

YOSEMITE NATURE NOTES

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*Governor's Group, Mariposa Grove of Giant Sequoias
—Ralph Anderson*



Courtesy California Department of Fish and Game

California Department of Fish and Game airplane shown at moment of release of trout fingerlings being planted in one of Mammoth Lakes, northern Mono County, east of Yosemite.

Yosemite Nature Notes

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YOSEMITE LAKES SPRINKLED WITH AIRBORNE TROUT

By Orthello L. Wallis and Glenn D. Gallison, Park Rangers

Rainbow trout fingerlings literally sprinkled from the skies over Yosemite on August 13, 1952, when 107,800 of them were planted from an airplane into 16 remote back-country lakes. This was the initial intensive stocking of trout by plane in Yosemite National Park. By mid-July 1953, these fish had grown to lengths of 7½ to 12½ inches.

Only Dorothy Lake, isolated in the extreme northern portion of the park, had been previously planted by plane. In August 1951, 10,000 rainbow trout from the Hot Creek Fish Hatchery were released there.

Preliminary lake surveys, made by the authors to determine the need and the general suitability of the waters for restocking, preceded the actual 1952 plane-planting operations. On one 10-day survey trip into the northern section of the park the authors traveled over 100 miles, most of the distance being covered by cross-country hiking. On this expedition observations were made in 43 lakes.

Ten of these lakes and six others previously investigated were selected to be planted by plane. The trout populations, originating from

earlier plants, were greatly diminished or totally absent in each of these waters. The surveys were conducted as a project of the Yosemite Trout Investigations, made possible by the interest and generous donation of Mrs. Mary Curry Tresidder.*

The Yosemite airplane-planting operations began at 2:45 on the morning of August 13, 1952, when two pickup trucks of the California Department of Fish and Game and one truck of the National Park Service were loaded with the trout at the Yosemite Fish Hatchery. The trucks then left for the Merced Airport, 85 miles away. There the first one-third of the fish were transferred from the carrying cans on the trucks to much lighter 10-gallon aluminum cans, which were placed aboard the plane. At 6:27 a.m. the plane took off on the initial flight and headed eastward toward the Yosemite Sierra.

Not long afterward, at Emeric Lake in the eastern part of the park, the plane swept down low over the water and in a puff of mist released the first trout to the amazement of two early-rising campers who were preparing their breakfast. A few minutes later the plane glided across

*See "For Better Fishing" by Orthello L. Wallis, *Yosemite Nature Notes* 32(5):43-47, May 1953.

Vogelsang Pass and discharged a second batch of fingerlings into Vogelsang Lake. This operation was observed by Lloyd Lucas, manager of the nearby High Sierra Camp, and by the senior author.

The third plant of this flight was made in Lower Ottoway Lake situated a few air miles to the southwest. Here Park Rangers Rod Broyles and John Townsley witnessed the stocking activity. On this primary flight, one other lake was also seeded with fish.

The remaining lakes located in the northwest portion of the park were stocked on the following two flights. The entire planting schedule in which 107,800 fingerlings were stocked in 16 lakes was completed by 10:40 a.m. that day. Each flight from the airport to the lakes took approximately one-half hour.

Planting of trout by airplane in the isolated lakes of California's high Sierra is the result of years of experimenting by the California State fishery experts. The initial work was begun in 1946 and 1947. These studies revealed the important fact that fingerling trout could survive this method of stocking with minimum loss.

By 1949 the first practical application of the new technique was made at 150 lakes, into which a total of 300,000 trout were dropped. A full-scale program was undertaken the following year when 1,633,275 trout were dropped into 426 lakes. During the next three seasons the following numbers of trout were planted by this method: 1951, 2,769,000 in 632 lakes; 1952, more than 2,600,000 in 610 lakes; 1953, 2,864,000 in 662 lakes.

