

BEAR GULCH
SELF-GUIDING
TRAIL

PINNACLES NATIONAL MONUMENT

Water - the lifegiver,
an oasis in an arid land
where volcanic springs and seeps
paint a green garden
midst harsh chaparral.

Through scorching summers
water flows, gouges out,
removes debris. . .
sometimes above ground
sometimes below the surface.

This is a *riparian* community
where thrive water-loving plants.
The liquid lifeline becomes -
a focal point
a meeting place
a cool sanctuary.

Man
like all creatures
is drawn to water.
Walk the winding trail
through Bear Gulch.
Feel the magic of a wooded glen
where trees grow tall and green.
Discover some of the secrets
of the water community.

1 Emerging from its barren bed
where volcanic rock
forces it to the surface,
Chalone Creek flows
in fickle patterns,
meandering under a canopy
of tall trees.

Ancient faults
have shaped its course;
fractured bedrock
traps pockets of water
that suddenly appear -
then disappear.

Birds find shelter and shade
in a lush understory of plants;
they fill the canyon with song.

Small animals
make their homes here
where thick ground cover
offers much protection
and food.

2 Sometimes mistaken for
poison oak, BLACKBERRY BUSHES
cover the ground
with spiny vines,
thriving in the cool shade.

The many birds found here
are attracted by the plant's
spiny protection
and tasty fruit.
It is almost certain
the animals will find
the ripe berries
before you do.



3 Willows grow
where water is abundant.
The ARROYO WILLOW
is no exception.
Its furrowed bark
twists and turns toward sunlight.
Linear leaves
capture the sun's warm rays.

Catkins of flowers
appear in spring
on separate male and female trees.

Indians used willow sprouts
to build their homes and shelters.
The inner bark was boiled
then used for fever and pain,
the bark containing a substance
related to aspirin.



4 The bright green foliage of **COYOTE BRUSH**, or chaparral broom, has small toothed leaves resembling those of scrub oak.

This low woody shrub is normally found near streambeds - areas with ample water.

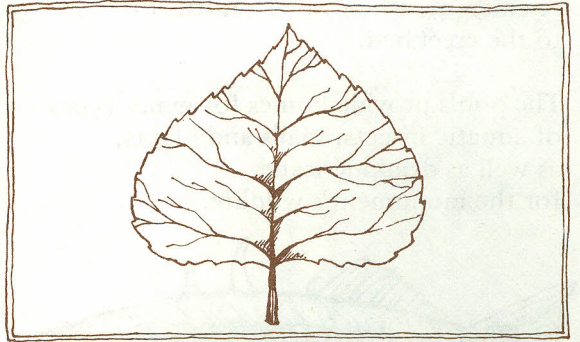
In fall and early winter, small, white brushlike flowers bloom, bringing welcome color to the monument.



6 Rising above nearby trees, the attractive **COTTONWOOD** spreads its broadly rounded crown to the sky.

Growing to over 80 feet in flat well-watered areas, it offers welcome shade on hot summer days.

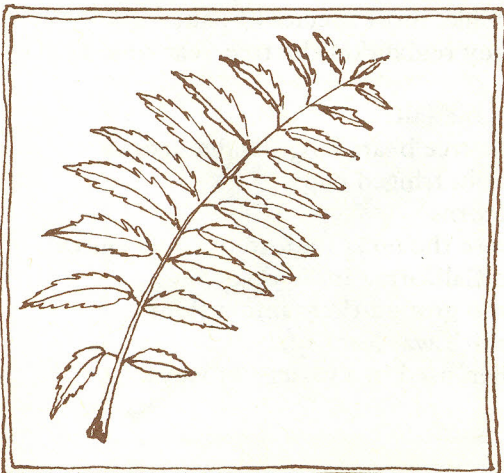
Light green, delta-shaped leaves turn bright yellow in the fall highlighting the landscape.



5 Only a few **BLACK WALNUT** trees grow at Pinnacles. This one is not far from the trail.

Its leaves are smaller than domestic walnut leaves. The edible nut is encased in a round extremely hard shell. The tree's branches are bare through the winter months.

Wild walnut trees may indicate where Indians camped in the past; locations where food and water were plentiful.



7 As this trail moves away from the streambed green riparian vegetation becomes scarce. Dry habitat prevails its plants adapted to little water.

Though not fire adapted as are many chaparral plants, **DIGGER PINES** are drought resistant. Pinnacles' only pine, its long root system reaches 100 feet or more to a permanent source of water.

Because fire has been absent so long in the park, the pines have spread to areas once occupied only by chaparral. These Digger pines stand away from most other plants; their fallen needles forming acidic humus in the soil favorable to the pine but little else.

8

As the stream retreats
chaparral advances
down steep hillsides.
Thin, rocky soil on exposed slopes
retains water poorly.

