

# Tree & Fern Keys – Tools for Armstrong Redwoods Docents

Rev 1.28.23

**A key to Common Ferns and Fern Relatives follows the Tree and Shrub Key.**

## A Key to Some Common Trees and Shrubs of Armstrong Woods and Pomo Canyon

### What plants are included?

This document includes **some** of the more common trees and shrubs found in the valley at Armstrong Woods and Pomo Canyon, but NOT all of them. It also includes a few less commonly observed species and some found on the nearby coast.

If a specimen does not fit the description, it is likely a plant that is not included in the key.

The key includes:

- a dichotomous key to common trees and shrubs
- brief descriptions and photographs of the plants are included in the key

### What plants are NOT included?

This key is for trees and woody shrubs, not smaller herbaceous plants and wildflowers. It focuses on the areas where most of our visitor tours occur – the valley floors at Armstrong Woods and Pomo Canyon. The ridges around Armstrong Woods, Austin Creek State Recreation Area, the Red Hill/Pomo Canyon Trails, and the Sonoma Coast State Beaches have significantly different flora.

### What is a Dichotomous Key?

A key is a tool used to identify (or “key out”) organisms. It is a series of choices that leads to an identification. Since there are usually two choices, it is called dichotomous.

This key should help you identify the more common ferns found on the valley trails at Armstrong Woods and in the campground area at Pomo Canyon. **It includes the more common trees and shrubs, NOT all of them.** If you use it to try to identify a plant that is not included in the key, you may come up with an incorrect identification. So it is important to compare the specimen with the photographs and descriptions that follow.

**NOTE:** When keying out a specimen, it is important to use **typical** specimens, not the largest or smallest leaf or one that is damaged or otherwise atypical.

You may be able to find a copy of the *Pacific Coast Tree Finder* on the Internet. It is a simple dichotomous key to trees. We have a copy that you can check out from the library at the Stewards Volunteer Office.

The Stewards Docent library also has several other tree and wildflower books.

# Identifying Trees and Shrubs

## Some useful vocabulary:

**alternate leaves** grow across from each other on the stem, but are staggered. (compare to “opposite”)

**catkin:** a dense cluster of petal-less male or female flowers along a small, linear stem (e.g., in alder or hazelnuts)

**compound leaves** have more than one leaflet on a stem; **simple leaves** have only one leaflet

**deciduous:** a plant that sheds its leaves when dormant, usually in fall or winter (as opposed to evergreen)

**leaflet:** a division/part of a compound leaf (leaves have buds at the base of the stem, **leaflets** don't.)

**needles:** a very narrow form of leaf

**opposite leaves** grow directly across from each other on the stem. (compare to “alternate”)

**palmate:** spreading out from a point

**pinnate:** the leaflets are arranged on both sides of a compound leaf's axis/stem

**serrated:** toothed or notched, like the blade of a saw

**spp** indicates more than one species.

A **sheath** is a wrapping found at the base of pine needles.

sheath



**catkins**



**palmate  
leaf**



**alternate  
leaves**



**opposite  
leaves**



**palmately  
compound  
leaf**



**pinnately  
compound  
leaf with  
opposite leaflets**

**credits:** drawings and photo by Mike Roa

## Leaf Key to Some of the More Common Trees and Shrubs in Armstrong Woods and Pomo Canyon

(May include trees not present at the Armstrong or Pomo, and does not include all trees found at the sites.)