The plane used is a twin-engined C-45 Beechcraft which has the power, carrying capacity, and maneuverability necessary to transport the

trout to the high-elevation lakes. It is equipped with an aerating plant, operated off the plane's generator, to furnish the fingerlings with the oxygen necessary for life while en route. A tank or hopper with a capacity of 50 gallons is constructed in the camera porthole in the floor of the plane. A small opening located behind the hopper serves as a sighting device.



California State fish hatchery at Happy Isles.

Each lake to be stocked is identified from the air by the recognition of its shape and location, which have been determined by previous study of the terrain on aerial photos or by ground investigation. With the knowledge gained on the surveys, the junior author, who went along on each flight as an observer, pointed out each lake to the pilot quickly and accurately.

When the lake is spotted, the small trout are poured into the hopper and the plane descends for the planting run over the lake. The instant the body of water appears in the sighting hole, the tripping mechanism is released to open the bottom of the hopper and allow the fish and the water to fall free. The water immediately turns into mist. The trout, after surging forward a short distance, soon plummet straight downward at a rate of nearly 30 miles per hour, and strike the lake surface like

giant drops of rain. The junior author riding in the plane was able to see the fish actually hitting the water in each of the lakes except one on which a slight breeze ruffled the water surface.

While releasing the fingerlings, the plane cruises at a speed of approximately 125 miles per hour and travels at an elevation of 300 to 800 feet above the water. The planting is done between the hours of 5 and 10 in the morning when the air is calm and clear and few disturbing air currents are present. Pilot Al Reese and his copilot Carol Faist have become so proficient at their business of dropping trout from the air that they can land the fish in most any lake which exceeds 2 acres in size.

This method of planting trout in remote lakes saves time, expense, and effort. By airplane, it is now possible in a few minutes to restock lakes which would be accessible on the ground only by long, tedious, overnight packstock trips. The airplane stocking of 16 of Yosemite's lakes was completed in less than one day. If the fish had been carried in to the same lakes by packstock, the schedule would have required 10 days. It would have been necessary to make 4 lengthy overnight journeys and 3 long single-day trips covering a distance of over 179 miles on horseback.

By plane these lakes were planted at less than one-third the cost which would have been required to do the task by pack animal. The total cost of the Yosemite operation was greater than that of the average plane-planting schedules because of the distance of the hatchery from the airport, and the mileage from the airport to the bodies of water to be planted. In the average operations, the airfield is a loser to the source of

the fish and to the lakes to be stocked. Officials of the California Department of Fish and Game have determined that, in their overall program, the expense of planting by plane in 1953 was \$1.25 per thousand fingerlings as compared with \$20.00 per thousand to stock the same waters by packtrain.

Annual investigations will be conducted in Yosemite to determine the success of trout populations planted by this new method. Although it is more practical at present to stock the readily accessible waters by former methods, planting of the remoter lakes by plane will eliminate the long, difficult packtrips.

During July 1953 the senior author made observations in 13 of these plane-planted lakes. The investigations revealed that the trout which had been released at 154 fish per ounce had grown to lengths of 7½ to 12½ inches in 11 months. The greatest growth was made by the rainbows which were planted in the lower-elevation lakes where the water temperatures are higher and the aquatic foods more abundant.

The stocking of trout by plane in Yosemite is another example of the cooperation between the California Department of Fish and Game and the National Park Service. In this operation the State furnished the trout raised in the Yosemite Fish Hatchery, assisted in taking the fish to the airport, and provided the plane and crew used in the actual planting. The National Park Service conducted the preliminary field investigations and transported some of the fish. The junior author flew along on all three flights as an observer and assisted in spotting the proper lakes to be stocked. The National Park Service administers the trout management program and enforces the protective regulations.

