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E. P. LEAVITT

Acting Superintendent



“LEARN TO READ THE TRAIL-SIDE”

YOSEMITE NATIONAL PARK, CALIF. 1927

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# YOSEMITE NATURE NOTES

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## THE CALAVARAS WARBLER

Enid Michael

The Calaveras warbler (*Cermivora ruficapilla gutturalis*) is the warbler here considered. This warbler's general coloration is yellow—clear yellow below and greenish yellow above. A blue-gray cap extends over the crown and down the back of the neck; the throat is clear yellow and there are no markings whatever of either black or white. The female is similar to the male, but the colors are somewhat duller. While the general coloration of the Calaveras is yellow, this warbler lacks the brilliant golden yellows of the Yellow and Pileolated warblers. Like all the common warblers of the Yosemite, the Calaveras warblers are small birds, trimly built and actively alert in their feeding habits. From their general feeding habits it is safe to assume that they feed almost entirely on insect life.

During the spring and summer months six different species of warblers are to be found commonly in the Yosemite valley. Each of the different species has different foraging areas and different tastes in vegetational associations. The Calaveras warblers show a decided preference for the maples and Kellogg oaks. They do not, however, follow the oaks out onto the level valley floor, but stick to the forest-covered talus slopes close to the walls. When they first arrive in spring (somewhere about the beginning of the last week in April) they spend their days among the freshly leafing oaks on the warm north side of the valley. Later in the season when the sun climbs higher and the days grow warm, many of these birds move across the valley into the shadow of the great south wall to take up their stations for the

nesting season among their beloved maples.

Calaveras warblers feed rather well up in the leafy crowns of their favorite trees. Small yellow birds feeding in such a situation would be most difficult to identify were they to remain silent. Fortunately, however, for several months after their arrival the Calaveras warblers are persistent singers. To the casual observer all the warbler songs are pretty much alike. However, the trained ear senses a difference and by the trained ear one may better differentiate the warblers than by medium of sight, for often the singers may be hidden away in the foliage, or they may be seen in the glare of the sun when their colors would prove confusing.

When our warblers arrive in the valley they are in full song. As the songs of the different warblers are all more or less similar, it is great sport to walk out on a spring morning to exercise the ear in the delicate art of identifying the different singers by sound alone. And then to verify the correctness of one's decisions one must then see the singing bird; this too, is often a task that requires patience. A good way to memorize the songs of birds is to choose a series of words that seem to fit the song. To my ear the Calaveras warbler seems to say "witchie, witchie, witchie." These words, rapidly repeated in a shrill voice, are followed by a Canary like thrill which ends the song.

A peculiar thing about the Calaveras warblers is while they habitually feed well up in the trees they nest upon the ground. All of our other warblers nest at about the level of their principal foraging lanes.

# THE FERNS OF YOSEMITE

By Grace Benton

Yosemite School of Field Natural History

One of the most beautiful sights that Yosemite has to offer its visitors is too often overlooked by those within this wonderland of nature. The great granite walls tower above the valley floor; the pines, the oaks, and the firs, strive to reach the top; the birds and flowers present an ever-changing vista of song and color, but the ferns of Yosemite prefer to hide their lacy loveliness of leaf and marvelous variety of form in the cool, shadowy thickets along the streams or in the rocky clefts of the canyon walls.

As a family the ferns are older than the flowering plants, having first appeared in the early part of the Paleozoic era. During the Carboniferous age they reached their maximum of development and were the dominant type of vegetation. For the story of these early ferns we are dependent upon the fossils of that day. Much of our coal has been formed from fern groups no longer growing upon the earth. Present day ferns made their appearance in the middle Mesozoic time and are best represented by the Polypodiaceae. Many interesting ferns have gradually diminished in number as the flowering plants have become more and more numerous. But for those who seek them out, many beautiful specimens may still be seen, varying from the dwarf ferns found well within the Arctic Circle to the magnificent tree ferns of the tropics.

In the temperate regions the larger ferns, with their symmetrical, feather-like fronds, are most abundant in the Upper Sonoran and Transition Zones. They like cool, shady situations with plenty of water and grow most luxuriantly on well-protected northern exposures. The smaller cliff ferns are less particular and flourish under rocky ledges where little veins of soil are sometimes moistened by tiny rivu-

lets. An uncovering of close-set hairs or over-lapping scales enables them to retain moisture, and when the dry season comes their tightly rolled fronds are an added protection against heat and drought.

