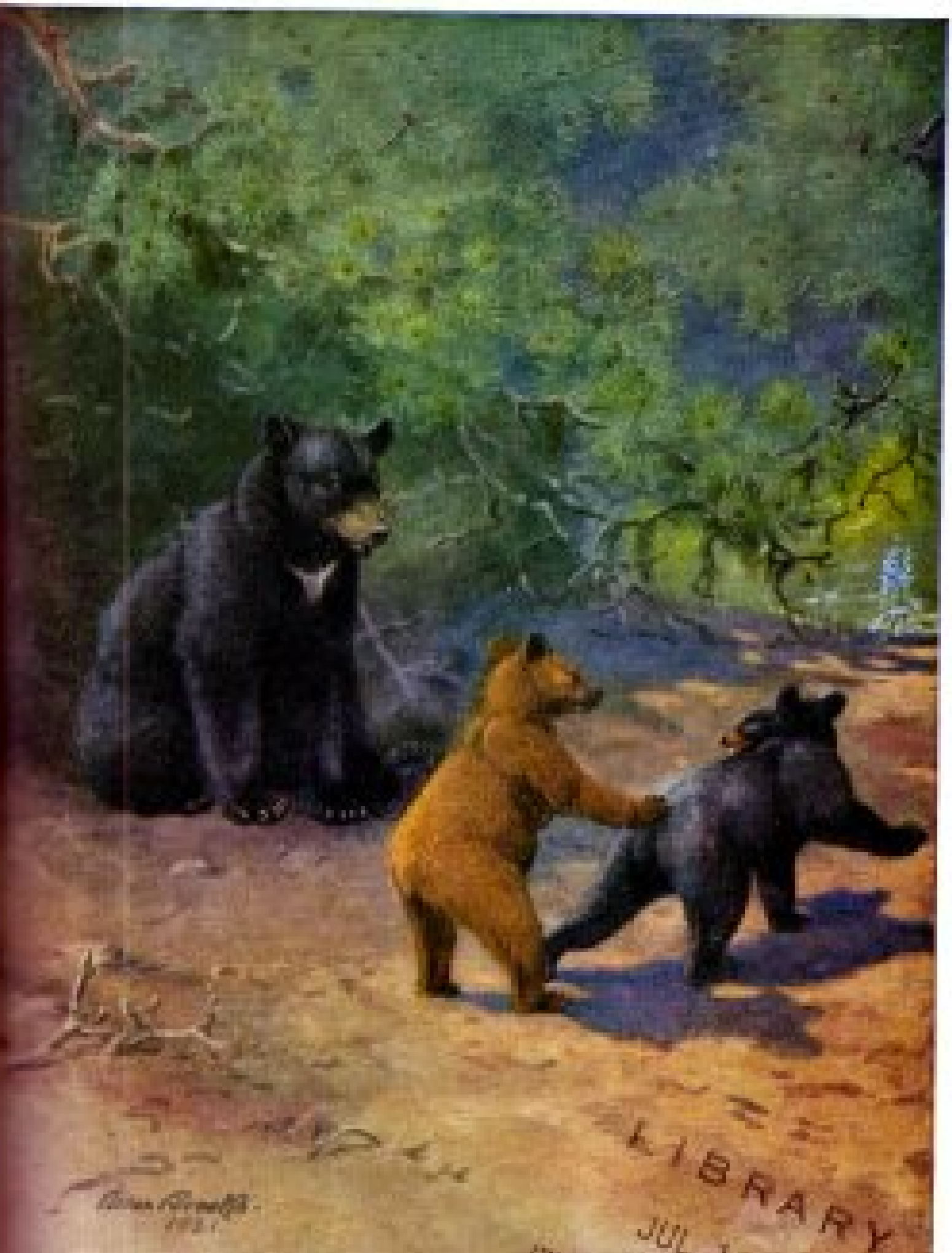
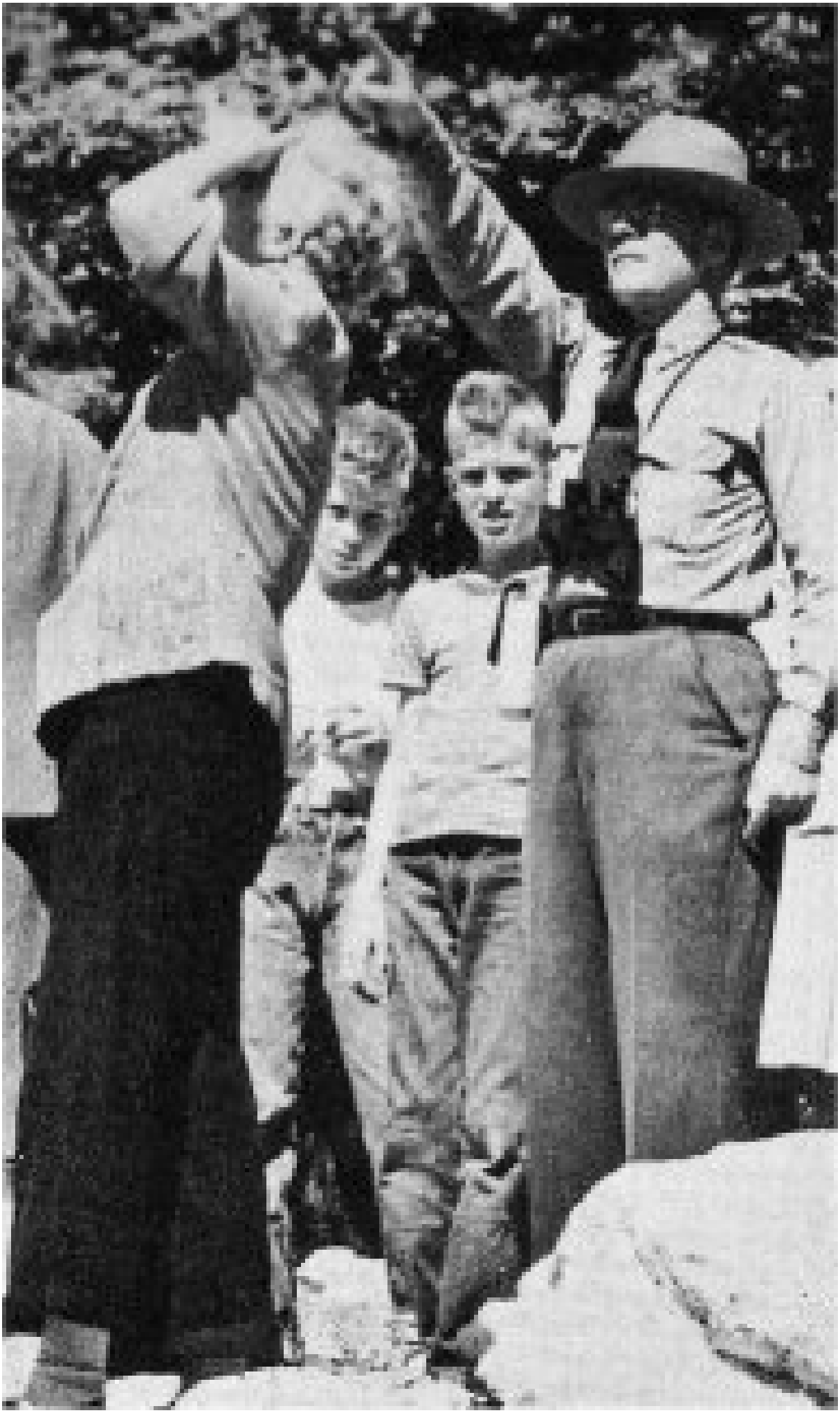
***Mammals of Yosemite National Park* (1952) by Harry C. Parker**



About the Author



Harry Parker leading a

bird walk, 1946

Harry C. Parker was born 1906 and earned an AB in Zoology from Kansas University and a Master's degree in Geography from Clark University. He was director of a natural history center in Massachusetts when he enrolled in the 1936 class of the Yosemite Field School of Natural History. He joined the National Park Service in 1940 at Olympic National Park. After a few months, he transferred to Yosemite as Junior Park Naturalist. He married Katherine "Kit" D. Johnson at the base of El Capitan October 1942. Next month, he left for World War II in the Aleutians where he served as 1st lieutenant in the Quartermaster Corps. After the war, in 1946, he rejoined as Associate Park Naturalist in Yosemite, where he wrote *Mammals of Yosemite* in 1952.

Parker transferred to Crater Lake National Park in 1952, where he was Park Naturalist and Chief Park Naturalist. At Crater Lake he was editor of the *Crater Lake Nature Notes.* In 1955 he transferred to Grand Teton National Park as Chief Park Naturalist. In 1956 he transferred to Washington, D.C. as a specialist in the museum branch and lived in Alexandria, Virginia. Parker was particularly interested in birds and was a member of the American Ornithologists' Union. Harry Parker died in August 9, 1961.

