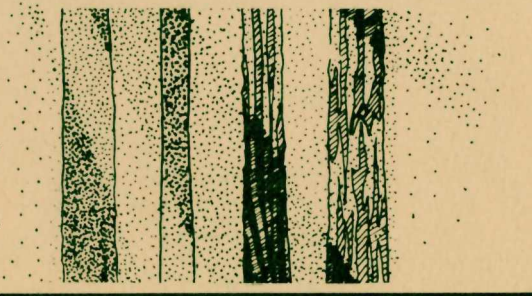


10 DELIGHTFUL DAMPNESS

On most days at Lady Bird Johnson Grove the forest is captured by ethereal fog. Shafts of sunlight shift in light misty fogs. Dense wet fogs condense on the leaves and fall like rain drops. This moist blanket is essential to the coast redwood forest.

Redwood trees exchange many gallons of water each hour with the surrounding air in a process called transpiration.

Without the protection of fog, and the 85 inch annual rainfall, these giants could not replace their moisture losses. Fog not only helps the forest conserve water, but adds about 0.2 of an inch in July and August to the yearly rainfall.



11 BERRIES IN ABUNDANCE

The thickets around you contain salmonberry and thimbleberry, which are typical of redwood forest undergrowth.

Salmonberry has thorny stems with leaves in sets of three, and scattered rose-colored flowers that develop orange to red berries.

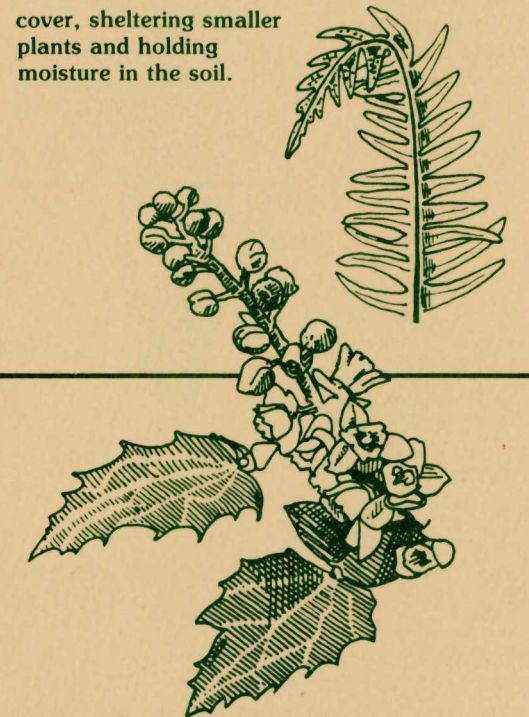
Thimbleberry has maple-like leaves without thorns, and white flowers that become fleshy red fruits similar to a raspberry.

Both salmonberry and thimbleberry lose their leaves during the winter, appearing like sticks among the ferns.

12 FOREST FERNS

The redwood forest is host to myriad ferns. Licorice ferns, named for their licorice-tasting stems, live on the bark of trees. Ferns like this giant sword fern tickle your sides as you walk this trail. Ferns, like mosses, flourish in the abundant moisture of the redwood forest. They

cover, sheltering smaller plants and holding moisture in the soil.

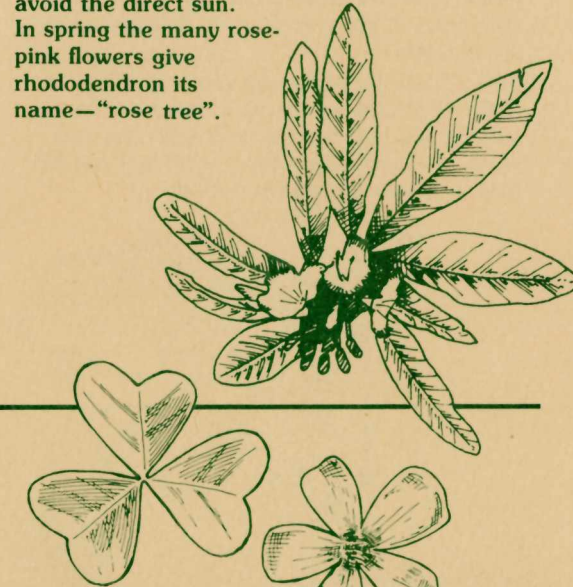


13 OREGON GRAPE

Feel the sharp-toothed edge of this plant. Misnamed a "grape", this member of the barberry family is found growing in groups. Beneath the soft soil surface, Oregon grape is inter-connected by a root-like stem system, as is the redwood sorrel covering the ground beneath it. Of what survival value do you think this is to the plants?