### The Process of Reproduction

The highest group of flowerless plants reproduces by "alternation of generations"; that is, the fern exists in two separate phases, the sexual and the non-sexual. The plant with which we are familiar represents the non-sexual stage and is called the fern sporophyte, since it bears, usually on the under side of some of its leaves, small spore cases or sporangia. Clusters of these sporangia are known as sori and are often partly protected by a thin covering known as the indusium.

The spores within these spore cases take the place of the seed in a flowering plant, and when they are mature they are hurled forcibly from the plant by the cleverly constructed sporangia. Thousands of these tiny spores, or germ cells, are borne by a single frond, but only those fortunate enough to land in a moist place are able to reproduce. By cell division the spore grows rapidly and becomes a thin green scale, the prothallium or sexual plant. On its under surface are borne female organs, or archegonia, and male organs, or antheridia. From the antheridia are released spermatozoids with motile cilia which enable them to swim in a film of water and reach the archegonia where fertilization takes place. The resulting cell, or zygote, produces the new fern plant of the non-sexual type, sending up a first leaf and down a first root and also a root by means of which the tiny plant receives nourishment for a time from the prothallium, or gametophyte. As the new plant sends out more leaves the gametophyte withers and disappears, having fin-

ished the work necessary for reproduction.

#### The California Grape Fern

An interesting relative of the "true ferns," found in Yosemite, is the *Botrychium californicum*, or California grape-fern of the Ophioglossaceae, or Adder's-tongue family. This plant, like the fern, has a life cycle of two well-marked phases, the sporophyte and the gametophyte. In the conspicuous sporophyte form the lacy, sterile blade is surmounted by a long stalked fruiting panicle which withers and disappears after the spores have been shed. The California grape-fern likes shade and moisture and is most frequently found among the brackens along Tenaya creek, well-shaded by the trees and shrubs. Although fern-like in habits, its thick leaves and fleshy stalks distinguish it from its more fragile cousins.

The Polypodiaceae, or fern family, may be divided according to the type of sori into three general groups: Those having sori without indusia; those having the sori marginal and covered by the altered, reflexed lobe of the leaf, and those having the sori not marginal, but each covered with a special indusium.

A representative of the first group, those having sori without indusia, found in Yosemite valley is the *Gymnogramma triangularis*, or gold fern. The rigid, brownish-black stems grow in clusters supporting the pentagonal shaped blades, which are thickly covered on the under side with a deep yellow powder. The sori cover the backs of the pinnae. The gold fern is a lover of moist places and may be found in rocky crevices at the foot of Yosemite Falls.

A number of representatives of the second group, those having marginal sori covered by the reflex margin of the frond, are plentiful in the valley. Four of the *Pellaeas* may be found along the rocky ledges and canyon walls.

#### The Coffee Fern

*Pellaea andromedaefolia*, or the

coffee fern, is more common in the Upper Sonoran Zone about El Portal, but a few may be found among the rocks of Indian Canyon. It is the largest of the *Pellaeas* and thrives in the brushy foothills. The loose, open plants with their straw-colored stalks and dull green to reddish-purple leaves are sometimes called sheep fern because the tiny stalks break easily into small, needle-like pieces and may penetrate the intestines if eaten by grazing sheep.

*Pellaea bridgesii*, or bridge's cliff-brake, is a smaller, blue-green plant with narrow fronds, having the pinnae mostly alternate. The sporangia extend about the pinnae in an intra-marginal band, uncovered until curled by drought. It is a fern of the Canadian zone, more common in the rocky crevices about Little Yosemite and below Sentinel Dome than in the valley proper. But a few appear among the boulders of Indian canyon and similar rocky slopes.

*Pellaea densa*, the Oregon cliff-brake, sometimes known as Indian's Dream, grows a thousand feet lower along the ledges and granite pavements. It is smaller and more abundant, occurring in thick, bunched clusters in both Transition and Canadian zones. It is bright green in color, with triangular, tripinnate fronds upon which the sori are crowded in a continuous line.