- "Harry C. Parker Joins Museum Staff," *Yosemite Nature Notes* 20(1):4-5 (1941) by M. E. Beatty
- Obituary, Washington *Post,* August 10, 1961
- "Harry Parker" [obituary], *Yosemite Nature Notes* 40(6):132-134 (1961) by Carl P. Russell [PDF]
- Shirley Sargent *Protecting Paradise* (1998)

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Mammals of Yosemite National Park

By
HARRY C. PARKER

SPECIAL NUMBER — PRICE 50 CENTS

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Cover Illustration: Sierra Black Bear. From “Fur-bearing Mammals of California,” by Grinnell, Dixon and Linsdale, courtesy of the Regents of the University of California, the Museum of Vertebrate Zoology, University of California Press, and Mrs. Hilda W. Grinnell.

MAMMALS OF YOSEMITE NATIONAL PARK

By Harry C. Parker, Associate Park Naturalist*

Foreword

Yosemite National Park, aside from its scenic grandeur, offers a large, varied and interesting complement of plant and animal life. This is partially explained by the variety of living conditions here as, for example, the great range in elevation (2,000 - 13,000 feet). Another reason is the policy of protection for all native living things in national parks. This serves to assure present-day visitors the privilege of enjoying them and it predicates that future generations may also be able to enjoy a remnant of the Sierran wilderness with its coincident wildlife.

This pamphlet is for the park visitor who wants to know something about the “wild animals.” Professional scientists who specialize in the study of mammals (mammalogists) are likely to find little new to them here, and the matter may well be dismissed with an invitation to inspect the technical list of species and subspecies on page 104.

With 78 kinds of mammals to treat in these few pages, it is impossible to attempt anything like full coverage. I have taken the same approach that a ranger naturalist might use if he were giving an illustrated talk to the public here in the park. Because of the great popular interest, deer and bear have been dealt with at some length, but the general idea is merely to introduce the reader to the various mammals by giving a few high points of interest.

Like the ranger naturalists who give the talks, I am deeply indebted to all who have gone before, both in Yosemite and elsewhere. Especially am I obligated to the authors of the monumental works *Animal Life in the Yosemite* and *Fur-bearing Mammals of California;* the countless observers who have published articles in *Yosemite Nature Notes*; and those whose vision led to the establishment of the Yosemite Museum, including the fine library and study specimens there.

With the systematic list of technical names, I have received invaluable aid from Dr. Seth B. Benson of the University of California, Berkeley, and Dr. William H. Burt, of the University of Michigan. I am also deeply grateful to my colleagues of the National Park Service in Yosemite, especially the rangers and naturalists, who have been unstinting in their aid, whenever called upon. Mr. and Mrs. A. W. Hood made a major photographic contribution, as did Ralph H. Anderson.

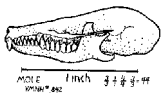
I wish particularly to thank the University of California Press and the California Academy of Sciences for their generosity in lending certain plates which contribute so much to this booklet.

*Mr. Parker is now (June 8, 1952) Park Naturalist at Crater Lake National Park.

HOW TO TELL A BEAR FROM A BEAVER

Mammals comprise those creatures with hair on their bodies and which suckle their young. These form but a small part of the animal kingdom; hence it would be inaccurate to restrict the term “wild animal” just to mammals, despite popular use to the contrary. After all, worms are wild animals; so are frogs; so are birds; so are *millions of kinds* of insects, just to name a few others!

For convenience in identification, scientists have divided mammals into several “orders” or large groups. Six of these are represented in the Yosemite list: Insect-eaters (*Insectivora*); bats (*Chiroptera*); flesh-eaters (*Carnivora*); rodents (*Rodentia*); rabbits and their allies (*Lagomorpha*); and even-toed, hoofed mammals (*Artiodactyla*).



Mole

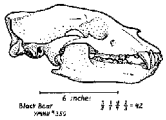
Dental characteristics play a large part in this classification, and, in a general way, indicate the food habits of each group. This fact may assist in keeping the differences between orders in mind. We will, therefore, pursue the subject further, utilizing drawings of the skulls of typical Yosemite species made by Richard G. Miller.* [* See "Food Habits of Yosemite Mammals as Indicated by Their Teeth," *Yosemite Nature Notes*, 24 (2-5), February, March, April and May, 1945.] The symbols that look like a row of fractions represent the number of teeth on one side of the face, reading from front to back, uppers and lowers.

The insect-eaters (moles and shrews) have very sharp teeth which are especially suited for cutting through the hard parts of insects and rapidly chopping up food. This even applies to the jaw teeth, which in most other orders serve as grinders rather than shears. The front teeth are long and sharp, useful for grasping and holding lively prey.

Big Brown Bat

The scientific name for bats, *Chiroptera,* refers to the structure of the wing (Greek *cheir,* hand, plus *pterone,* wing), rather than to food habits (see p. 59). However, the teeth of Yosemite bats are specialized for catching and eating insects, so we may also think of them as "flying insectivores" rather than "flying mice" as is popularly supposed (see below, "Rodents").

The canine or "eye" teeth of Yosemite bats are quite large and well suited for seizing and grasping. The jaw teeth are quite jagged and offset between uppers and lowers to provide a definite shearing action. This enables them rapidly to chop up and devour the many insects that are captured in flight.

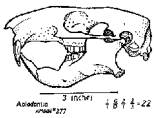


Black Bear

The flesh-eaters (*Carrnivora*), typified by bears, dogs, cats, weasels and the like, have prominent canine teeth which, together with the strong incisors or front teeth, equip them for seizing and holding living prey. Powerful jaw muscles assist in biting and tearing. Most members of the order have sharp jaw teeth with blade-like crowns, well-suited for a scissors-like action in cutting and chewing flesh, tendons and bones. The bear is a notable exception to this condition, having broad, flat crowns on the jaw teeth which are more useful to such animals that eat almost anything, from ants to carrion.

Cony

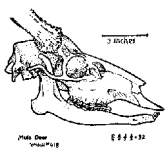
Rodents, or gnawing mammals, are characterized by four chisel-like front teeth, two long uppers which overlap the two prominent lowers. These incisors are kept sharp by differential wear in the gnawing process. The front surface of the tooth is hard, wear-resisting enamel which remains as a sharp edge after the softer dentine has eroded back. The wearing down is compensated by continual renewal, the teeth pushing out from the roots deep within the jaws. The canines are lacking but there are competent jaw teeth for the grinding up of food cut by the incisors.



Aplodontia

The rodent skull figured is from the mountain "beaver" or Aplodontia (see p. 64). If one is accustomed to thinking of rodents as being only small creatures, such as rats and mice, it should be remembered that the golden beaver (*Castor canadensis subauratus*) attains a weight in the neighborhood of 40 pounds, yet is very definitely a rodent!

Rabbits, hares and conies (*Lagomorpha*) outwardly resemble the rodents in many respects. The front teeth grow continually to compensate for wear, but the enamel ex[t]ends to the back surface of the tooth. There is also an extra pair of incisors, lacking the cutting edges, right behind the upper, front, two chisel teeth. The jaws of lagomorphs are so fastened that they chew with a sidewise motion, while in rodents there is considerable longitudinal action.



A good name for the hoofed mammals might be “toenail walkers,” for the hoof is actually a specialized toenail. Yosemite deer and bighorns, or mountain sheep, usually walk on the two large toenails on each foot and are therefore members of the even-toed, hoofed order of mammals, *Artiodactyla.*

Deer and bighorns have no upper incisors, but utilize the lowers very well in obtaining food by gripping vegetation against toothless upper “plate” and lips, then wrenching it loose. The greenery then goes into the rear of the mouth where it is ground between large, broad teeth. It then moves to the rumen, a compartment of the stomach which serves as a storage chamber. There the food remains in a half-chewed state until the animal is through foraging and finds time in a safe place to give it further attention. It is then brought up in cuds, chewed and reswallowed for thorough digestion.

The system of classification of mammals progresses downward from the orders through lesser groups having closer ties in structural relationship, such as families, divided in turn into genera (singular *genus*), species and subspecies. Such divisions are indicated in the checklist (see p. 104).

A discussion of the characters delineating these lesser divisions seems entirely beyond the limits of a work of this nature. However, it should be explained that the scientific names of the various species contain at least two parts, the first of which is the genus, the second the species, and, where applicable, a third, the subspecies. Subspecies, and in most cases, species, are based on comparatively minor differences in color, size, or structure of the skull and teeth and require the dead specimen in hand for final determination. Obviously such characters will not be readily observed in the park, where the wildlife is protected by law against molestation in any form.

Perhaps some concept of the nature of a scientific name can be gained by consideration of an artificial case, a hypothetical man whose name is John Adam Smith. Written as a scientific name, this would be “Smith John Adam,” latinized, of course. *Smith* may be compared to generic name, *John* the specific name, and *Adam* the subspecific, though technically, the example is not truly analogous.

There is a tendency on the part of mammalogists to use common names for species, but not for subspecies since the latter cannot usually be distinguished in the field, except sometimes on the basis of locality, correlated with its known range. Twenty years of experience in educational work have taught me that the layman wants common names for the different forms. Since well-established vernacular names for most Yosemite mammals have existed in the literature for many years, I have used them in this work wherever they were available. In certain instances, where the common name applied by Grinnell and other western authors was preceded by a name more widely known throughout the United States, I have favored the latter in order to make the booklet more useful to park visitors, who come from all parts of the land.

INSECT-EATERS — Moles and Shrews

From “Mammals of Lake Tahoe” by Robert T. Orr, California Academy of Sciences.