14 ROSEBAY RHODODENDRON

As you stand under this tree, feel the lumpy trunk and look up at the large oblong leaves. The bright green color of the evergreen leaves provide striking contrast to the dark shade of the forest. Rhododendrons grow large and luxuriant under the protection of these tall trees. Without this protection, it grows as compact bushes with leaves tilted toward the earth to avoid the direct sun. In spring the many rose-pink flowers give rhododendron its name—"rose tree".



15 LITTLE GIANT

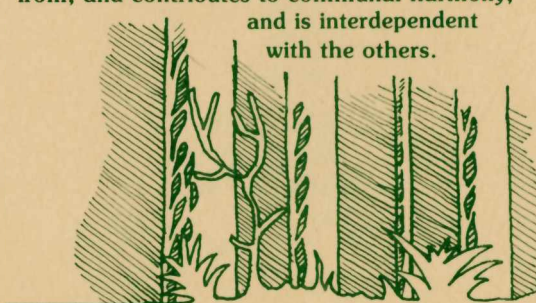
Some of the forest's great success stories are told by its smallest members. Redwood sorrel, or oxalis, is found in abundance throughout the redwood forest. Much like the Oregon grape, its delicate clover-like leaves are connected by a branching underground stem system. This allows the plant to spread out, absorbing sunlight and water over a broad area, thus more efficiently using available resources.

Another reason for the sorrel's success is found above the soil surface. In the deep forest shade, its leaves are horizontal—absorbing every bit of sun that penetrates the forest canopy. Full sunlight causes them to protect themselves from water loss by closing like umbrellas and exposing the red undersides of their folded leaves.

16 FOREST FELLOWSHIP

Look down on this ridge and note the variety of vegetation that blankets these steep slopes. Redwoods growing over a hundred feet below tower above you. A wealth of understory plants absorb the scattered sun rays. The roots of each plant contribute to a massive network that secures them into this soft loamy soil. Without this network, the slope would become unstable and wash into the drainage of Little Lost Man Creek below. The rich topsoil would become turbid deposits in the stream waters. Neither stream nor slope would support abundant life. Each member of the forest community receives from, and contributes to communal harmony,

and is interdependent with the others.

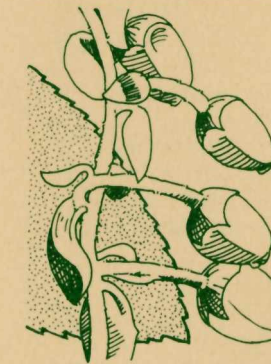


17 EVERGREEN EVERYWHERE

Do you remember the "penthouse tree?" Growing from its top was this same bushy shrub, the evergreen huckleberry. Feel its small thick leaves and note their tough leathery texture and serrated edges. These leaves help this adaptive plant to grow in both the dark shade of the forest floor and in sunlight places such as the tops of trees. It can also flourish on the rocky and windy slopes of our northern California coastline. It's small dark berries provide a tasty treat for wildlife as well as visitors. Throughout your travels in Redwood National Park and the northern coast, look for evergreen huckleberry. It is everywhere!

18 SALAL

Notice the leathery net-veined leaves of this shrub. Although strikingly different from rhododendron and evergreen huckleberry, salal is in the same plant family. Like most plants of the heath family, it grows well in the acid soils of the northern California coast, successfully competing in both dark forests and open coastal areas.



19 HOW DO YOU FEEL?

Try writing down just a few words to express your feelings.

For centuries people have written their often intense feeling and thoughts into short poems. Care to try it? The rules are few: The poem must be simple and direct. It must be written in three lines of five, then seven, and then five syllables each.

Hokushi, a seventeenth century Japanese master wrote:

*The moon on the tree
I keep hanging it - taking it off
and gazing each time.*

This expression of self-awareness in nature is called "haiku."

*It is not easy
to leave this cool green garden
for the dusty road.*

-Anon

IF YOU WISH TO KEEP THIS FOLDER, please deposit 35¢ in the coin receptacle at the trailhead. Otherwise, please return it to the folder box.



Lady Bird Johnson Grove

Nature Trail

Welcome

to Lady Bird Johnson Grove. You are standing at the beginning of a one-mile loop walk. Leave the noise of the road behind you and enjoy the stillness of the coast redwood forest. Come to understand the grove not just for the redwoods themselves, but because for a while you have become a part of the whole forest.