1. leaves shaped like needles  
leaves broad and flat  
go to 2  
go to 5
2. needles more than 1.5” long  
needles less than 1.5” long  
go to 3  
go to 4
3. needles in groups of **two** with a sheath at the base  
needles in groups of **three** with a sheath at the base  
**BISHOP PINE**  
**MONTEREY PINE**
4. needles arranged all around the twig, like a bottle brush  
needles in two rows, flat (feather-like)  
**DOUGLAS-FIR**  
**COAST REDWOOD**
5. pinnate leaves compound, composed of 5-7 leaflets  
(*Leaves have a bud at the base; leaflets don't.*)  
leaves are simple, not made up of leaflets  
**RED ELDERBERRY**  
go to 6
6. three or more veins of equal size branching out at the palmate leaf base  
main veins branch off of a large central vein  
**BIG LEAF MAPLE**  
go to 7
7. leaves deeply lobed, with ends of lobes pointed  
leaves not deeply lobed  
**CALIF. BLACK OAK**  
go to 8
8. leaf edges smooth or nearly smooth, without distinct teeth or notches  
leaf edges with teeth or notches  
go to 9  
go to 10
9. dark green leaf gives off strong odor when rubbed or crushed  
no strong odor when leaf crushed; smooth red bark on branches  
**CALIF. BAY/LAUREL**  
**MADRONE**
10. viewed on the underside of the leaf, the conspicuous main veins run directly to the edge of the leaf  
viewed on the underside of the leaf, the main veins branch into smaller veins without reaching the edge of the leaf  
(Other than central vein, other veins may be hard to see.)  
go to 11  
go to 13
11. leaf stem or whole leaf woolly or very hairy  
leaf stem not woolly or very hairy  
go to 12  
**RED ALDER**
12. firm leaves have stubby spines at the end of each main vein  
leaf very soft with many small soft teeth at the leaf margin/edge  
**TANOAK**  
**CALIF. HAZELNUT**
13. most leaves more than 2.5” long, leaf teeth small; smooth red bark  
not as above  
**MADRONE**  
go to 14
14. narrow, “bendy” leaves with sharp, tapered tips and the widest portion of the leaf toward the middle or base of the leaf rather than toward the tip; longer than 1”  
not as above  
a **WILLOW**  
go to 15
15. many leaves arranged on opposite sides of stem in pinnate fashion.  
Leaves are finely toothed and 0.5 – 1.5” long.  
not as above  
**EVERGREEN HUCKLEBERRY**  
go to 16
16. leaf edge scalloped with more than 25 spines along the edge  
leaf edge with fewer than 25 spines, convex on top  
**TOYON**  
a **LIVE OAK**

# Leaves of some trees found at Armstrong Woods and/or Pomo Canyon

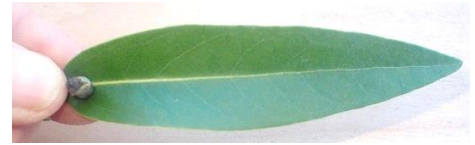
**Big Leaf Maple**



**Bishop Pine**



**Calif. Bay Laurel**



**Calif. Hazelnut**



**Coast Redwood**



**Black Oak**



**Douglas-fir**



**Evergreen Huckleberry**



**Live Oak**



**Madrone**



**Monterey Pine**



**Red Alder**



**Red Elderberry**



**Tanoak**



**Toyon**



**Willow**



credits: all photos by Mike Roa

## BIGLEAF MAPLE: *Acer macrophyllum*

### Description:

- grows to 100' tall, but usually smaller
- Leaves opposite and deciduous; blades are palmate, usually with 5 lobes.
- The flowers form elongated clusters in April-May
- The seeds are about 1/3" long (with "wings", ~1.5-2") and borne in pairs.

Big leaf maples are found in a variety of habitats from Alaska to California.



Credits: all images by Mike Roa

## BISHOP PINE: *Pinus muricata*

### Description:

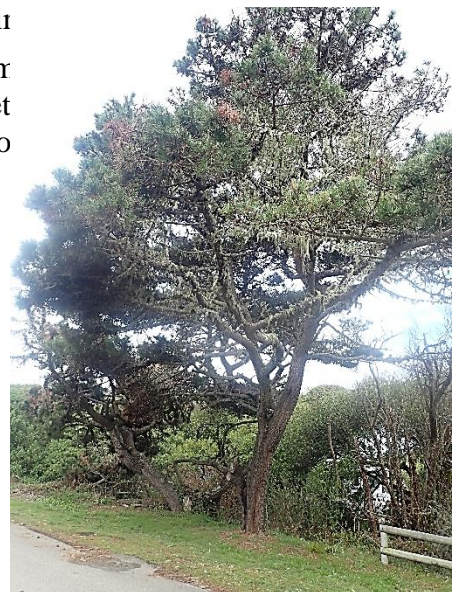
- typically 40-80' tall, to 100' tall
- The needles in bundles of two, 3-6" long
- They are short-lived, usually living less than 100 years.

The bishop pine is a "closed cone" pine, meaning that the cones may remain closed until a fire heats them up, but bishop pines are quite variable in that regard. They may open without fire, or may stay closed for decades until heated by a wildfire.

The cones are held closed by resin, which is melted by the heat of fire.

There are two populations of bishop pines, separated by about 200 miles. Sonoma Co. is at the southern end of the range of the northern variety while the southern variety's range extends from San Luis Obispo Co to southern California and into Baja.

These photos are of Bishop pines at Wright's Beach.



Credits: by Mike Roa

## CALIFORNIA BAY LAUREL: *Umbellularia californica*

Other common names include bay, laurel, Oregon myrtle, pepperwood, myrtlewood, and spice tree.