SHREW

Shrews are the smallest mammals found in the park, with only the Merriam canyon bat as a possible rival (see page 61). Four of the five species found here are less than half the size of a house mouse, have small feet and are some shade of brown. The exception is the mountain water shrew, which will be dealt with later. All five have sharp, pointed noses and tiny eyes. Again excepting the water shrew, they can be identified as to species only by the expert who has the specimen in hand.

They are among the most voracious of animals, requiring approximately the equivalent of their own weight in food each twenty-four hours! To obtain such quantities of insects, carrion and other flesh (they readily attack, kill and eat mice larger than themselves), a great deal of time must be spent in foraging. They are among the most active of mammals. Food seems to be located mainly by sense of smell.

In Yosemite, shrews seem to prefer moist situations and tend to keep under cover, such as matted vegetation, logs and rocks. The runs and burrows of other mammals are often used as highways in the relentless search for food. They have been found at all elevations in the park and apparently are active in winter as well as summer. I remember an occasion, at Upper Lyell Base Camp, one September morning when the thin snow on the ground was marked with tiny shrew trails widely ranging throughout the area.

The **mountain water shrew** is about the size of a house mouse; dark, slaty gray in color. It is apparently never found far from water. The narrow, scrub-willow-lined streams of the higher elevations are a favorite haunt.

This form is well suited to stream life. The fur does not get soaked in the water, but holds air within its surface, so that when the animal swims under water, a silvery envelope of air bubbles encloses it. The hind toes are fringed with stiff hairs. This fringe assists it in swimming, by serving much like webbing, and enables it to skitter right across the surface, literally walking on the water. It is said that the mountain water shrew can also walk on the bottom of a stream or pool.

Photo by Author

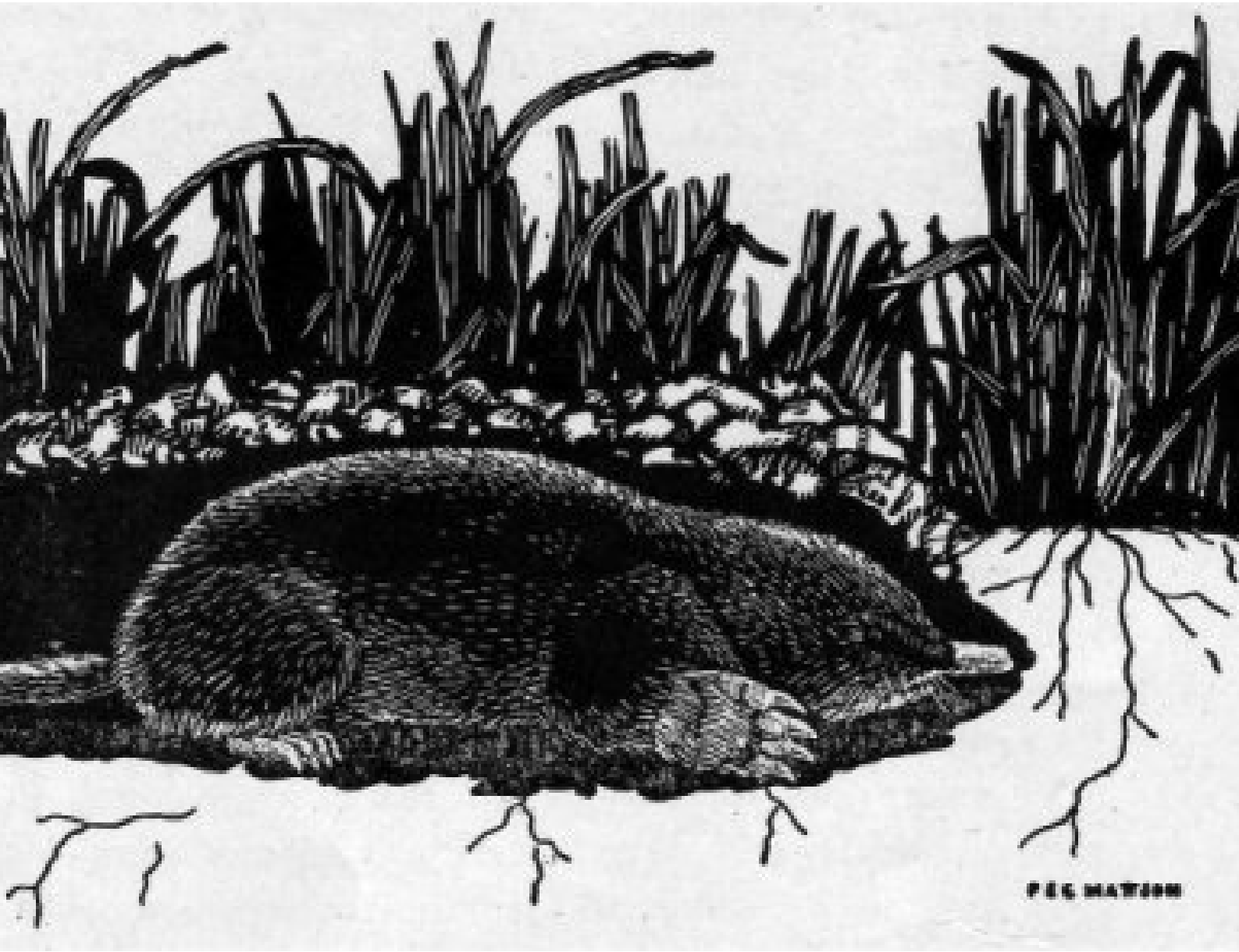
Mole run. Note cracks in the earth.

The **Yosemite mole** is well suited for life underground The pointed nose, tapered head, short neck, cylindrical body and lack of protruding ears contribute to smooth passage through loose soil or open tunnel. The short, sturdy front legs with spade-like feet, turned sidewise and equipped with strong, thick nails, form a powerful digging apparatus. A mole can dig itself out of sight before your very eyes, seeming to melt into the earth! The fur is short, thick and reversible as to “lay” so it is not rubbed the wrong way whether the animal is traveling

forward or backward. The mouth is placed well on the under side, which would tend to keep dirt out when the animal is digging. Moles have eyes, but they are small and not well developed.

Two kinds of tunnels are made and used. The low, raised ridges, just barely cracking the surface, are familiar to gardeners and golfers. At certain seasons, usually just after a heavy snow melts in the spring, these are quite common on lawns and the floor of the forest in Yosemite Valley. They may or may not be re-used after construction. The second type of run is a system of subsurface tunnels, perhaps a foot or more in the ground.

Construction of the "deep" tunnels requires disposal of soil removed. At intervals a lateral passage is dug to the surface, dirt carried up and pushed out through the hole. As the action is repeated, earth piles up on the surface of the ground. At no time does the mole expose itself while doing this. Rather than coming out on top, it continues to push the material up from the bottom directly out of the hole. The dirt thus falls uniformly around the outside, with the hole plugged up, so that a mole hill is symmetrical, like a volcanic cone. This is an important difference between a mole hill and a pocket gopher mound (see p. 73). Like that of the gopher, under natural conditions, the work of moles brings about important aeration and reworking of the soil.



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

MOLE AT WORK

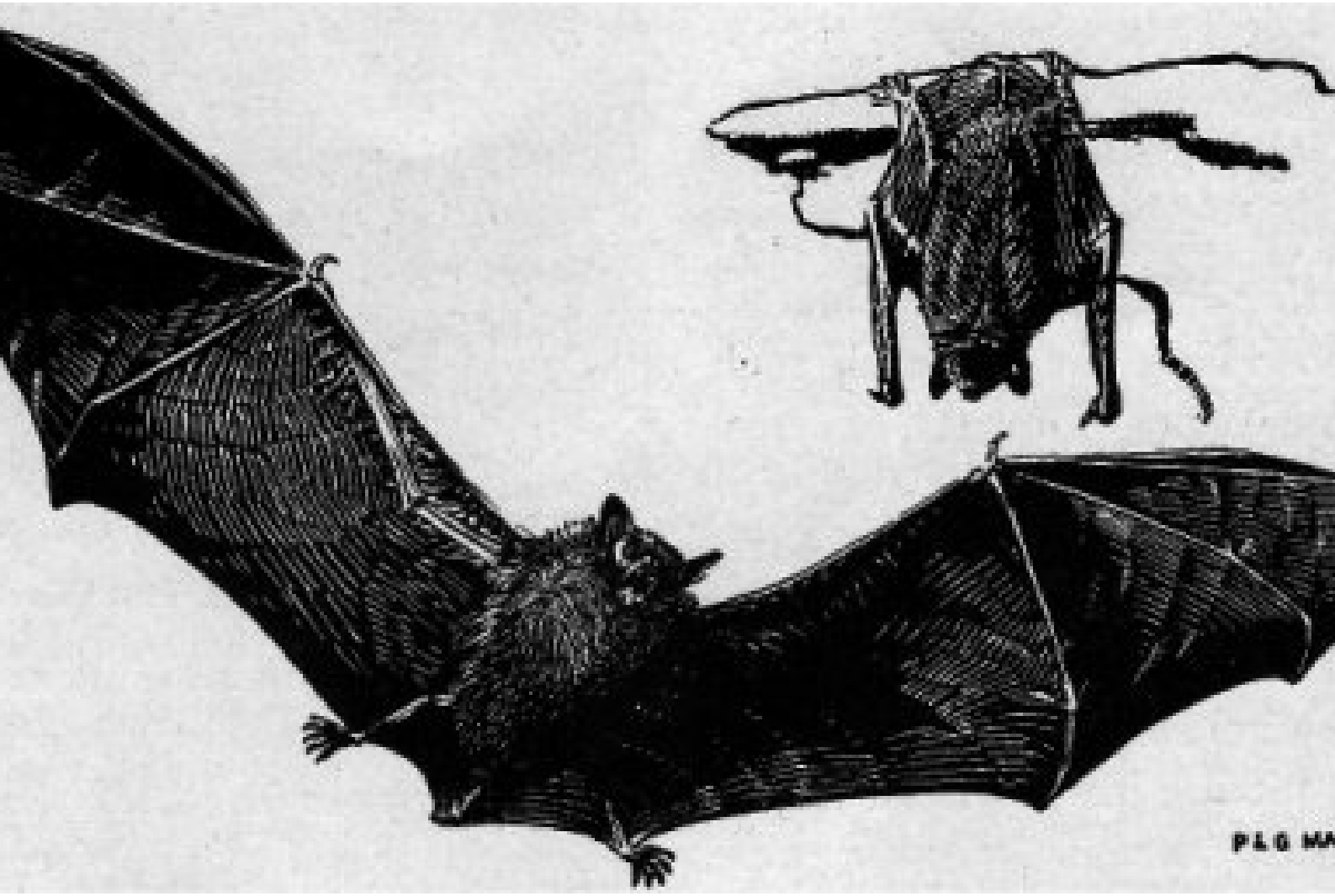
The chief food is insects, worms and similar animals. Little vegetable matter enters into the diet of the Yosemite mole. It forages widely for enough to eat, mainly in fairly dry meadows, the floor of open forest, or in lawns. In suitable habitats, the Yosemite mole has been found from the lower elevations of the park on the west up to 8600 feet (Tuolumne Meadows).