Chaparral plants survive
where other plants fail.
The YUCCA sprouts
grayish, spearlike leaves
and an occasional bloomstalk.
Common to semiarid and desert areas,
the yucca blooms only once,
then dies;
but new plants sprout from roots
of the parent plant.

Two common chaparral plants
grow at the base of the hill.
Dark green needlelike leaves
identify CHAMISE,
the dominant brush type of Pinnacles.

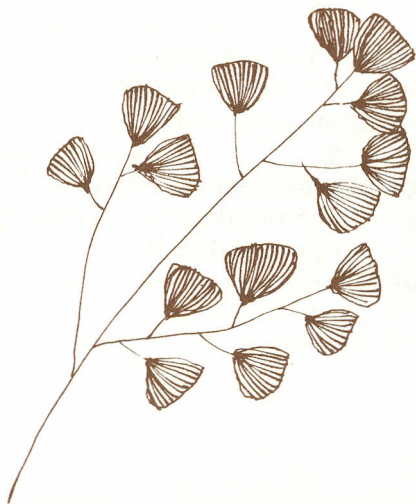
Small wedge-shaped leaves of BUCKBRUSH
are an important source of food
for deer.
In early spring
clusters of white buckbrush blossoms
fill the air
with a sweet lilac smell.

9

The bottom of Bear Gulch
is a moist link with life.
An abundance of water
enables many plants to survive.

On shaded slopes grow
the delicate MAIDENHAIR FERNS,
distinguished from other ferns
by shiny black leafstalks
and fan-shaped fronds.

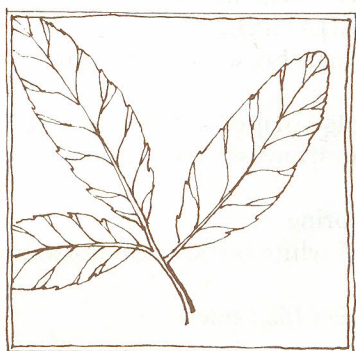
Ferns are good riparian indicators.
Even in late summer
a few green individuals may be found
growing where pockets of water
occur near the surface.



10 A familiar hillside shrub, **TOYON**, or Christmas-berry, often grows into an attractive tree on deep soils in low-lying areas.

Its white clusters of flowers appear in June and July, but it is best known for its bright red berries that ripen in late fall, and are used as Christmas decorations. The berries were prized by Indians, and others, as a food source.

Often called California holly, it is said Hollywood, California takes its name from the abundance of these shrubs once growing there.

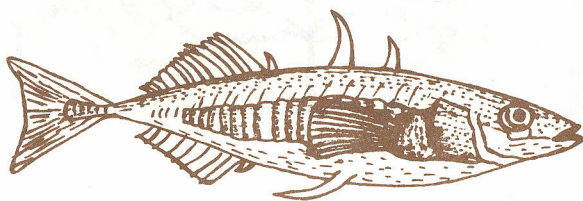


12 Even as summer wanes surface water remains along certain portions of the creekbed below, attracting animal life.

These are usually low areas where underground water re-appears on the surface periodically.

Gazing into some of these pools you may catch a glimpse of a small, minnow-sized fish, the **THREE-SPINED STICKLEBACK**, and wonder how it survives when the pools dry up. The stickleback has the amazing ability to bury itself in mud for long periods of time, re-emerging when water returns to the creekbed.

The pools provide homes for many types of aquatic insects, snails and plants, as well as drinking water for the monument's wildlife.



11 Erosion is always at work. This boulder's surface was once only bare rock. Now a thick carpet of **MOSS** grows here.

The surface was covered first with lichens, which grow very slowly, wearing down the rock over a long period of time.

Once the surface has been conditioned mosses are able to grow, breaking the rock down even more so higher plants can take root in the small amount of soil produced.

All rocks of Pinnacles will ultimately "return to soil" as this is a constant process.

Though moss may appear very dry during summer months, a little water poured over it will quickly revive it.

13 Ferns may grow quite large in well-watered areas. The largest fern at Pinnacles is the **CHAIN FERN**, with 4-to 6-foot fronds.

Ferns reproduce by spores rather than seeds. Spores on this species, arranged in chainlike rows on the underside of the leaves, give the plant its name.

Chain ferns require abundant water and are found in creekbeds, or near springs and seeps. Moses Spring and Fern Chamber in Upper Bear Gulch are fine examples.

Indians used the tender young coiled shoots ("fiddleheads") of this fern as a vegetable.



14 CALIFORNIA SYCAMORES

tower above other trees
along Bear Gulch Trail.

Large plates scale off of
the mottled gray and white bark
as the tree grows.

The large, light-green leaves,
covered below with white fuzz,
turn golden in the fall.