### Description:

- Grows to 30-80' tall, often multi-stemmed.
- Sprouts rigorously from root crown or cut trunks.
- Leaves are evergreen, simple, alternate, leathery, and elliptical or lance-shaped, 2-6" long, with upper surfaces dark green and light green lower surfaces. Strong odor when crushed.
- Yellow-green .5 inch flowers in clusters of 4-10 flowers.
- Fruit is the size of a large olive (~1 inch long), turning from green to purple as they mature.

Native Americans used the leaves as an insect repellent and to hide their human scent when hunting. They also dried and roasted the seeds to eat, but the resulting nut is very bitter.

The wood is used in furniture making and for turning, making beautiful bowls and other implements. The leaves can be used in cooking, but this tree is a different tree than *Laurus nobilis*, which is the commercial bay from Europe.



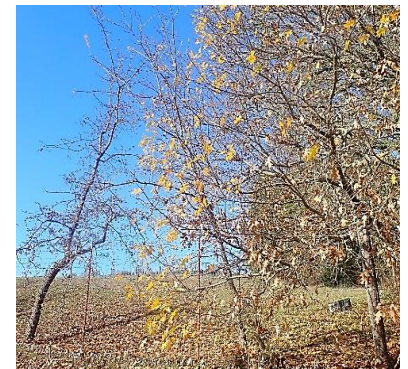
Credits: all images by Mike Roa

## CALIFORNIA BLACK OAK: *Quercus kelloggii*

### Description:

- 30-80' tall, with dark gray bark (black when wet)
- The leaves are simple, alternate, and deciduous, 3.5-8" long.
- The leaves are deeply "notched", forming 7-9 lobes with pointed tips
- The male flowers form long, droopy catkins (below right, in March).
- Black oak acorns are .75-1.3" long and more stout than those of the live oak.
- The caps can enclose up to half of the nut.

The CA black oak grows throughout the coast ranges and Sierra foothills. It is initially shade-tolerant, but becomes shade-intolerant as it matures.



Above: young black oaks in December



Credits: all images by Mike Roa

Right: catkins in March

## CALIFORNIA HAZELNUT: *Corylus cornuta*

Other common names include California hazel and beaked hazelnut

### Description:

- Usually multi-stemmed shrub or small tree, 6-12' tall
- Leaves are simple, alternate, egg-shaped to almost round, and deciduous. The **leaves are very soft** and hairy, dark green on top and light green underneath (turning yellow in the fall).
- Flowers are catkins (right, photo taken in December)
- Nuts are surrounded by papery husks and often develop in pairs.



Native Americans used shoots in basketry. Nuts are edible. (This is a different species from the larger species grown commercially, which is *Corylus avellana*.)



Credits: male catkins, leaves and seeds: by Mike Roa

single seed at right: by Karen Gebbia, Stewards docent

## COAST REDWOOD: *Sequoia sempervirens*

### Description:

- The tallest tree in the world, reaching heights of over 380'.
- needles arranged on either side of the stem, feather-like ("flat sprays"), .75-1" long
- The needles at the top of the tree are more awl-shaped and grow close to the twig, scale-like, which conserves water in the exposed branches at the top of the tree.
- cones .75-1.25" long (olive sized and shaped).
- The cones often fall from the tree still attached to a twig.

While there is only one recognized species of *Sequoia* redwood today, 40 or more fossil species have been found across the northern hemisphere. Other plants are called redwood, including the Sierra redwood (*Sequoiadendron giganteum*), and the dawn redwood (*Metasequoia glyptostroboides*), which is native to China today but also was wide spread at one time.

While it depends on coastal fog for summer moisture, redwood will grow well in dry climates if given sufficient water in the summer. Unlike *Sequoiadendron*, coast redwoods are **not** well-adapted to snow.



Credits: all images by Mike Roa

## DOUGLAS-FIR: *Pseudotsuga menziesii*

### Description:

- 125-200' tall (tallest known (in Oregon) is over 325' tall) (one in Washington was reported to be 385' tall, rivalling the tallest coast redwoods.)
- The needles are .5 – 1.5" long, arranged "bottlebrush-style" around the stem, blunt tipped
- Cones are 2-4" long with distinctive 3-lobed bracts protruding from between the scales
- The bark on young trees is gray and relatively smooth, often with resin droplets. The bark of mature trees is deeply furrowed, often in elongated diamond patterns.

Douglas-fir is the major the major timber/lumber producing species in western North America, with its wood being used for lumber, pulp, plywood, and particle board.

It is intermediate in shade tolerance, so will often live in redwood forests for a long time until the redwoods shade it out.