The extremely subterranean life of the Yosemite mole undoubtedly contributes greatly to its safety from attack by other animals. Both moles and shrews possess a slightly unpleasant odor, which may afford considerable protection from predators. However, both are known to be killed by certain hawks, owls, and mammals.

BATS

Bats are probably more numerous in Yosemite than an unobservant person may realize. They may be seen every evening about twilight, or, in some species, earlier, in warm weather, flying back and forth over the river or the meadows in Yosemite Valley. They may be heard

squeaking overhead whilst the camper enjoys his after-dinner fire. In half an hour's ride in an open car, approaching Chinquapin from the south, a friend and I once counted more than fifty bats flying over the roadway, where they were silhouetted against the gradually darkening sky.



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

LITTLE BROWN BAT

The bat's wing is formed from the bones of the hand and arm, with a leathery membrane stretched across this framework and connected to the hind legs and tail. When at rest, the wing can be folded up, much as an umbrella closes.

Bats are the only mammals that truly fly. Many people consider them as flying mice. That this has probably always been so is reflected in the German word for bat, *Fledermaus,* or "flying mouse." However, we already know that the skull and teeth belie this belief (see pp. 54, 55). Indeed "flying insect trap" more nearly describes our Yosemite bats.

There are many other folk tales about bats that have no foundation in fact. For instance, they will not normally fly into a person's hair. For years, ranger naturalists have spoken on the platform at the summer evening programs at Camp 14 [Editor's note: Lower Pines Campground—DEA.], while bats swooped to and fro behind them, catching insects that were attracted by the light on the picture screen. Yet never has a bat flown into the hair of a speaker. Once I stood with four other men in the bat cave of Carlsbad Caverns beneath a blanket of bats estimated at 15,000 individuals, which clung to the ceiling. In the course of our investigations, this mass was agitated into flight, yet at no time did they endeavor to get into our hair.

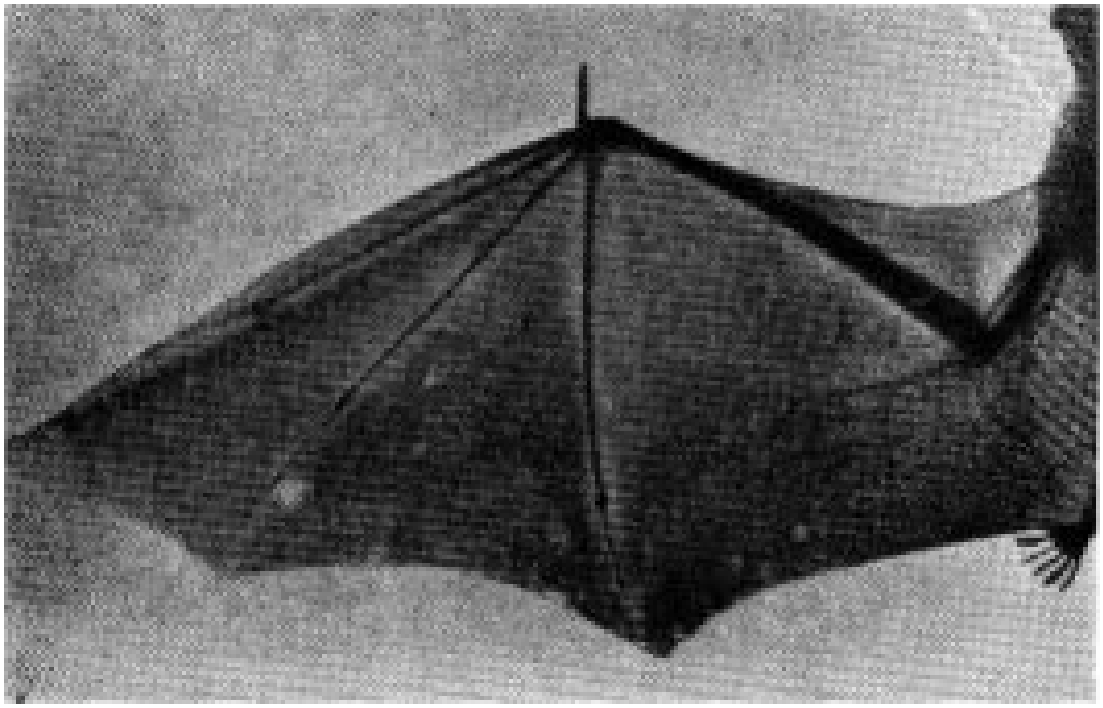
From Kodachrome by Anderson

Head of Pacific pallid bat. Note the eye.

We have heard the saying, “blind as a bat.” Some carry that thought further and believe that bats have no eyes. However, they do have eyes, rather well-developed ones, though comparatively small.

Since most mammals that are active at night have rather large eyes, the question arises as to how bats can fly with such sureness through the branches of trees and avoid other obstacles in the dark. For that purpose, the eyes seem to be of little assistance to bats. Tests have been made with blindfolded bats in rooms crisscrossed with wires and the animals flew about, rarely hitting the barriers. However, when the ears or mouth were plugged, blunders were quite notable. It seems that bats in flight emit sounds of a frequency too high for the human ear to detect. By listening to the variations in the echoes of these sounds, a bat is warned of obstacles in time to avoid them. These sounds should not be confused with the high-pitched squeakings that are often heard from bats.

During the daytime, Yosemite bats hide in rock crevices, caves, buildings, and trees, where they hang upside down and sleep. This upside down posture is facilitated by the strongly curved hind toes and claws. In the winter, some of our bats hibernate, while others migrate to a more temperate clime.



From Kodachrome by Anderson

Wing of Pacific pallid bat. Count the fingers.

While the babies are quite young, they cling to their mother when she is at rest, and she may even carry them with her when she flies forth to forage for food. As they grow stronger, she usually leaves them clinging to a sheltered place where she returns after her trips for food. They grow very rapidly and are hunting for food themselves when but a few weeks old.

Yosemite bats feed entirely on insects, which they chiefly garner while on the wing. Water is usually taken by swooping low over the surface and scooping it up. All of the bats in the United States are insect eaters. Since an individual bat may consume a quarter of its own weight in one meal or half its weight in a night, we may assume they are generally beneficial to the interests of man.

In size the Yosemite species range from the tiny Merriam canyon bat, which is less than three inches long with a total wingspread of less than eight inches, to the California mastiff bat, with a total length of 6 1/2 inches and a wingspread of 19 inches. This is the largest species in the United States.