#### Bird's-Foot Fern

*Pellaea ornithopus*, or bird's-foot fern, is still more plentiful along the dryer valley walls, where it has climbed from the upper Sonoran home. It is an evergreen plant, dry and brittle, the lower clusters of pinnae resembling the print of a bird's foot. The sori are well covered by the reflexed leaf margins. This fern is sometimes called tea fern, poison fern, or black fern, since it, too, may cause the death of sheep.

Another small fern especially adapted to the hot dry slopes of canyon walls with a southern exposure, is *Cheilanthes intertexta*, the coastal lip-fern. It is a low-growing plant with densely clustered stalks and crowded pinnae. It

is heavily covered beneath with a reddish-brown wool and has the indusium formed by recurved margins. It is another typical upper Sonoran plant, which finds a place on the warm slopes of Indian canyon.

Quite opposite in its tastes from these drought-resisting cliff ferns is the adiantum pedatum, or five finger fern, whose filmy leaf tissue is dependent upon the mist and coolness of protected recesses for existence. It is this fern of which John Muir says: "The finest of all the rock ferns is adiantum pedatum, lover of waterfalls and the lightest waftings of irised spray. No other Sierra fern is so constant a companion of white spray-covered streams, or tells so well their wild thundering music. The homes it loves best are cave-like hollows beside the main falls, where it can float its plumes on their dewy breath, safely sheltered from the heavy spray-laden blasts. Many of these moss-lined chambers, so moist, and brightly colored with rainbow light certain thousands of these happy ferns clinging to the emerald walls by the slightest holds, reaching out the most wonderfully delicate fingered fronds on dark, glossy stalks, sensitive, tremulous, all alive, in an attitude of eager attention; throbbing in unison with every motion and tone of the resounding waters, compliant to their faintest impulses, moving each division of the frond separately at times as if fingering the music, playing on invisible keys" (John Muir, *Our National Parks* p. 167.)

Although less common today than in the days of which John Muir writes, it may still be found in graceful beauty along the Mist Trail, in Tenay and Indian canyons, and below Sentinel rock. In late July great clusters of this beautiful fern adorn the higher crevices of the upper Ledge trail. **The Bracken or Common Brake**

A less dainty, but better known and more widely distributed fern is *Pteris aquilina*, the bracken or common brake, known in varying forms throughout the world. As its name implies, its wide spreading

fronds resemble an eagle's wings. It varies in height from a few inches to several feet and is a fern of waste places that are not too shaded. "It is found both in woodland and in the open fields; its favorite haunt is neither, but is that half-way ground where man leaves off and nature begins, the cypripedium or the thickset" (Clute, *Our Ferns in Their Haunts*.)

It has a small smooth, black rootstock that may send up fronds fifteen or twenty feet from the parent plant and the sori are borne on a continuous marginal receptacle covered by the double indusium. The rootstocks are sometimes ground and mixed with flour to make bread, while the young fronds may be used as a vegetable resembling asparagus. The fronds may also be used in tanning leather, packing fish and fruit, thatching houses and bedding stock. We are even told that the sori, caught at midnight, render the possessor invisible. It is found in great abundance all over the floor of the valley and extends well through the Canadian zone. John Muir tells us that "On the level sandy floors of Yosemite valley it often attains a height of six to eight feet in fields thirty or forty acres in extent, the magnificent fronds outspread in a nearly horizontal position, forming a ceiling beneath which one may walk erect in delightful mellow shade" (John Muir, *"Our National Parks"* p. 165.)

Along the main traveled paths it no longer attains this splendid size, but in a few well protected thickets along Tenaya creek, above Mirror lake, it may still be seen in all the glory of earlier days. John Muir pictures this fern with a loving hand when he says: "No other fern does so much for the color glory of autumn with its browns and reds and yellows changing and blending. Even after lying dead all winter beneath the snow it spreads a lively brown mantle over the desolate ground, until the young fronds, with a noble display of faith and hope, come rolling up into the light through the midst of the beautiful ruins." (John Muir, *"Our National Parks"* p. 165.)

### The Brittle or Bladder Fern

Perhaps the smallest representative of the third group, those having the sori covered with a special indusium and not marginal, found commonly in Yosemite, is *Cystopteris fragilis*, the brittle or bladder fern. The sori of this species are roundish and separate, covered with a hood-like indusium which is thrust back by the sporangia before maturity.

