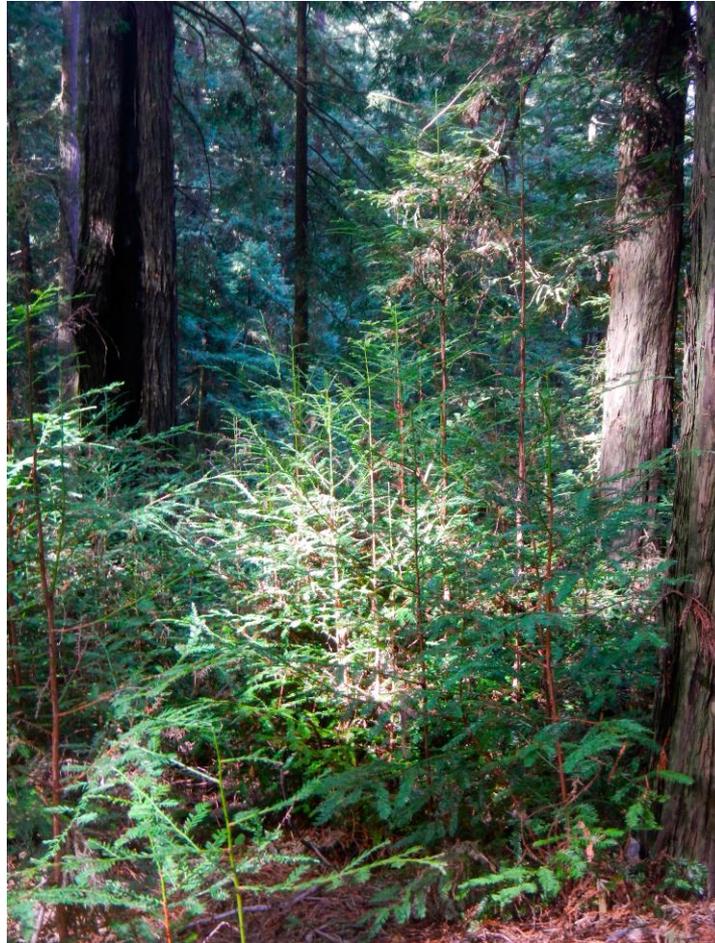
The coast redwood occupies a zone near the coast from southern Monterey County near to just beyond the Oregon border. Here you see the very shapely young trees



Redwood bark varies from red-brown when young to a weathered grayish cast in old trees. Here you also see stump sprouts around the base and a burl on the right hand tree



Redwood stump sprouts reach only a few feet high unless the parent crown is injured, in which case they can grow into a circle of trees around the base of the injured parent



Coast redwood bears two kinds of needles. Here you see the lower branch needles that lie in two rows. Note the white stomatal bands on the underside.



Seldom do people see the upper needles which are spirally arranged and narrow. These needles were blown down from the top crown in a wind storm



As with the rest of the cypress family, redwood pollen cones are tiny. They open in the dead of winter



Redwood seed cones are small, only inches long, barrel shaped, and with diamond-shaped scales. These cones are not quite mature, turning brown and opening in the fall



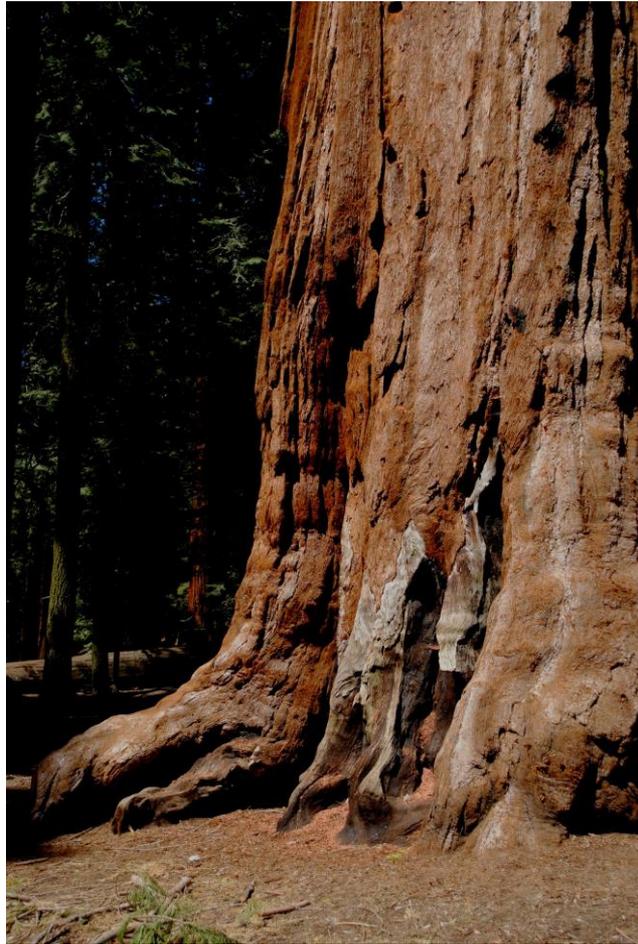
A mature coast redwood cone showing the diamond-shaped scales



The giant sequoia or Sierra redwood occurs in mixed groves with other conifers, mostly at middle elevations from the central Sierra south, the largest concentration at the southern end of its range.