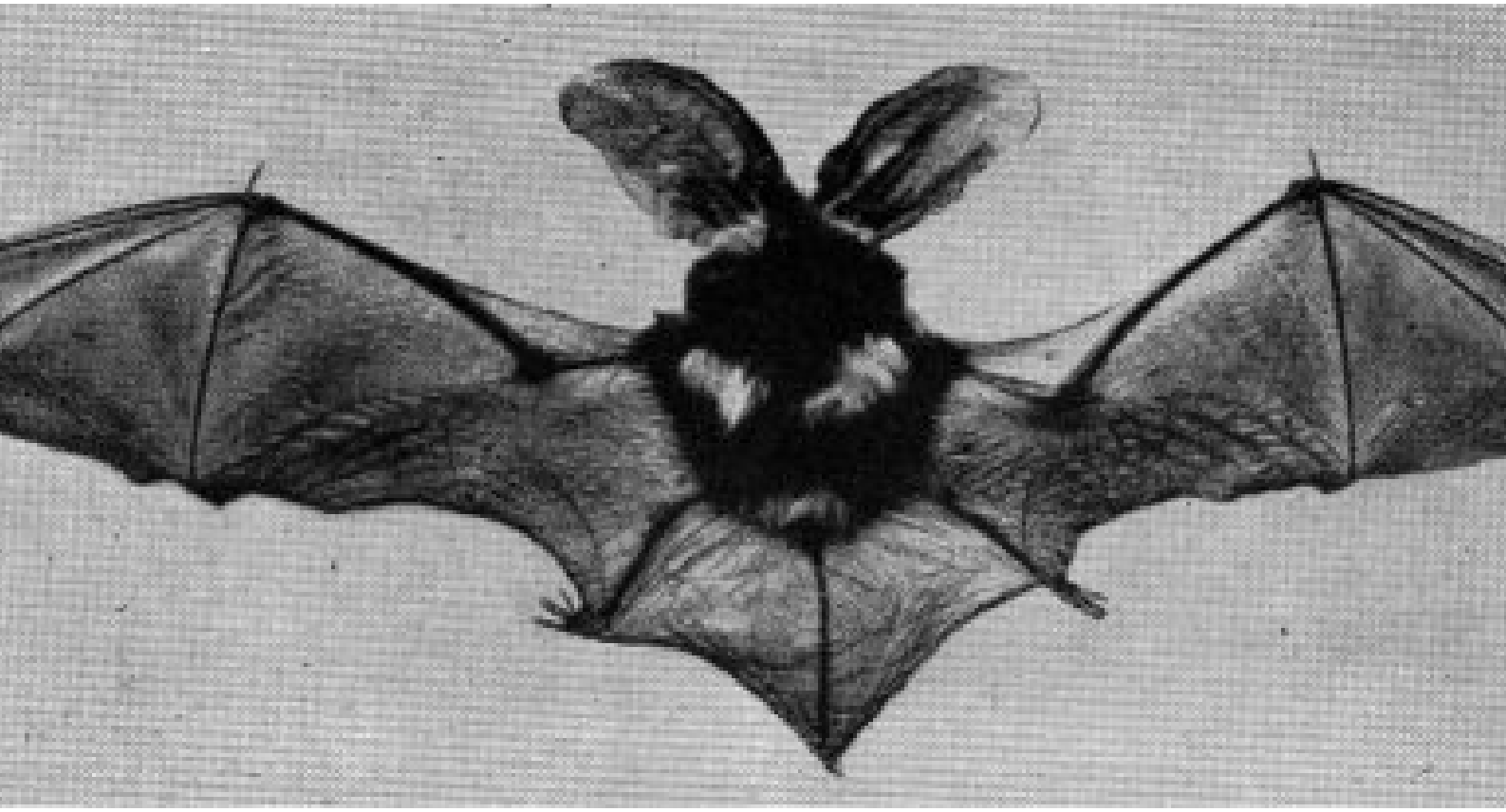


Photo courtesy Museum Vertebrate Zoology, University of California

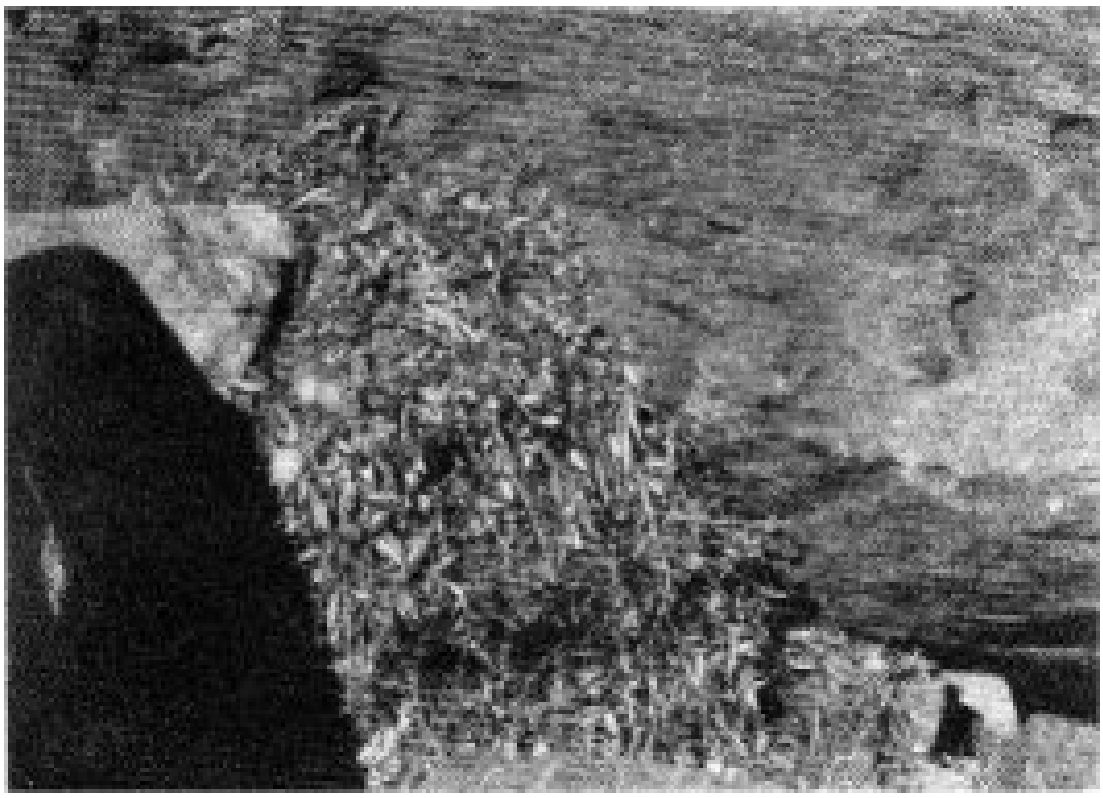
The spotted bat, rarest Yosemite mammal.

One of the rarest mammals, the **spotted bat,** has been found in Yosemite Valley on two occasions. These are two of only ten specimens known to science. One was found in August 1931, by the cook at the Government mess hall, hanging under the eaves of the building. The other was found by the son of a visitor in Camp 15 [Editor's note: former Upper River Campground—DEA.], August 13, 1951. Anyone finding such a bat in or near the park should immediately bring it to the attention of the Yosemite Museum staff.

Yosemite cony, “squeaking.”

The **Yosemite cony,** or **pika,** is a dweller in the high-country rock slides above the fir forest belt. One of its other names, “rock rabbit,” gives a clue to the nature of the little animal. However, it is only about one-third the size of our smallest rabbit; the ears and eyes are comparatively small; and the hind legs are but little longer than the front ones. The tail is so diminutive as not even to be visible through the rabbit-like fur.

The traveler on our high-country trails will have little difficulty discovering the cony, if he will remain quiet while observing a suitable rock slide. Presently, the little fellows will begin their loud, squeaking calls from various parts of the slide. The observer will still need to look a while before the animals are sighted, because there is a ventriloquistic quality to the call, which seemingly comes from where the animal “isn’t.”



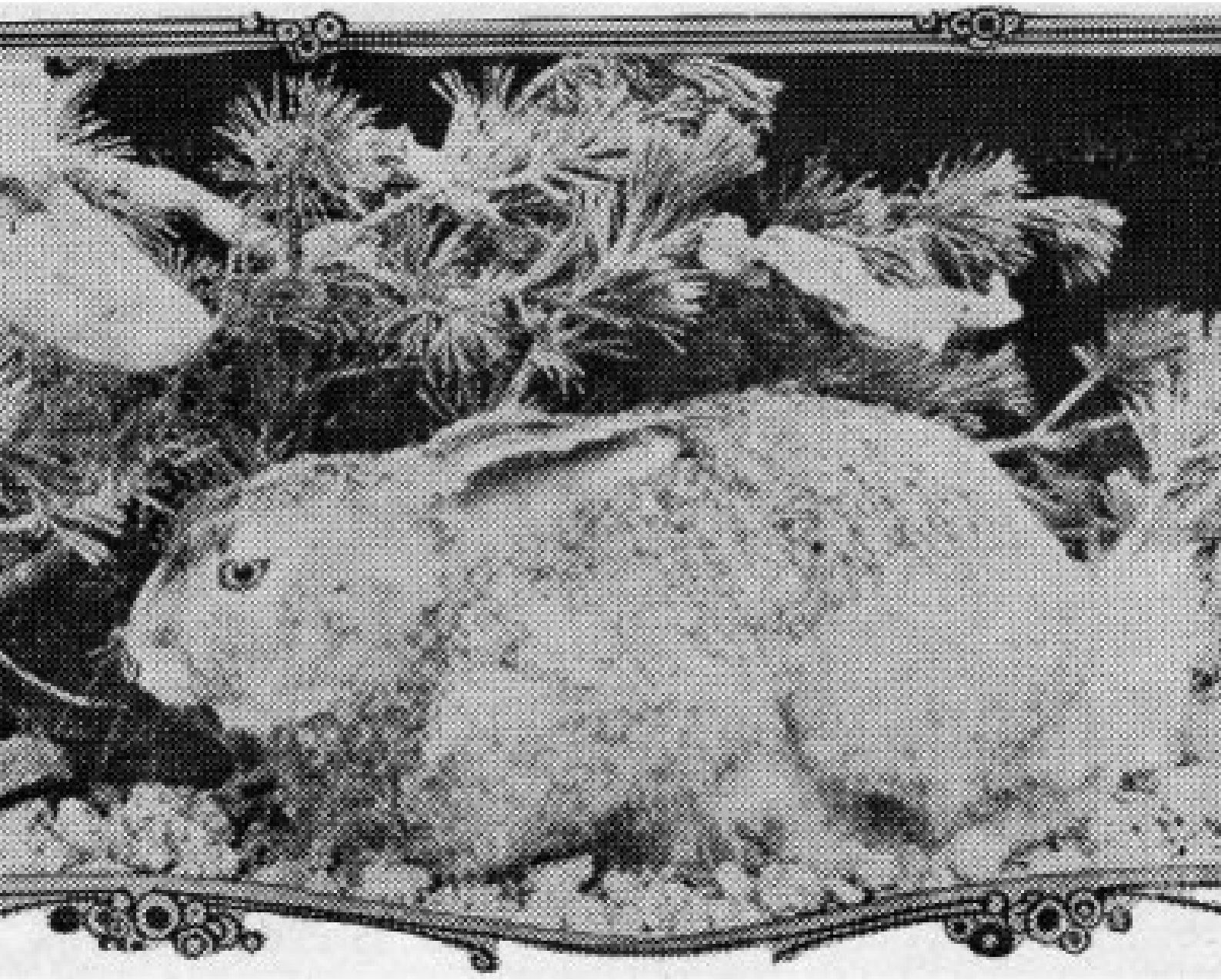
Cony's haypile.