This is truly a fragile, delicate fern of shaded, rocky situations, where there is plenty of moisture. It is a Transition species, sometimes found in upper Sonoran and Canadian zones where moisture and soil conditions are favorable. This fern is common along the Ledge trail, in the upper part of Indian Canyon and along the Mist trail.

### The Lady Fern

Another moisture-loving fern of Yosemite is the *Asplenium filix femina*, or lady fern. This graceful plant grows in vase-like clumps along the shaded meadow streams, sometimes climbing well up the canyons, where there is plenty of water. It shows much variation in size and shape of frond and in cutting of pinnae, but presents always a feathery and delicate airiness. The sori are oblong to oval with the indusia toothed or ciliate on the free edge. It is common in shaded spots along the Ledge trail, in the marsh above Camp Curry, along the river near Pohono bridge and well up Indian canyon.

A hardier, though less common fern in Yosemite, is the *Polystichum munifolium*, or sworn fern. The long, narrow, simply pinnate fronds on their scaly, woody stems bear sori in close medial rows, often more plentiful near the ends of the leaf. The plants occur in widely scattered places along stony slopes from the forest above Little Yosemite down to the hills near El Portal.

A more common fern of the Upper Sonoran and transition zones, found in half moist and partly shaded situations, is the *Aspidium rigidum argutum*, or rigid wood

fern. In general contour the frond has somewhat the appearance of the lady fern, but it is darker in color, less graceful in appearance, and less finely toothed, with the indusia strongly convex, but not toothed. It is common among the rocks along any of the dryer trails in the park.

Next in size to the common bracken is *Woodwardia radicans*, the great chain fern, with its long staked but unbranched leaves, standing in circular clumps. The linear blades are deeply pinnatifid with the sori forming a chain-like row on each side of the mid-ribs of the segments. It flourishes best in springy spots, where there is all-the-year seepage, and beautiful clusters may be seen below El Capitan. A few scattered plants also appear between the stream and Vernal Falls trail near Happy Isles.

### The Altitudinal Variation of Ferns

In studying the frequency of the various species of ferns in Yosemite the trail from Happy Isles to Clouds' Rest was selected as one affording considerable altitudinal variation. Since most ferns grow in more or less thick clusters, the numbers represent clumps of ferns visible along the trail-side. *Pteris aquilina* has the widest range and greatest variation, with 3842 appearances. *Aspidium rigidum*, while much less frequent, was seen 131 times, most commonly along the lower trail. *Cystopteris fragilis* appeared eighty-two times along the Mist trail and *Asplenium filix-femina* was almost as frequent, appearing seventy-two times. Also along the Mist trail *Adiantum pedatum* was observed twenty-nine times, in nearly every case in inaccessible situations. Along the granite ledges above Nevada falls and near Little Yosemite Hikers' camp *Pellaea bridgesii* was seen twenty times, while in widely scattered situations *Polystichum munifolium* appeared eleven times. Four bunches of *Pellaea densa* were noted in rocky crevices, and just beyond Happy Isles three large clumps of *Woodwardia radicans* were noted.

In the shaded meadows or along the streams of the ledges and canyons *Applenium filix-femina* would almost rival *Pteris quilina* in frequency; certainly it would far outnumber the *Aspidium rigidum argutum* of Clouds' Rest trail. *Pellaea ornithopus* and *Cheilanthes intertexta* must be sought on the sunny granite slopes of such places as Indian canyon and Eagle creek, where they appear earlier in the season in considerable numbers.

This slight survey of Yosemite ferns affords but a glimpse of a most interesting field, but it is presented as a stepping stone to a larger and more intimate knowledge of the ferns of Mendocino county, where the *Polypodiaceae* are "the very emblem of the forest,

and its shade, a symbol of its cool solitude," (W. R. Maxon—"Ferns as a Hobby") and a never ending source of enjoyment.