Giant sequoia trunks are massive, with an expanded base, and cinnamon colored. Their bark is thick and protects the tree against fire



Even when part of the giant sequoia trunk is burned, if the other part remains intact, the tree continues to live



The shape of the giant sequoia crowns is dense and uniform in the first 50 to 100 years, later becoming craggy and irregular due to lightning strikes and wind storms



Giant sequoia leaves are uniform throughout the tree and seldom the upper leaves of the coast redwood.



Giant sequoia branches make pollen cones as small as coast redwoods, and release their pollen in late winter



Here is the seed cone of the giant sequoia, roughly 4 to 8 times the volume of the coast redwood but with the same basic shape and cone scales



Both redwoods seldom have seeds that germinate and grow unless there's been a fire or other disturbance to the forest. The giant sequoia also keeps its cones closed but squirrels often nibble them off, allowing them to open when they fall.



Compared to the cypress and pine families, the yew family is minor, with only two native species in two different genera

- The family has the following traits:
- Needles for leaves,
- Dioecious plants—separate male and female,
- Small, cream-colored pollen cones, and...
- Seed cones that consist of a single toxic seed surrounded by a fleshy aril
- The two genera are *Taxus* or yew and...
- *Torreya* or California nutmeg

Western or Pacific yew, *Taxus brevifolia*, is a slow-growing shrublike tree found in the understory of moist forests, often by streams, mostly in northwestern California



Yew needles lie flat in two rows, superficially resembling coast redwood, but the needles have no obvious odor



When the female trees make cones, identification is unmistakable; a single seed sits in a bright red fleshy cup, attractive to birds



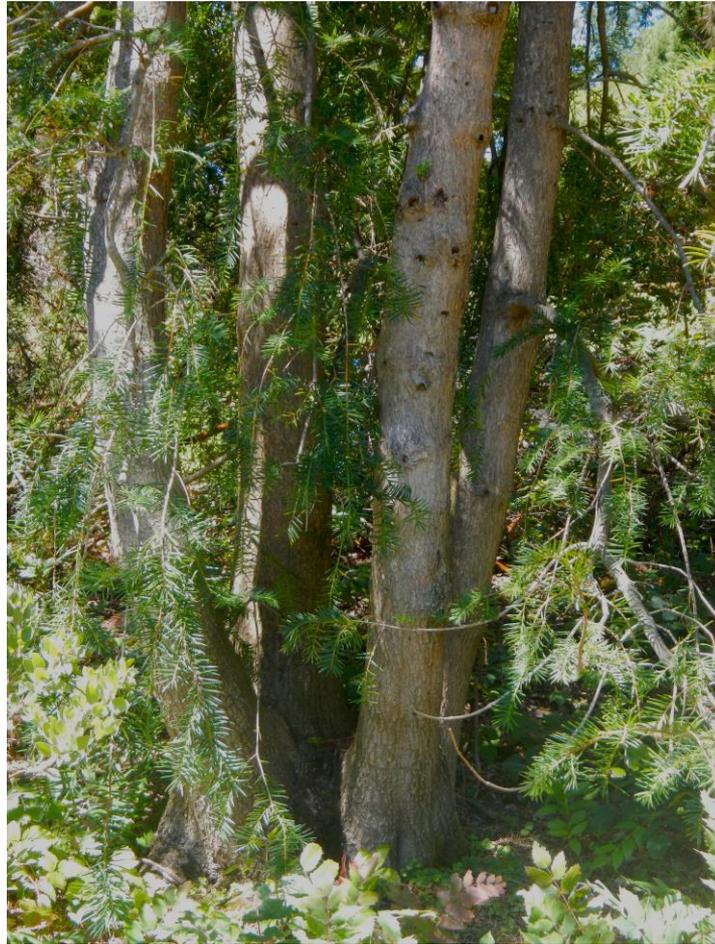
Typical yews normally form an understory under taller conifers as seen here, but...



...in age and under favorable growing conditions, yews develop trunks up to 30 feet high



By contrast, the so-called California nutmeg, *Torreya californica*, grows in drier woods, usually in stands of many individuals in one area but widely separated from other stands



California nutmeg needles are glossy, extremely sharp (Indians used them for tattooing), and with a unique fragrance of their own



Unlike many conifers except some cypresses and redwoods, California nutmeg stump sprouts when the trunk has been chopped off.



California nutmeg normally grows as a tree, which over time may reach around 40 feet tall, but never gets to the size of many of our other conifers



Here you see the nearly ripe seed “cone” of the California nutmeg, which has fallen to the ground. The important question is what animals might disperse these to new homes; nutmegs tend to live in clusters of trees within limited areas.



Here you see a young female “cone”, the nutmeg-shaped seed is completely covered by a fleshy plumlike layer that turns purple when ripe. The seed is not the spice; in fact, the true nutmeg is a tropical broadleaf tree