Douglas-fir is not a true fir. (Hence the scientific name of the genus: *Pseudotsuga*, and the hyphenated -fir in the name.) True firs have cones that stand upright on the stem and fall apart when they release their seeds. Douglas-fir cones hang down from the stems and fall from the tree intact.



approximately  
life size



Credits: all images by Mike Roa

## EVERGREEN HUCKLEBERRY: *Vaccinium ovatum*

### Description:

- Shrub that grows to 8' tall. At Pomo Canyon, they often grow on top of stumps.
- Leaves are evergreen and leathery, sometimes turning reddish. .5-1.5" long, with fine-toothed edges.
- Flowers are light pink and bell-shaped.
- Fruits are about ¼" in diameter, dark purple-black, with a waxy coating, and are edible.



Credits: from iNaturalist:  
flowers by zigy  
fruit by Hollis Bewley  
plant on stump and  
leaves by Mike Roa



## LIVE OAK: *Quercus* spp.

There are several different species of “live oaks”. There is lots of hybridization, and their classification is

not clear. Most common in our area are the coast live oaks, *Quercus agrifolia*, but others can be found.

### Description:

- These oaks are called “live oaks” because they don’t lose their leaves in the winter; they are evergreen.
- In general, live oaks have leaves that are convex on top and have spines on the leaf edges.
- Mature trees grow to 30-80’ tall, with bark that is smoother and lighter colored than the black oak..
- The male flowers form long, droopy catkins.
- Acorns are .75-1.5” long and more slender than those of the black oak, and the cap encloses less than half of the nut..

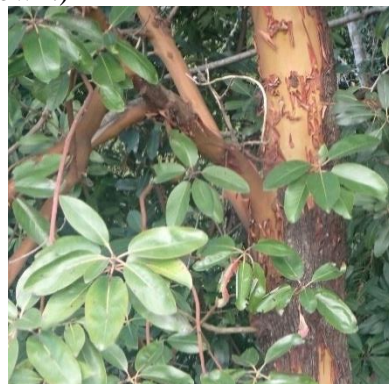


Credits: all images by Mike Roa

## MADRONE: *Arbutus menziesii*

### Description:

- 25-80’ tall
- The leaves are evergreen, alternate, oval, and 3-7” long. The edges may be finely serrated or entire (smooth).
- The flowers are white-pink, about .25” long, and urn-shaped, occurring in 3-6” clusters. They look very much like manzanita flowers.
- The fruits are red-orange, and about .25” in diameter.
- The smooth bark of a young madrone is green to orange-red in color, while mature bark is reddish brown. (Some confuse madrone with manzanita (*Arctostaphylos* spp.) Manzanita generally is more shrub-like than tree-like. Manzanita leaves are smaller than madrone, and its bark is a darker red-brown.)



Photos by Mike Roa

## MONTEREY PINE *Pinus radiata*

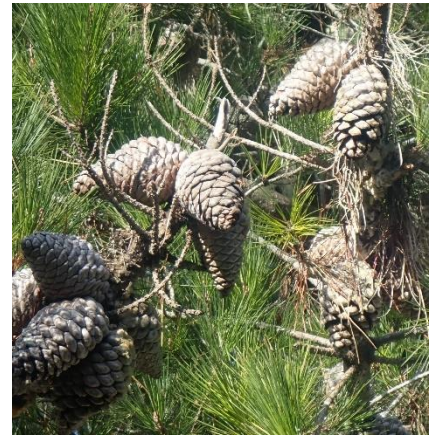
### Description:

- typically 40-125' tall
- The needles are in bundles of 3 (occasionally 2), 4-6" long.
- Monterey pines are short-lived, usually living less than 100 years.

The Monterey pine is a "closed cone" pine, meaning that the cones may remain closed until a fire heats them, but Monterey pines are quite variable in that regard. They may open without fire, or may stay closed for decades until heated by a wildfire. The cones are held closed by resin, which is melted by the heat of fire. Humidity is also a factor in cone opening and closing.

Monterey pine's native range is restricted to three small areas on the California coast and two off shore islands, but the species has been planted all over the world; it is the world's most planted conifer species. Most of the pines that you see driving in western Sonoma County are Monterey pines. Its popularity stems from its extremely rapid growth. It is used for paper and other wood products, and also as an ornamental tree.