FLOWERS OF THE MERCED'S FLOWING WATER

By Richard J. Hartesveldt, Ranger Naturalist

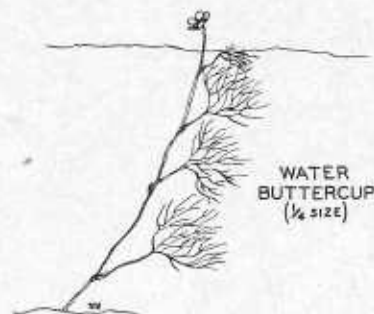
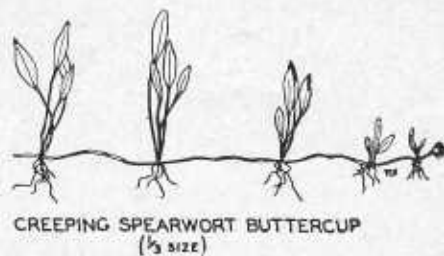
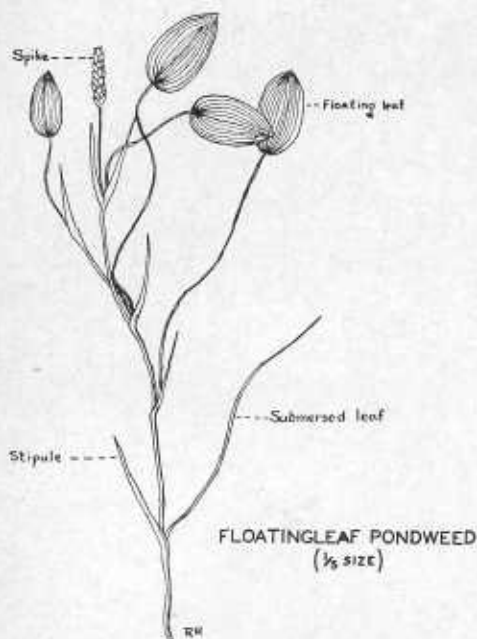
Of all the flowering plants that are found within Yosemite National Park, certainly those that make their home in running water are not among the best known nor the showiest. Few people, even fishermen, are interested in them because in a mountain stream these plants generally play only a small role in forming cover for fish. At first glance it may appear that most water plants have about the same habitat requirements. A closer look will show that aquatic flowering plants, like their drier relatives, inhabit a great variety of ecological situations. Most of them are found growing in the slower moving waters next to the streambanks, but others have been able to adapt themselves to life in swift-flowing water.

Strolling along the Merced River while wearing a bathing suit and a pair of tennis shoes (for the sake of one's feet), one may encounter several species of flowering plants living in the flowing water. Early in the spring when the water is high, the number of species established there is vastly increased. If the water were always this high, many of these species would succumb. By midsummer there are still several species growing in the river, and these are truly aquatics.

One plant that I was surprised to find in several sheltered localities along the Merced River was the floatingleaf pondweed (*Potamogeton natans*). It lives in the almost still water below the end of jutting sandbars. In every case where I observed it the bottom was sandy, the current slow, and the temperature of the

water much warmer than out in the moving stream. Pondlike conditions prevailed and the plant was growing beautifully. It is easily recognized by the broad-ovate floating leaves that are brownish green in color (see illustration). For this reason another descriptive common name is often used: floating brownleaf. These leaves are hinged to long, slender petioles. The plant has another kind of leaf which is submerged; these are long and linear and may sometimes be confused with the long stipules that form at the nodes. The flowers are borne in inconspicuous spikes which just protrude above the surface of the water in order that they may be pollinated by the wind. One large colony of these plants is located on the south side of the river a few hundred yards upstream from the Sentinel Bridge. Early in the summer some of the plants were seen out in the river where the current floated them as far down the stream as the stems would allow. Most of this colony is high and dry by the first week in August.