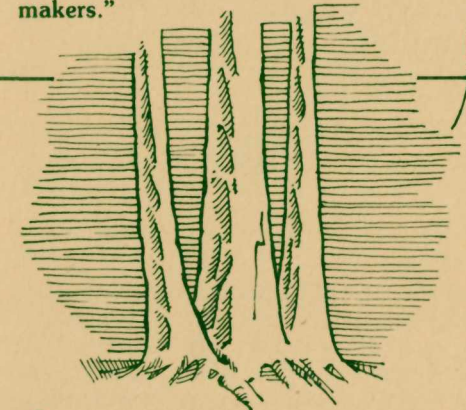
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Steve Cardinelli Design
Illustrations by Erik Jensen



1 WIDOW-MAKERS

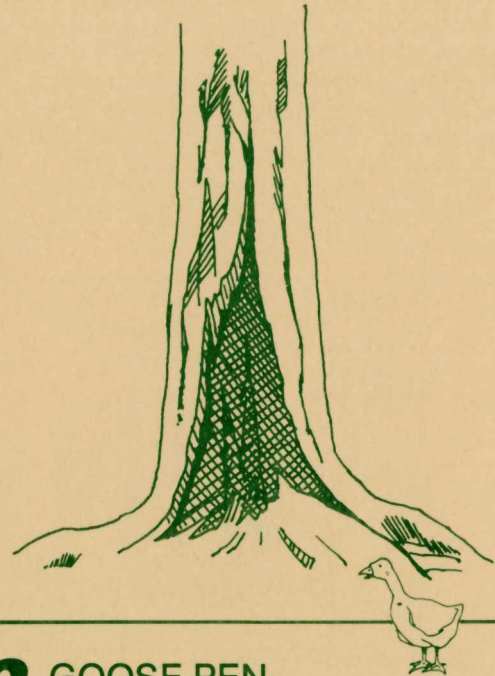
Feel the bark of this Douglas fir and compare it with the coast redwood directly behind you. Both are deeply furrowed, but the depth and long fibrous texture of the redwood distinguishes it from the thick bark plates of its Douglas fir neighbor. As you look up at these tall trees notice their long clean trunks. Lower branches, shaded by the tree itself and nearby growth, become non-productive and are shed. During storms these branches may come crashing down from great heights and at great speeds—pioneers called them “widow makers.”



2 SPROUT TREES

This group of trees tells one of the great success stories of the forest. Unlike other cone bearing trees, or “conifers,” the redwood is capable of sprouting additional trunks, as well as reproducing by seed. The swollen, bumpy base of this tree contains burls which are dormant buds that may sprout if the tree is damaged. With its root system already established, the sprout trees can grow much faster than redwood trees grown from seeds.

How many generations of sprout trees can you find around this tree?



3 GOOSE-PEN TREE

Do you find it hard to believe that this hollow redwood is still living? This condition is the result of many injuries. The thick bark of redwood lacks resin and supplies little fuel for fires. However, repeated fires and other injuries to the bark reduce and remove much of this protective layer. The exposed heartwood is then vulnerable to rot fungi and later fires which can hollow out the tree. Some trees, such as this one, retain enough bark to keep them alive for centuries.

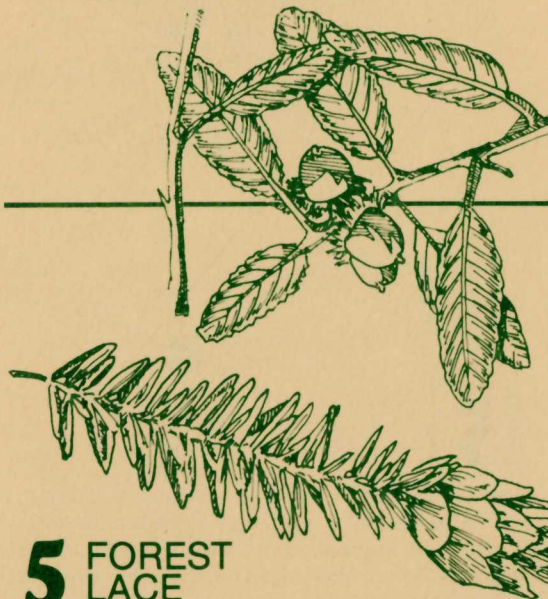
Pioneers used these large cavities to confine small livestock and fowl—hence the name goose-pen.