Credits: all images by Mike Roa

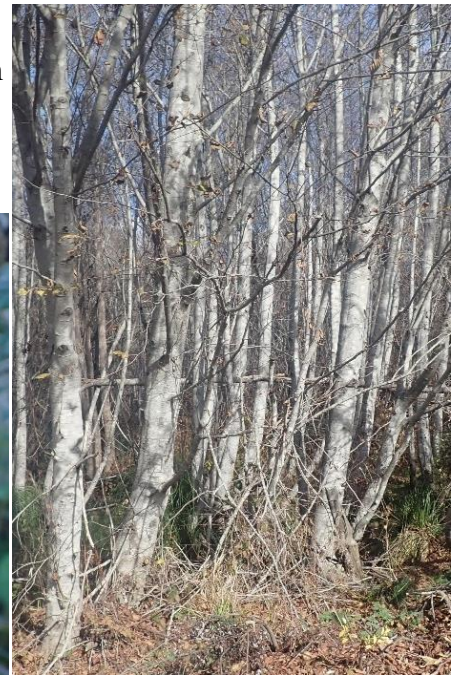


## RED ALDER: *Alnus rubra*

### Description:

- Mature trees grow to 80-100' tall.
- The 3-6" long leaves are simple, alternate, and deciduous, with serrated edges. (Some leaves may persist through December.)
- Pollen is produced in elongated catkins
- Seeds are produced in cone-like catkins that are usually olive-sized or a bit larger.

Alders like moisture and are usually found in riparian (streamside) environments. They are not very shade-tolerant, so they usually grow along streams where there is sunlight.



above: alder trees in December  
 far left: leaves in May (upper and lower surfaces)  
 left: last year's cones  
 middle left: catkins in December  
 near left: catkins in March

## RED ELDERBERRY: *Sambucus racemose*

### Description:

- large shrub, growing to 25' tall
- leaves are opposite, pinnately compound, with 5-7 elliptical leaflets
- deciduous
- small white flowers form dome-like clusters (blue elderberries form flat-topped clusters)
- fruits are red-black, round (blue elderberries are dark purple with a waxy coating making them look blue)
- fruits are eaten by wildlife but toxic to people



Credits: flower and berries by Karen Gebbia.

All others by Mike Roa

## TANOAK: *Notholithocarpus densiflorus*

Also known as tanbark oak, this tree is not a true oak; it is more closely related to chestnuts than to true oaks.

### Description:

- Grows to 50-90' tall, but may remain shrublike in shady areas. Shade tolerant.
- The 3-5" long leaves are evergreen, simple, alternate, and leathery. They may be entire or may be serrated.
- The pollen-bearing catkins are upright and 3-4" long. The acorns are 1-1.5" long with a shallow cap that doesn't cover much of the seed. It has bristly scales.

The acorns were an important food for Native Americans.

Tannin from the bark was used for tanning hides.



Credits: leaves and acorns: by Mike Roa

flowers: and acorn (right): from iNaturalist, by Todd Plummer

## TOYON: *Heteromeles arbutifolia*

Sometimes called Christmas berry or California holly because the red fruits ripen in late fall-early winter.

### Description:

- Shrub-like or a small tree to 15' tall.
- The 2-4" long leaves are alternate, evergreen, and leathery. They are elliptical with many small teeth along the margins.
- The white flowers grow in flat-topped clusters and produce red fruits that are about .25" in diameter.

Grows in chaparral and drier hillsides in our area.



Credits: all images by Mike Roa

## WILLOW: *Salix* spp.

There are many species of willow (30 species in California alone!), and they can be hard to classify to species. The arroyo willow (*Salix lasiolepis*) is a common species.

### Description:

- Willows tend to be shrub-like or trees to 30 or more feet tall.
- The arroyo willow's leaves are alternate, lance-shaped, and 2-5" long, with smooth or fine-toothed margins.
- They are mostly deciduous, but some leaves may remain green and on the plant over the winter.
- The seeds are produced in catkins (1.5-2.75" long).

The sap contains salicylic acid, the active ingredient in aspirin. (The leaves and buds taste like aspirin.) Willows like water and are fast-growing, so they are useful in streamside restoration and protection.



male flower  
in early February



female flowers  
in early March



in early April

Credits: all images by Mike Roa



## A Key to Common Ferns and Fern Relatives of Armstrong Woods and Pomo Canyon



rev 6.30.21

### What is a fern?

Ferns are non-flowering vascular plants. They have specialized (vascular – fluid transporting) tissues (roots, stems, and leaves). Unlike seed plants, they primarily reproduce by means of spores, which can grow into a new plant without the need for fertilization. They also have a tiny “gametophyte” stage that produces sperm and egg, which combine to form the sporophyte (spore-producing) stage without forming a seed. The gametophyte stage is seldom seen. They can also reproduce vegetatively from their rhizomes (underground stems) or, less commonly, by vegetative buds.