On the sandbar that formed the shelter for the floating brownleaf, and in the adjoining waters near the Sentinel Bridge, as well as in many other similar localities, I found an interesting sedge. The Kellogg sedge (*Carex kelloggi*) is identified by the single male spike and several linear female spikes of simple flowers. These have numerous small scales which are conspicuously dark, contrasting with the light green of the other flower parts. Some clumps of this sedge inhabit fast, shallow water. There the plants are smaller



Some aquatic plants of the Merced River.

and have fewer blossoms with less of the contrasting colors. The leaves and stems are bent over from the current. The clumps have well-developed root systems that bind much fine soil together. Apparently these clumps have broken away from the streambanks and have become lodged in the shallow water where they are tolerant enough of the adverse conditions to continue growth.

In shallow water where the current is moderately slow and the bottom is stony, a peculiar little crowfoot is discovered growing so thickly that it forms mats on the bottom. This is the creeping spearwort buttercup (*Ranunculus flammula* var. *ovalis*), which doesn't resemble the typical members of its genus (see illustration). The stems are long and creeping and they root at the nodes. The small leaves are linear spatulate and are borne on petioles that may measure as much as 2½ inches in

length. Where the water has receded and left the plants up on the banks, the leaves are larger and bright yellow flowers are formed.

A very small plant encountered in or out of the water is the tinker's penny or trailing St. Johnswort (*Hypericum anagalloides*). The small aquatic form whose stems seem to thrive in the flowing water is much smaller than the typical plant on dry land. Like other St. Johnsworts, it has the familiar translucent dots on the leaves. These dots can be seen best with the aid of a hand lens and are a good identifying character.

In the slow-moving water near Camp 7 I found a rather large bed of bittercress (*Cardamine breweri*). The leaves of this member of the mustard family are hairless and crisp, the upper ones compound with 3 to 7 leaflets. The plants closely resemble toothwort (*Dentaria*) and watercress (*Radicula*).

The common horsetail (*Equisetum arvense*) sends its trailing stems beneath the line gravel of swift-flowing water. The narrow leafy stalks may or may not protrude above the surface of the water. I observed that the reproductive stems were growing mostly on the drier banks.

Two species of manna-grass occur in abundance along the shores of the Merced. The northern manna-grass (*Glyceria borealis*) is very tall and has wide leafblades, some of which are 2½ feet long and float with the current on the surface of the water. I found some of the flowering grass near the shore, while sterile plants could be seen in the water to a depth of 4 or 5 feet. A characteristic of the genus is that the sheaths of the leafblades are partly closed and keeled.

The few-flowered or weak manna-grass (*Glyceria pauciflora*) was noted only in limited numbers on rocky bottoms with the creeping buttercup. The leaves of this species are wide and mostly bright green, although some may be purple gray.

The most fascinating plant that I discovered was making its home in the middle of the stream, often in rapid-flowing water to a depth of 2½ feet. The flowers of the water buttercup (*Ranunculus aquatilis*) may be seen blooming above water in the more quiet stretches, or they may bloom several inches beneath the surface where the current is rapid. The five white petals are contrasted sharply with the dark yellow stamens and pistils. The leaves are dissected into numerous filiform segments that are borne on sheathed petioles (see illustration). They are dark green in color and are very limp when taken out of the water. Occasionally, a broad floating leaf can be found. It is certain that these plants cannot reproduce from seed



Anderson

Half Dome and Merced River.

as long as the flowers are submerged in the swift current, so they are able to propagate themselves vegetatively by the means of runners. In the deeper water, seeds seldom mature.

Thus it is apparent that many flowering aquatics have broad floating or emergent leaves, or narrow dissected leaves if growing under the water. The need for broad leaf surfaces for transpiration purposes is absent in the submerged parts of a plant. In species which live either on dry land or in the water, the leaves of the aquatic specimens are generally much smaller than the others. This often makes identification difficult, especially when flowers are absent, but it adds greatly to the interest of an ecological study. If such an interest in these water-loving plants can be acquired despite their lack of showy flowers, a trip along the Merced River can prove most fascinating.