Patience will be rewarded by the sight of the conies clambering nimbly over the tallest and steepest of the boulders, or perched on top of one of them, "bleating" away. While they are active mainly in the daytime, it is not impossible to see or hear them abroad on the brilliant moonlit nights for which the High Sierra is noted.

This little animal literally "makes hay while the sun shines." Grass, sedges, and other vegetation are gathered and placed in piles among the rocks to cure in the alpine sun. Apparently this is done in anticipation of the long winter in those altitudes, when the rock slide may lie under eight to fifteen feet of snow. At that season, the cony has a store of food placed "high and dry" to carry it over the winter. These piles seem to belong to individuals, which defend them vigorously against other pikas, although evidence cited in *Animal Life in the Yosemite* (Grinnell and Storer) indicates that a female and her young may make a group cache.

Rocks used as observation posts usually contain many droppings about 1/8 inch in diameter and resembling shot in appearance. These signs, together with hay piles when present, will indicate whether a particular slide is occupied by conies.

The sheltering rocks protect conies from most predatory enemies, except for three members of the weasel family who "use" the same territory—the Sierra pine marten, the Sierra least weasel, and the mountain weasel. They hunt for conies and are undoubtedly successful on occasion, for when one of these potential enemies appears, the pikas become quite excited and "bleat" for all they are worth, indicating that an enemy is recognized. Marmots and bushy-tailed wood rats also inhabit the same slides, but there is no evidence to indicate that they do not get along with the conies.



White-tailed jackrabbit.

The **white-tailed jackrabbit** is another denizen of our high country. It seems to prefer rather flat, sparsely wooded terrain having some bushes present for thick cover, but ranges up to old plateaus over 12,000 feet in elevation. In the Yosemite Museum is a specimen from Merced Lake, 7200 feet. Rangers report white-tails along the Glacier Point Road in winter at about the same elevation.

In this region it is commonly called "snowshoe rabbit," but that name apparently belongs to a much smaller hare which ranges in the north, no race of which has been recorded closer than 17 air miles from the north boundary of the park.

The white-tail is enormous as rabbits go, being about one and one-half times the size of the common black-tailed jackrabbit that is known so well in the lowlands. I remember once starting one up from under a willow bush in Tuolumne Meadows. My first thought was that it was a fox, so large did it appear. The tail and feet are always white, no matter what the season of the year. During the winter months it has a white coat, although the pale brown or black markings of the summer coat may persist on certain points, such as the tips of the ears or nose.

The white-tailed jackrabbit is more active in the late evening or at night, usually foraging where a fairly unobstructed view is afforded. This means, of course, that approaching enemies can readily be seen while yet at some distance. The droppings, flattened spheres about one-half inch in diameter, are to be found scattered about on the flat-topped areas where the animals have frequented the high country for many generations.

The **black-tailed jackrabbit,** or one of its races, is the commonest jack seen in the West. In recent years, it has entered the extreme western part of the park, near Crane Flat and Mather. It can easily be distinguished here by the black upper surface of the tail and very slender body.

The **Mariposa brush rabbit** is similar in appearance to the well-known cottontail, but with very much less “cotton.” It is about half the size of the black-tailed jackrabbit, but with ears shorter in comparison to the body. It is common in the chaparral of the foothills along the west boundary of the park, but has been recorded only once inside the park line.

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

MOUNTAIN BEAVER

The **Sierra mountain beaver** bears no close resemblance to the true beaver. It looks much like a tailless muskrat or a gigantic meadow mouse, blackish brown in color. It will seldom be seen by the park visitor, for it utilizes extensive tunnels safely to reach food above ground and is chiefly nocturnal. The burrowings, six or seven inches in diameter, running parallel to the surface, roofless in spots, may be found on bottom land near streams in widely scattered locations at elevations ranging from less than 4,000 feet to more than 10,000 feet.

The food consists of almost any "greenery," but bark is also eaten. Mountain beavers are known to stack and cure vegetation near the mouths of their runways. This is now believed to be done in order to have a supply of dry bedding, rather than in preparation for the season when green food will not be available.

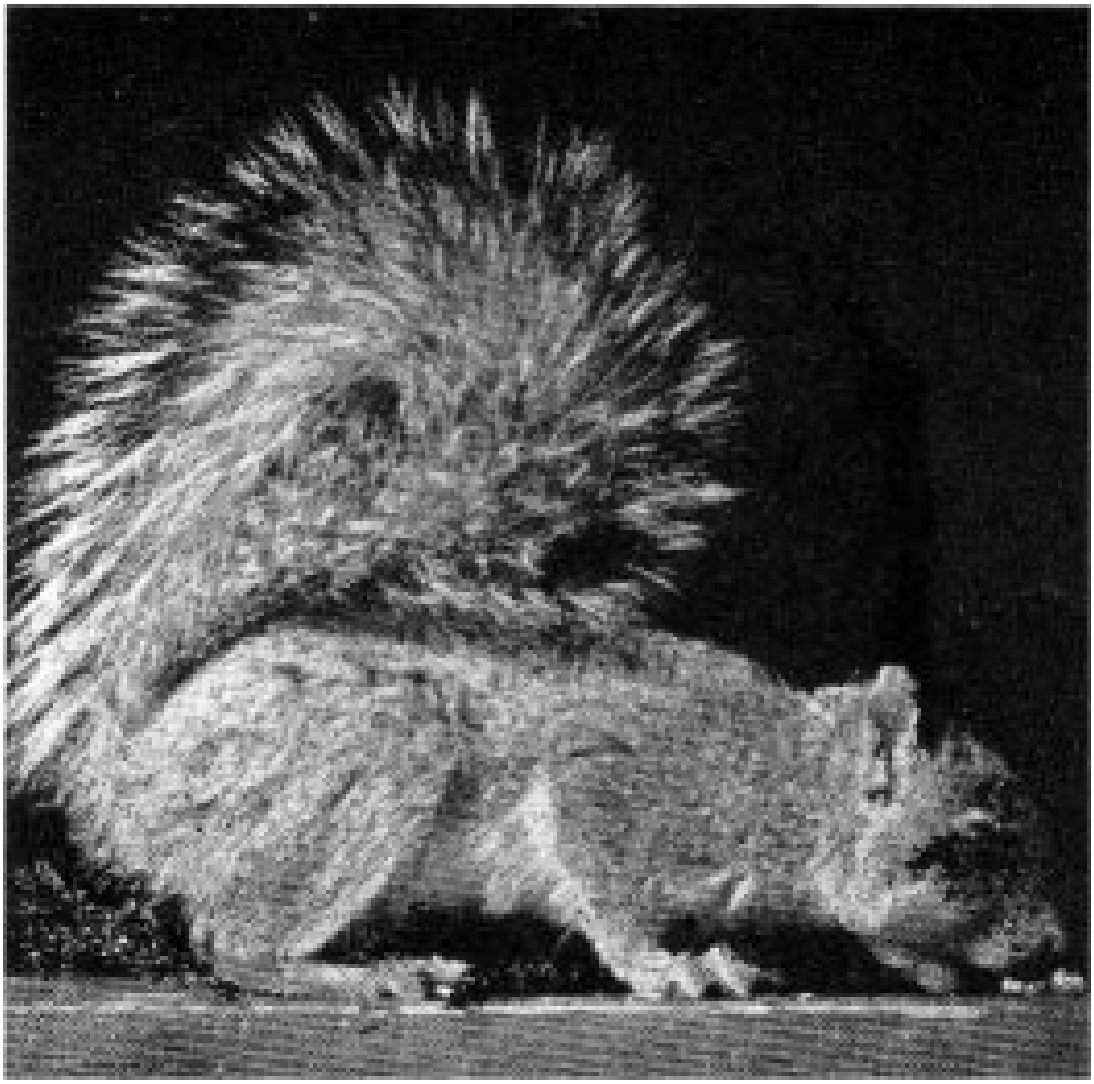


Photo by Anderson

California gray squirrel

The **California gray squirrel** should be identified easily by any visitor to Yosemite Valley. Some two feet long, with a beautiful, bushy gray tail, it is adequately described by its name. The Sierra ground squirrel, which sometimes climbs trees, might be confused with this species, but the ground squirrel may be distinguished by its two white or grayish shoulder patches and the much narrower tail. The upper limit of the range here seems to correspond with that of the oaks, although gray squirrels also feed freely on pine seeds. It is thought that in the higher forests, competition from the Sierra chickaree prevents the gray from flourishing.