This key includes:

- a dichotomous key to common ferns
- brief descriptions and photographs of the ferns that are included in the fern key

Although not technically a fern, plants in the genus *Equisetum*, commonly called horsetail or scouring rush, are often referred to as “fern relatives.” They are included in this key.

### What is a Dichotomous Key?

A key is a tool used to identify (or “key out”) organisms. It is a series of choices that leads to an identification. Since there are usually two choices, it is called dichotomous.

This key should help you identify the more common ferns found on the valley trails at Armstrong Woods and in the campground area at Pomo Canyon. **It includes the more common ferns, NOT all of them. If you use it to try to identify a fern that is not included in the key, you may come up with an incorrect identification. So it is important to compare the specimen with the photographs and descriptions that follow.**

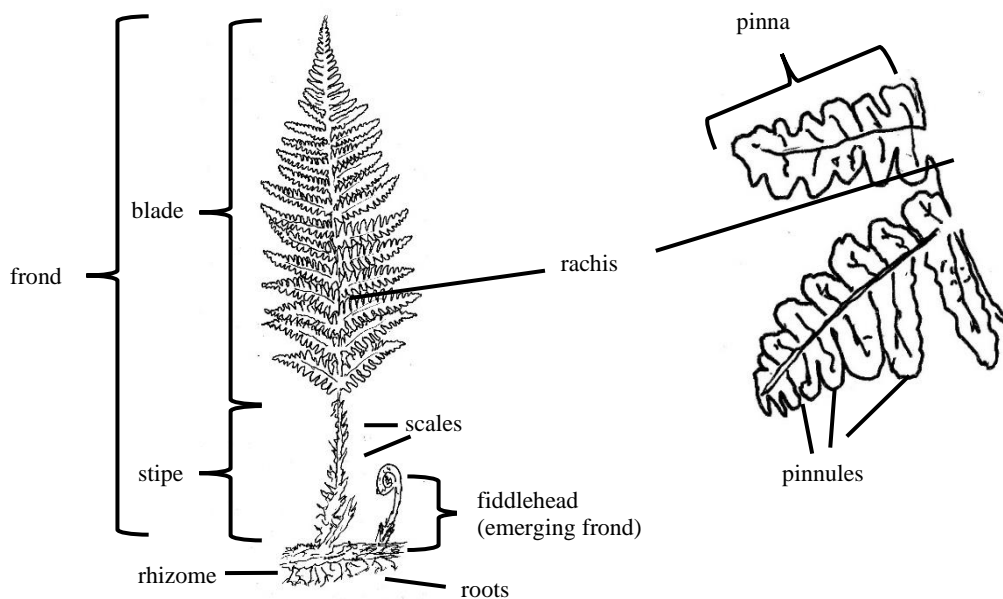
**NOTE:** When keying out a specimen, it is important to use **typical** specimens, not the largest or smallest frond or one that is damaged or otherwise atypical. Not all fronds are fertile. (Some don’t have sori.)

You may be able to find a copy of the *Pacific Coast Fern Finder* on the Internet. It is a simple dichotomous key to ferns. We have a copy that you can check out from the library at the Stewards Volunteer Office.

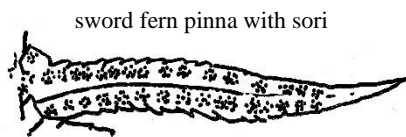
## Identifying ferns:

The most important anatomical features used to identify ferns are:

- overall shape of the **frond**, which is, essentially, a fern stem and leaf
- how many divisions in the frond
  - pinnae** are the first divisions
  - pinnules** are secondary divisions, i.e. divisions of the pinnae
- The base of the leaf stalk of the frond is called the **stipe**
- The portion of the frond bearing the pinnae is the **blade** or leaf.
- The **rachis** is the portion of the stem of the blade that bears pinnae.
- The underground portion of the stem is called a **rhizome**.
- As the fern emerges from the ground, the leading tip is coiled. This is called a **fiddlehead** or crozier.
- **Spores** (asexual reproductive bodies) are borne in **sporangia**, which form clusters in what are called **sori** (singular: **sorus**). The location and shape of the sori are important in identifying ferns.
- Sori may be covered with a flap called the **indusium**.
- The sori may also be covered by the curled over edge of the pinna (a **false indusium**).