MOUNTAIN QUAIL

By Sam W. Elkins, Ranger Naturalist

The Yosemite visitor who takes himself away from the roads and out on the trails will have many rewards. Perhaps one of the most satisfying will be a chance encounter with a covey of mountain quail (*Oreortyx picta plumifera*). During the months of July and August he can expect to find coveys of young birds with one or both of their parents in the vicinity of mountain springs or at the heads of ravines.

This bird is generally admitted to be the most beautiful of all the members of the quail family found in North America. It is also the largest of those species that may properly be termed quail. From the other quails found in California the mountain form may be distinguished at once by its larger size, rich chestnut throat and sides, the latter bounded by black and white, and by the long slender topknot or plume made of two jet-black feathers that can be made to stand proudly erect, without dipping forward as does the topknot of the valley quail.

Coveys of the mountain quail, or plumed quail as it is also called, are usually rather loosely formed, but they are nevertheless held together by the soft *kow, kow, kow*—notes of the parent birds as they slowly make their way over the forest floor. The covey may be large—as many as 11 or 12 chicks following the parents as they search along the ground for tender young leaves, seeds, or insects, which make up the greatest part of their diet.

When disturbed, the adult bird will frequently take some conspicuous position and utter calls of alarm

which bring about a surprising reaction on the part of the young birds. Instead of scattering, the young will often freeze in their tracks, for they seem to know that their streaked-brown protective coloration is their best defense against a possible enemy. They can hold their places only so long, though, and if a person passes uncomfortably close to one of these immobile chicks, it will come to life and scurry along the ground, or perhaps fly to some nearby tree or bush. Quail, like most of the grouse and partridges, feel most at home on the ground and would rather run than fly. The mountain quail is especially difficult to force into the air. When it does fly it usually does so from behind a tree or bush, which makes it particularly hard to follow.

These young birds and their parents will remain in the higher mountains until late September or October, when instinct will tell them that winter is on the way and that their food will soon be covered with snow and ice. At that time they will begin their peculiar vertical migration, on foot, down the mountainside to the lower elevations. "Old-timers" in the mountains say they can judge how severe the winters will be by how far down the quail travel in their fall migration. During the winter the young usually will band together, where they may be found in large groups until the following spring, when once again, perhaps like some of us, they will "hike" back up the mountainsides to spend the summer in the remote and beautiful parts of our back country.

GETTING TO KNOW THE MOUNTAIN LION

By Lloyd D. Moore, Ranger Naturalist

On June 18 last year, while fishing in Tamarack Creek about 1 mile above the Tamarack Flat campground, I was treated to a rare observation. The trout had been eluding me all afternoon when I happened to notice some large animal tracks in the wet sand next to the creek. The marks had not yet filled with water so I knew they were quite fresh and the maker must be nearby. Dropping my fishing gear, I hurried around a bend in the canyon and there I saw my first mountain lion. It was about 50 yards away and had evidently been awaiting my appearance.

When I first came upon it, the animal was just sitting on its haunches looking at me. Instantly I stopped still in my tracks and we simply stared at one another. After a pause which seemed endless, but couldn't have been more than a few seconds, the lion took to its heels.

The huge cat did not appear to be running hard but in a surprisingly short time it had crossed the meadow into the forest and disappeared. It ran—bounded might better describe the action—in a very loose-jointed but graceful manner with the thick rope-like tail held outstretched as a balance. I paced off one of the strides and found it to be between 10 and 15 feet in length.

As for the size of the animal, I guessed it as being about 2 feet high at the shoulder and slightly higher over the hips. Including the heavy tail, its length must have been over 6 feet. The lion was a light tawny brown in color. Later I mentioned seeing the lion to District Ranger Odin Johnson and he reported that

he had seen one too, but that his was a dark brown in color, so we surmised that there must have been a pair of lions hunting in the region.