The California gray squirrel sometimes builds large nests of twigs, needles, grass and similar materials, in trees, or, soft linings may be made in cavities of trees. The California black oaks in Yosemite Valley are so old that plenty of holes seem to be available, for outside nests are not too common there. I have reason to believe that some individuals make an outside nest in summer, then move to a cavity with the approach of autumn. However, this cannot be positively stated to be a universal practice.

The preferred food here appears to be acorns and pine seeds. Acorns are cached individually in the ground in autumn, some of which are dug up later, especially in winter. I have seen a gray squirrel dig down through several inches of snow and successfully locate an acorn buried in the ground beneath. Perhaps this food storing habit helps explain why gray squirrels do not hibernate, but are active all the year.

Gray squirrels were virtually wiped out in Yosemite by an epidemic of scabies in the early 1920's. They were extremely rare here for a number of years; an all-day census of the Valley in the summer of 1935 revealed but two individuals. By the early 1940's the species had made its way back to such an extent that a. considerable number were killed by motor cars. They are now abundant throughout their proper range in the park.

From Kodachrome by Parratt

Sierra chickaree

The **Sierra chickaree** is the favorite mammal of many rangers. I think they like the little fellow because he is so active and vociferous, contributing a touch of life to the still reaches of our coniferous forests. When an intruder comes quietly into the chickaree's territory, he will hear the bird-like note of interrogation, variously described as *quer-o, quir-o* or *whee-o.* If the intruder is noisy, or startles the chickaree, the animal's extensive vocabulary is brought into play and one is readily convinced that this animal can swear!

Visitors from the Northeast will recognize our chickaree as a species of red squirrel; those from the Northwest will realize that it is a race of their Douglas squirrel; those from the Rockies will call it a pine squirrel. About one-third the size of the gray squirrel, dark, reddish brown above with white eye-ring, whitish beneath, it is, indeed, closely related to all of those. While the lower limits of its range are at the elevation of Yosemite Valley, its chief bailiwick is the higher coniferous forests, extending up to the limit of trees.

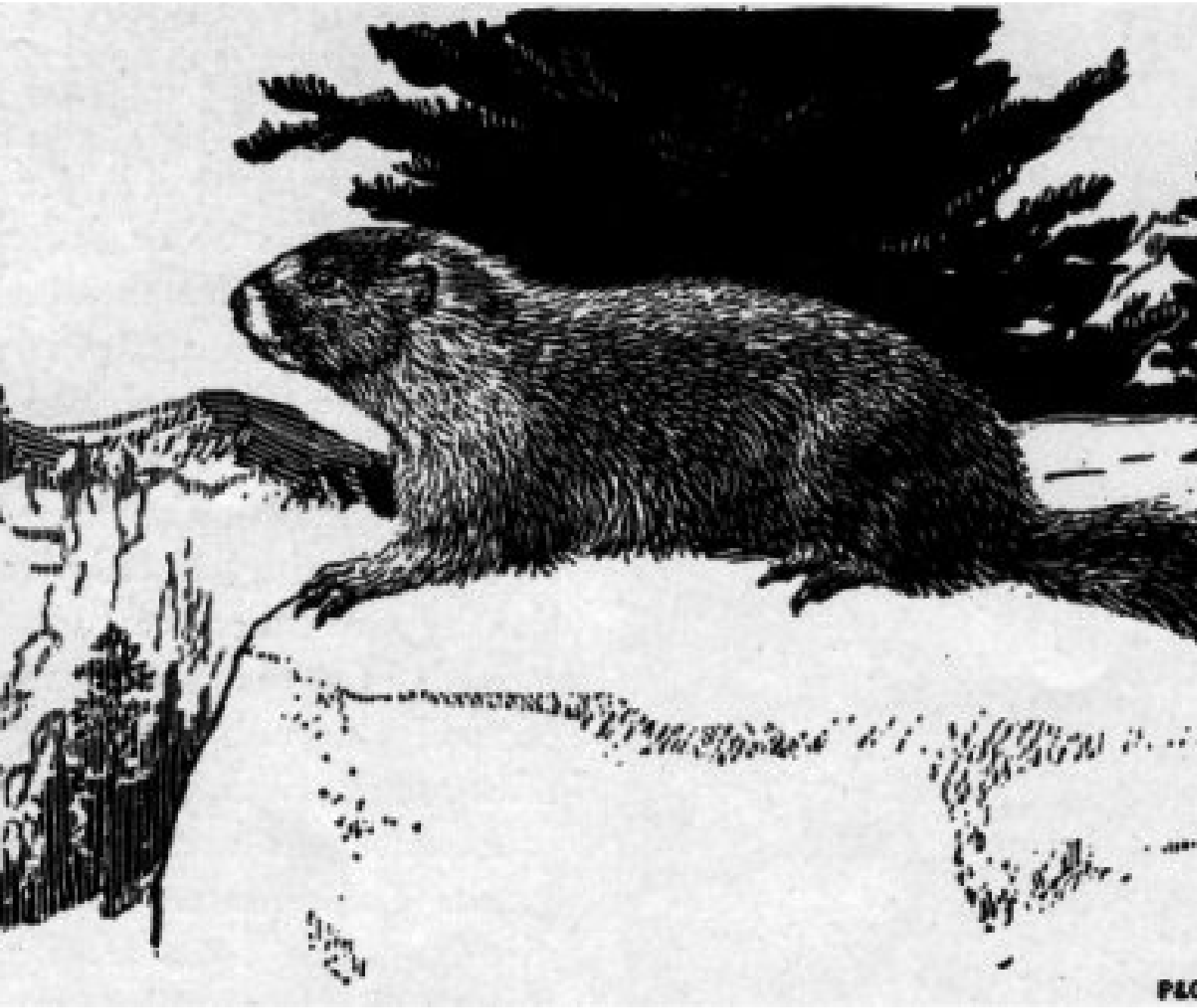
The home of the chickaree is usually in an old rotten stub or other tree cavity. This is lined with shredded bark, pine twigs and similar materials. Chickarees are not sociable animals and have a strong sense of territory, defending it against invasion by another of their kind, in fact resisting, if only vocally, intrusion by any other creature.

Seeds in cones provide the chief source of food, although the tender buds of pine, mushrooms, nuts and even meat are not scorned. Cones are cut down while yet green. The seeds are either eaten immediately, or the cones are stored along old logs or similar crannies near the squirrel's home. These shaded, often moist spots, provide conditions that tend to inhibit the cones from opening up so the seeds are retained until needed in the winter. Winter food is a matter of concern to the chickaree, for it is active the year around, even when snow covers the ground.

Sierra chickaree’s kitchen midden

The harvest by one individual can reach prodigious proportions. The chickaree usually works in the tree, cutting off a number of cones, then going down to the ground and caring for them. In the Mariposa Grove of Giant Sequoias, a single chickaree is known to have harvested and stored in hollow logs, in 12 days, enough sequoia cones to fill 38 barley sacks. When it is realized that a sequoia cone is about the size of a hen’s egg, the magnitude of this feat is even more impressive.

Since the seeds are what interest the squirrel, obviously the scales and stems of cones make quite a pile of debris after its meals. A spot is usually chosen for the shucking process which provides a good lookout, such as a rock, log or old stump. Consequently the waste from many meals adds up to quite a pile of scales and sterns. These piles are known as “kitchen middens” and are readily found throughout the forested country above the rim. Gray squirrels may make similar middens, but with a greater variety of food available, such workings are not found so commonly in Yosemite.



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

MARMOT

Daytime travelers on the Tioga Road are very likely to make the acquaintance of the **southern Sierra marmot.** Near or within the patches of meadowland, marmots are fond of lying flattened out on the tops of large rocks, basking in the sunshine. About the size of a cat, with its glossy, grizzled, light-brown upperparts and contrasting orange-yellow chest and feet, they make a strikingly pretty sight in this position. Easterners will note a strong resemblance to a woodchuck, for the two are closely related.

From cast by M. V. Hood

Marmot tracks. Hind foot on left, front on right.
Six-inch pencil.

It must have plenty of green plants to eat and rocks or trees or logs under which to burrow. Tunneling under such a place means that a predator is not able to dig them out. At the first real threat of danger, it is toward the burrow that the marmot gallops. Some of them take up residence in barren rock slides so that in case of alarm, all they have to do is tumble down into the intricate rock maze to be safe. The basking points have a great many droppings on them—elongate, dark and about one-half inch in diameter.