**Sori are found on the ventral (lower) side of the pinnae**



sword fern pinna with sori

**indusia (sorus coverings):**



circular  
indusium

chain-like  
indusia

kidney/horseshoe  
shaped indusium

**Key to Some of the More Common Ferns and Fern Relatives  
in Pomo Canyon and Armstrong Woods (Descriptions follow.)**

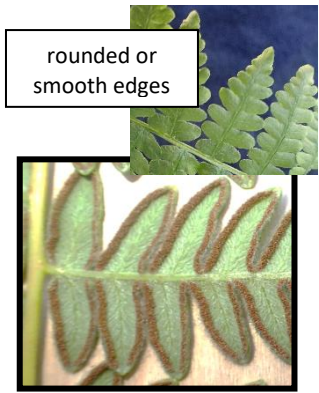
**Notes:** All of these ferns, as well as several others, can be found at both sites.

This key is only “good” for the ferns that it includes, so if a fern doesn’t seem to fit the description or match the photographs, it is probably a species that is not included in the key.

1. Plant is a green, hollow, sheath-like jointed stem,  
with or without side branches. **HORSETAIL**  
Plant is fern-like. go to 2
  
2. Fronds appear gold or silver on the underside **GOLDBACK FERN**  
Fronds green on the underside go to 3
  
3. Pinnae are fan- or crescent-shaped. go to 7  
Pinnae not as above. go to 4
  
4. Fronds/stem long (3-9’). Sori are large (to ¼” long),  
elongated, and borne in chain-like  
rows that are parallel to the midrib of pinnae. **GIANT CHAIN FERN**  
Fronds not so long, sori not so elongated. go to 5
  
5. Fronds emerge from ground separately and form an  
elongated triangle. Frond has broad triangular shape. **BRACKEN FERN**  
Sori, if found, are along edge of pinnae, but may be  
covered by curled over edge of pinnae.  
Sori not as above. Several fronds emerge at one point (may emerge. go to 6  
from ground or may be growing on a tree (epiphytic)
  
6. Pinnae have a projection near the base, sort of like the hilt of a  
sword. Mature fronds more than 1’ long. **SWORD FERN**  
Pinnae do not have a projection like sword ferns do. **WOOD FERN**  
Frond is more of an elongated triangle than that of Bracken. go to 6  
Sori are kidney- or horseshoe-shaped and found along center of pinnae
  
- Pinnae do not have a projection like sword ferns do. **CA. POLYPODY FERN**  
Mature fronds less than 16” or so long  
Generally growing on rock faces, road cuts, or on trees.  
Sori oval-round and found along center of pinnae.
  
7. Pinnules at base of frond broad, fan-shaped. **FIVE-FINGER FERN**  
Those towards tip more elongated. Frond is  
forked at its base and is about as wide  
as it is long. Plant/frond is split into 5-11  
“fingers” from a frond.  
All pinnules broad, fan-shaped. Frond is not  
forked at its base and is narrower than it is long. **MAIDENHAIR FERN**



Bracken Fern



rounded or smooth edges

Five-Finger Fern



Goldback Fern



Maidenhair Fern



Giant Chain Fern  
(*Woodwardia*)

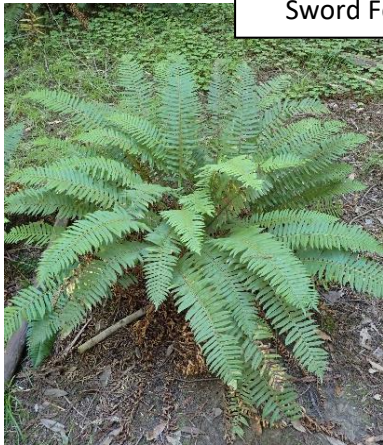


Polypodium Fern

Horsetail/Scouring  
Rush (*Equisetum*)



Sword Fern



Wood Fern





## Some Ferns and Fern Relatives Found at Armstrong Woods and/or Pomo Canyon

### Notes:

1. Descriptions are given in alphabetical order by common names.
2. Some common names may refer to more than one species. In that case, the genus name is followed by “spp.”
3. The characteristics that are most useful in identifying are in **bold**.
4. Fiddleheads: Many ferns emerge from the ground as young sprouts called “fiddleheads.” Several fiddleheads are shown in the descriptions below.

### **BRACKEN FERN: *Pteridium aquilinum***

They are also known as “brake” or “brake ferns”.

**Description:** (compare to Wood Fern)

- Leaves (fronds) may be over 4 feet long, usually 2-3 feet long, with light-colored (tan) stalks (stipes).
- The leafy part of the frond is triangular, almost as wide as it is long.
- The **stipes emerge from the ground several inches apart**, as opposed to many emerging at one point. (photo at right)
- The **sporangia are found along the edges of the pinnae**, but may be small and hidden under the curved edge.
- NOT evergreen. (They usually turn yellow in the fall and die back in the winter; some fronds may remain green.)
- The edges of the pinnae are smooth or lobed, sort of like a series of Bs, **but this is quite variable**.