Tamarack Flat is an exceptionally favorable site for a lion as it affords a bountiful supply of small mammals for food, as well as a large number of deer. This area is just far enough from the crowds of Yosemite visitors to permit lions to remain there undisturbed, except for a period during the summer season when people are using the campground.

There are many writers who claim that the mountain lion (sometimes called cougar, puma, or even panther) is a cowardly animal. This seems to be based on the fact that the great cat has an inherent fear of man. It is an established fact that when man moves into a region inhabited by a lion, the animal retreats to the more undeveloped areas, returning at times to kill livestock. Because of its predatory habits it is destroyed by stockmen at every chance. There are men who earn their living killing mountain lions. Inasmuch as this magnificent animal has everything to lose at the hand of man and nothing to gain, is it any wonder that it fears the very scent of a human? To call the lion a coward is a mistake—better, call it an intelligent mammal which can still survive mankind simply because it respects the influence of man. No animal which habitually attacks and kills moose, elk, and other large animals can be considered a coward. Possibly the greatest factor contributing to extermination of the mountain lion is its love of horsemeat.

Since I had read quite a bit about mountain lions, I was more startled than frightened by the one at Tamarack. Ernest T. Seton in *Lives of Game Animals* writes that:

The Cougar is a shy creature, avoiding man and perfectly harmless to him under all normal circumstances. . . . and under no circumstances, normal or otherwise, will it turn on him the full measure of power and ferocity that it holds in reserve for such other fellow brutes as may cross its will.

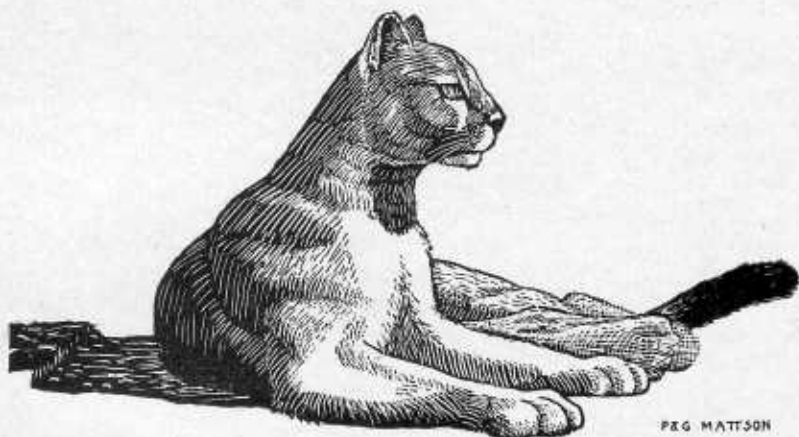
In *Naturalist in La Plata*, W. H. Hudson says this of the animal:

The reactions of the puma to man are peculiar. He actually seems to want to be friendly, and in South America is called by the Spaniards "Amigo del Cristiano," the Christian's friend. It is notorious that where the puma is the only large beast of prey it is perfectly safe for a small child to go out and sleep on the plain. The puma at heart is always a kitten, taking unmeasured delight in its frolics; and when, as often happens, one

lives alone in the desert, it will amuse itself by the hour fighting mock battles or playing at hide-and-seek with imaginary companions, or lying in wait and putting all its wonderful strategy in practice to capture a passing butterfly.

Enos A. Mills mentions in *Watched by Wild Animals* that he has been followed for days at a time by a mountain lion just of its native curiosity.

The mountain lion is one of the most infrequently seen of our Yosemite mammals. Its presence is not countenanced outside of the park. Even inside the protective borders of the national parks it keeps as far from man as its stomach will permit. Occasionally one will make a hunting foray onto the floor of Yosemite Valley, but fortunate indeed is the visitor or resident of Yosemite who gets to see one.



P & G MATTSOON

From "Mammals of Lake Tahoe" by Robert T. Orr. Courtesy of publisher, California Academy of Sciences.

California mountain lion



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Dan Anderson