The fruit,
a round prickly ball
about 1½ inches across,
remains on the tree through winter,
gradually breaking up,
releasing winged nutlets.



16

This creek drains Bear Gulch
and Condor Gulch
(the side canyon leading up
to the High Peaks).

After a heavy rainfall
water and debris surge through here.
Over many years this has formed
a **WATERFALL**,
where less resistant rock below
has washed away
leaving more resistant rock above it
forming the lip of the fall.

Dry most of the year,
the fall can be a roaring cascade
in winter and early spring.
Water's tremendous cutting power
carries away large amounts
of material.

The shiny, olive-green rock
in the talus slope here is **PERLITE**,
a volcanic glass
formed by rapid cooling
much like obsidian.

CAUTION: STAY ON THE TRAIL HERE.
"TALUS" MEANS LOOSE ROCK.
A MISJUDGED STEP COULD RESULT
IN SERIOUS INJURY.

15

Impressive **COAST LIVE OAKS**
grow along the trail.
The broadly rounded crown and
massive gray trunk
is a common sight
throughout most of coastal California.



Great branches bear thick leaves,
dark green and shiny,
with prickly edges cupped downward.
Unlike most species of oak,
they remain on the tree year-round.

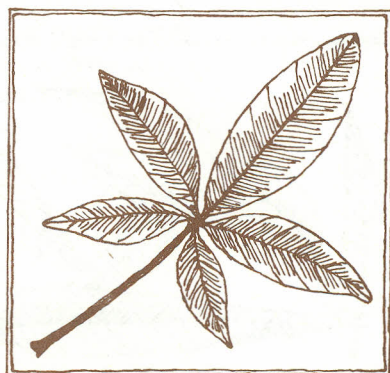
In the fall
the tree bears long slender acorns
set in fringed cups.

Acorns
were the most important food source
to California Indians,
who ground them into a flour
which was leached,
then used in a variety of ways.

17

One of our most beautiful
native trees is
CALIFORNIA BUCKEYE,
which bears large erect spikes
of creamy-white flowers
in May and June.

It often has several trunks
growing from the same root.
Bright green leaves
appear in early spring,
turn brown by late summer
and fall off;
this conserves water
through hot dry periods,
and exposes pear-shaped capsules
which enlarge and eventually split open,
releasing large shiny seeds
resembling chestnuts.
These are poisonous unless leached.



18 Some chaparral plants are mistaken for species of oak. Such is the case with **HOLLY-LEAF CHERRY**, a typical shrub of moist chaparral areas. Its dark-green prickly leaves reflect the sunlight. Clusters of creamy-white flowers appear in late spring. Summer finds edible fruit on its branches. The dark purple cherry has a very large pit and very little pulp, but is widely eaten by wildlife.

Indians made an alcoholic drink from the fermented fruit, and ground the seed kernel to mix with acorn flour.



19 The trail wanders away from the creek. Chaparral-type plants become dominant.

CALIFORNIA BUCKWHEAT grows in abundance on either side of the trail. It thrives in dry areas due to its narrow leaves and woody structure.

Tiny pinkish-white flowers in ball-like clusters appear in late spring atop each branchlet. By late summer, the blossoms turn a coppery, reddish-brown color.

Bees flock to these flowers which are good honey producers.

20 Look closely at this thick stand of Digger pines. Small clumps of yellow-orange growth cling to some of the branches.

This is **DWARF MISTLETOE**, a succulent-looking parasite closely related to traditional mistletoe.

Its small scaly leaves contain no chlorophyll. Trees infected with it ultimately die from its presence, and the parasite moves on.

The mature mistletoe fruit explodes, releasing sticky seeds which adhere to nearby trees.

Natural fires are probably the best way of controlling its spread.

21 This bend in the creek offers a fine cross-section of *riparian* (water-loving) plants. The large **CALIFORNIA SYCAMORE** towers above the smaller, misshapen **ARROYO WILLOW**.

Growing at the base of these trees are **BLACKBERRIES**, spearlike **SEDGE** grass, and two species of fern. Others in this group include **WILD ROSE**, **POISON OAK**, **ELDERBERRY**, and **NETTLE**.

The hillside across the road is quite a contrast from the streambed. It is the drier *foothill-woodland* dominated by **BLUE OAK**, **DIGGER PINE** and open grassland.

Farther up the hill, *chaparral* becomes evident, eventually giving way to the bare-rock (*xeric*) community of High Peaks pinnacled rocks.

All these communities are important in the pattern of life at Pinnacles.

A SHORT WALK

Today I walked
midst sycamores
where slow seeps water
from earth,
watched damselflies sweep
a small course,
saw bright butterflies;
things of worth.

A hidden trail
leaf-littered
goes among trees
by a stream.
Through shady ways
cool breezes waft slow,
as entranced by leafy shadows
I dream.

Poem by Ralph C. Webb

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