As you walk through Lady Bird Johnson Grove look for goose-pen trees and other evidence of fires. Although fires are an infrequent occurrence (perhaps two per century), they are a natural process in the redwood forest.

4 TANOAK

Look up at the wavy, toothed leaves of this hardwood tree. Compare the waxy upper surface to their fuzzy undersurface. These leaves identify one of the coast redwood's most common neighbors, the tanoak. Like most redwood associates, tanoaks are relatively young in comparison to those towering monarchs. After a fire has cleared the forest floor, only scarring the thick redwood bark, tanoak grows quickly to regain its position in the forest. Like the redwood, it has burls, or undeveloped buds, at its base that produce sprout trees.

Tanoak has an additional key to success. Its heavy seeds, or acorns, can penetrate the surface duff into the rich soil while the tiny seeds of redwood and other conifers must be able to grow right on the surface.



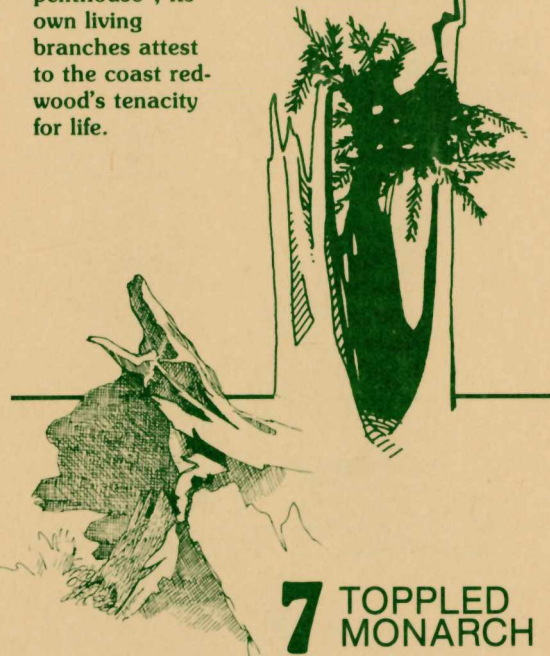
5 FOREST LACE

Gently touch these needle-like leaves and notice the delicate whorled patterns they make on the branches. Notice the varied leaf lengths on each branch contributing to the distinctive lace-like appearance produced by Western hemlock.

The thin scaly bark provides little protection from fires. Western hemlock cannot sprout like the tanoak and redwood but must reproduce by seeds. It is very successful because it produces a large number of seeds, and the seedlings grow on even the smallest decaying wood on the dark forest floor.

6 PENTHOUSE TREE

What does this redwood reveal to you about its history? What can you predict about its future? As in the goose-pen tree, the damaged bark has exposed the heartwood of this redwood. This rotting heartwood provides many rich nutrients for other life. Look up at the evergreen huckleberry and leather fern growing from its sun-exposed top, and the salal taking advantage of its open side. While providing the forest with a “plant penthouse”, its own living branches attest to the coast redwood's tenacity for life.



7 TOPPLED MONARCH

Wind is the great gardener of the ridge-slope redwood forest. Breezes prune the trees of non-productive branches. Great windstorms blow over top-heavy trees. If this redwood had fallen this moment, imagine the noise shattering the silence and the earth shaking beneath your feet. As you look at the base of this toppled monarch, note that it has no deep penetrating tap root. Shallow lateral roots provide the only anchor for the forest's tallest dwellers, making them more vulnerable to wind as they reach great heights. Though fallen, this tree is still contributing to the forest. Many microorganisms and primitive plants such as fungi will grow here converting wood to nutrients, food for other plants. The decomposing wood will make ideal growing conditions for redwood seedlings and other plants. Look for other fallen trees where new life is nourished.

8 TOWERING PATRIARCHS

The average age for an old growth redwood is 500-700 years. Some trees may live 2,000 years. Many fine examples reach heights of 300 feet or more, as tall as a football field is long. Take a good look back at this tree as you walk up the trail. How tall do you think it is?

Compare the scars on this tree to those nearby. Perhaps this redwood endured fires of a lower intensity than its neighbors.



9 TREE GROWTH

Look above you. How many patterns in the trees can you find? Tree patterns tell many stories of the forest's past.

The redwood before you has several tree tops growing from a single trunk. A great force such as wind or lightning removed the tip of this tree, interrupting its growth. Several lower branches, each growing as if it were the only tree top, soon took over the job of forming a new crown. Tree survival in the forest is dependent on the crown reaching the forest canopy to capture the sun's energy.