There is a single species of bracken fern, but several subspecies. Bracken fern is found all over the world.

**Young** leaves and underground stems have been used as food and medicine, but older tissues are poisonous.



Sori along rounded or smooth edges of pinnae



fiddlehead



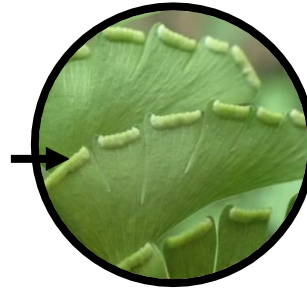
## FIVE-FINGER FERN: *Adiantum pedatum*

### Description:

- The black blade (stipe) is divided at the base into 2 equal parts, each of which has several pinnae.
- **Fronnd is about as wide as it is long.**
- Each pinna has several pinnules.
- Some pinnules (near the base) are fan shaped, while those towards the end are more elongated
- Sori found along the outer edges of the pinnules.

Closely related to Maiden-Hair Fern.

**Often found along creek banks.**



"fan-shaped" pinnule



elongated pinnule



## GIANT CHAIN FERN: *Woodwardia fimbriata*

Often called by its genus name, *Woodwardia*

### Description:

- Very large fern; frond may be up to 9 feet long.
- **Sori oblong, sort of sausage-shaped, and arranged in rows, chain-like, parallel to the midrib**



*Woodwardia* between campsite 16 and the creek at Pomo Canyon



## GOLDBACK FERN: *Pityrogramma triangularis*

### Description

- As the common name implies, the **underside of the Goldback fern appears gold, or, sometimes silver.** (The color is caused by a waxy powder, which can be rubbed off (as opposed to being a color of the fern frond itself.)
- As the species name *trianguplaris* indicates, the fronds are **distinctly triangular in shape.**
- The stipes are dark. (Native Americans used them for designs in their baskets.)
- The small (less than 1' long) triangular fronds curl up when dry.
- The sori form a a sort of brown network that may obscure the gold/silver powder.



**Credits:** from iNaturalist: dorsal view of several plants by Spencer Quayle ventral surfaces: both by Alex Heyman

## HORSETAIL or SCOURING RUSH: *Equisetum* spp.

Branched species known as “horsetail.” Unbranched species known as scouring rush.

### Description:

- **The stems are grooved, cylindrical, jointed, and hollow between the joints.**
- Often have silica deposits and **feel dry or rough.**
- Leaves are arranged in whorls at the joints, but in some species are tiny (left images below).

Because of its rough surface, used as a scouring tool to clean (scour) dishes.



*Equisetum* without “leaves.” Along Willow Creek Rd.



Young *Equisetum* in early March



*Equisetum* in May

## MAIDENHAIR FERN: *Adiantum* spp.

### Description:

- Stipe black, not divided at base.
- Pinnae borne along the main axis of the stipe.
- **Frond is longer than it is wide.**
- **Pinnules all fan-shaped.**
- Sori found along the outer edges of the pinnules.

Closely related to Five-Finger Fern.  
Often found along rocky outcroppings.

Native Americans used the black stipes in  
decorating their baskets.



ventral side of pinnule, showing false indusium



above: dorsal (upper) side of pinnule

## POLYPODY FERN: *Polypodium* spp.

Since Polypody ferns often grow on rock faces, they are sometimes called rock cap ferns.  
They are also epiphytes, meaning that they grow on other plants such as bay trees.

### Description:

- Usually less than 16" long.
- Sori round and arranged along the midrib of the pinnae.
- Although they may look remotely like sword ferns, they are smaller and lack the "hilt".



Polypody ferns on:  
rock face (above left) bay tree (above and above right)

## SWORD FERN: *Polystichum californicum*

Ferns of this genus (*Polystichum*) are sometimes referred to as Christmas ferns.

### Description:

- Many fronds (up to 100!) emerging from one place in the ground.
- Fronds may be up to 5' long/tall.
- Pinnae usually toothed, with a **projecting “hilt”** near the base.



## WOOD FERN: *Diopteris* spp

### Description: (compare to Bracken Fern)

- Leaves (fronds) usually less than 4 feet long, with light-colored (tan) stalks (stipes).
- The leafy part of the frond is triangular, longer than wide.
- The several stipes **emerge from the ground at one point**.
- Evergreen.
- The **sporangia are found along the middle of the pinnae**, often with a **kidney-shaped indusium** (covering).
- The edges of the pinnae are toothed, sort of like a series of Ws, but **this is quite variable**.



fiddlehead