#### BIBLIOGRAPHY

1. Atoms, Leroy—An Illustrated Flora of the Pacific States. Stanford University Press, 1923.

2. Comstock—Handbook of Nature Study. Doubleday, Page & Co., New York, 1920.

3. Hall, H. M. and C. C.—A Yosemite Flora. Paul Elder and Company, San Francisco, 1912.

4. Maxon, William R.—Ferns as a Hobby.

5. Jepson, Willis Linn—A Manual of the Flowering Plants of California. Sather Gate Bookshop, Berkeley, Calif., 1925.

## How Long Will a Bear Stay Up a Tree?

A GROUP of nature students were crossing Yosemite valley through the automobile camps when a camper attracted their attention to a black bear about forty feet up in a large yellow pine. According to the statements of nearby campers, this bear had gone up the tree the night before. A man and boy had slept beneath the tree, and apparently the bear had been afraid to come down. The consequent interest of campers which resulted in crowds gathering at the foot of the tree had continued to keep the bear treed. Thus, if the campers' statement can be believed, the bear had been in the tree since 10 o'clock the preceding evening and accordingly had had to make himself comfortable for more than twelve hours. As the party watched the bear they noted that he had become tired of standing on his feet on a limb and had seated himself on his haunches with the front feet grasping an upper limb. On returning to the spot an hour later the bear was still in the tree apparently taking a noon-day nap. Having searching out a large limb, he was lying flat on his stomach with his four legs hanging down on all sides. His head also was flat on the limb and he was apparently snoozing. Unfortunately, it was not possible to see exactly how long the bear did stay in the tree. Undoubtedly hunger would eventually drive him down. The main point is that black bears are fairly at home in trees, and by using a number of different postures they are able to make themselves comfortable.—H. C. Bryant.



# FLYING SQUIRRELS IN YOSEMITE CAMPS

By H. C. Bryant

Although everyone is pleased with the bright colors and interesting actions of chipmunks there is no member of the squirrel family that is more attractive than the flying squirrel. As a rule this animal is but a name to the average person, for though fairly common in forested districts, it forages at night and consequently is seldom seen. Lumbermen report seeing flying squirrels flying out of the top of a tree as it is felled and bird students have the occasional experience of driving one out in broad daylight from some old woodpecker hole in a stub. A few years ago nature guides in Yosemite were able to give a thrill to their students by disturbing a flying squirrel from his noon day siesta in such an old stub. Those who have tried keeping flying squirrels as pets have always considered them the very best.

Many a camper has heard something land on the roof of his tent and after a scuttling noise along the inclined surface they hear no more sound. Had they been able to watch the maker of the noise they would have discovered it a peculiar flattened squirrel with soft fur, large eyes and a peculiar flattened tail. Furthermore, the animal would look nearly as wide as long because the skin stretches between the fore and hind legs.

Only last week as a party sat about the campfire they saw some sort of an animal go sailing through the air and go "plunk" against the side of a pine tree near a feeding

table for birds. As they watched a flying squirrel, which it proved to be, scuttled down the side of the tree with a scratching noise, look up a position on the feeding table and began gnawing chunks of bread while holding them with his front feet. Hardly a week before a flying squirrel had been seen at the same location and had been approached with a flashlight so that only three feet separated the squirrel from the observer.

Some four or five years ago some waitresses at Yosemite Lodge began feeding flying squirrels on a certain beam along side of their tent. Soon thereafter squirrels came regularly about 9 o'clock each evening to feed. Later the girls began bringing cake instead of bread and thereafter the squirrels would leave the bread in preference to the cake. Many a group of nature students made their way to this particular location to observe under an electric light these interesting animals as they gathered their food.

It should be understood that a flying squirrel does not actually fly. It has no true wings nor is there any movement of the "wings." However, the skin does give a sufficient expanse of surface to support the animal in the air. In reality a flying squirrel volplanes from a higher point on one tree to a lower point on another tree.

The observing camper in Yosemite will be able to locate flying squirrels by the scratching noise on the side of trees or by noting some sizable creature sailing through the air from one tree to another. Of course the best opportunities are afforded around some food table where the flying squirrels are accustomed to gather in their search for food.

## "OLD HORNY"



## YOSEMITE'S REMARKABLE UNICORN BUCK

Scientists, and nature lovers alike, are much interested in this buck that carries a supernumerary antler. Apparently the third antler is shed and renewed annually, just as are the normal members of the animal's headgear.

Photo by J. V. LLOYD



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