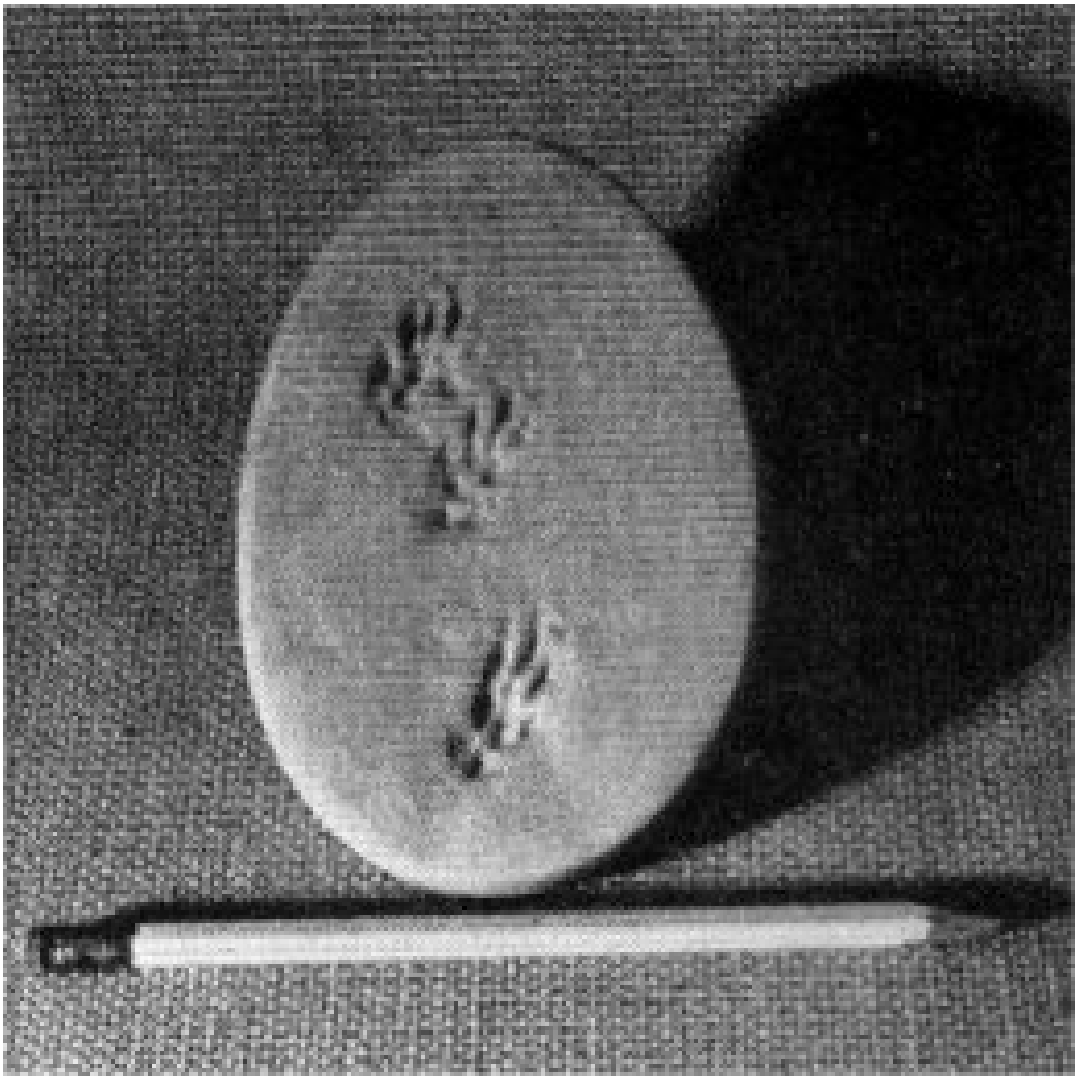
Heavy as it is, this gigantic ground squirrel can sit up straight on its hind legs if that is necessary to obtain a better field of vision against the possible approach of enemies. The call is a short whistle, though not as man-like as that of the hoary marmot in Olympic, Mt. Rainier and Glacier National Parks.

Our marmots tend to live in groups, but not large colonies. Like a true woodchuck, they are not active at night and they hibernate in the winter.

From Kodachrome by Anderson

Belding ground squirrel

The **Belding ground squirrel** can scarcely escape notice by the summer visitor to Tuolumne Meadows. Their piping, whistle-like calls resound on every hand and they are quite in evidence as they sit up very straight, like a stake driven into the ground, in the effort to maintain a more effective lookout for danger. This last habit has earned for them the popular name, “picket-pin gopher.” They are about the size of a house rat, but have a short, hairy tail. The upper parts are yellowish gray with a wide, reddish-brown streak down the back.



From cast by M. V. Hood

Belding ground squirrel tracks. Six-inch pencil.

Belding ground squirrels are most common in our higher meadows, though meadow land is not absolutely necessary for them, so long as a good supply of grasses, herbs and their seeds is available for food.

Home and shelter are in the ground. Since winters are very long in the high country, and these animals hibernate, it can be seen that a great proportion of their lives must be spent underground. Badgers are very assiduous in digging them out. Besides predatory birds, other enemies are known to include weasels and the mountain coyote.

The antics of Beldings are interesting to watch, for they are very active. When the young first appear above ground, they remain in the vicinity of the hole, while the mother mounts guard to give the alarm in case of danger. As the season progresses, the youngsters go forth on their own and dig individual burrows for themselves.

Photo by Anderson

Sierra ground squirrel. Albino in rear.

Most Californians coming into the park will have no difficulty in recognizing the **Sierra ground squirrel.** More than likely they will have some race of *Citellus beechcyi* near their homes, for the species is widely represented in the State. The Yosemite form has been set apart from the California ground squirrel of the coastal region because of the more grayish appearance of the former and for other technical differences. The whitish shoulder patches, upper parts speckled with grayish white and the fairly bushy tail serve to separate the Sierra ground squirrel from any other Yosemite digger. The distinctions between it and the California gray squirrel have been mentioned (p. 64).

This animal dwells in a system of underground tunnels made in open situations. When alarmed fully, the ground squirrel will literally fall into the nearest entrance it can reach. It sometimes sits very erect, presumably to widen the field of vision. It is active only in the daytime.

The food consists of seeds, grasses, fruits, plants, roots, bulbs, acorns, and some meat. It has internal cheek pouches which are filled when it is gathering and carrying food. It may climb into certain trees and low shrubs in connection with the search for food.

The Sierra ground squirrel is a hibernating animal. However, the hibernation must not be too profound, for I have often seen them abroad in Yosemite Valley during prolonged warm spells in January. After the weather again became severe, they were never seen about until the next warm spell.

Photo by R. G. Beidleman

Young golden-mantled ground squirrel.
Note absence of facial stripes.

The **Sierra golden-mantled ground squirrel** is the most beautiful of the Yosemite ground squirrels. The head, neck and shoulders are a reddish or coppery yellow, forming the "mantle," while two white stripes run along the sides of the blue-gray back. These stripes lead some people to confuse them with the chipmunks. However, the golden-mantle is larger than any chipmunk, about two-thirds the size of the Belding, and does not have stripes running through the face.

Golden-mantled ground squirrels are common in the open forests of the middle elevations, such as are found along the Tioga and Glacier Point Roads and the trails along the rims of the Valley. They make short burrows under ground, with the entrance near a log, stump or rock which provides a lookout point.

The food consists of nuts, fruits, and other vegetable matter, varied with meat. There is some evidence of food storage, though this must be for early spring use, since the Sierra golden-mantled ground squirrel hibernates.

Visitors to Glacier Point once came to know this species well. The golden-mantles there were unafraid of humans and permitted close approach, especially when food was offered. Sometimes they even crawled over a person's clothing and searched the pockets for food to stuff in their capacious cheek pouches.

However, a few cases of relapsing fever were traced to Glacier Point several years ago, and since golden-mantled ground squirrels are hosts to the tick that carries the fever, it has been necessary to reduce the population at that place and proscribe the sale of peanuts and other delicacies relished by ground squirrels.

It should be remembered that it is never advisable to come in close contact with any ground squirrel in the West, because some of them do have certain parasites which may carry diseases to which humans are susceptible. This does not mean that every ground squirrel needs to be exterminated. Public health authorities are well equipped to determine when a territory is dangerous and to prescribe measures to be taken in such an area. We have been assured by them that there is no cause for alarm at Glacier Point under the present precautionary program.

Photo by R. G. Beidleman

Long-eared chipmunk. Note the prominent
eye-stripes found in true chipmunks in the West.

Chipmunks are captivating mammals to watch. Their bright pattern, lively habits, and bird-like calls can afford hours of pleasure to the visitor who remains very still while in their haunts. There should be no trouble recognizing them as chipmunks by the fact that the stripes include the face and there is a narrow, dark stripe down the center of the back. The sharp, pointed nose and dainty configuration are not to be noted in any ground squirrel or chickaree.

To distinguish, in the field, the differences between the five kinds recorded for the park is quite another matter. This requires some study and an appreciation for finer distinctions. Their ranges include the territory from the western boundary to the highest peaks, but, with one exception, they do not overlap.

The Tahoe chipmunk is found in the areas occupied by three other kinds. This is probably because it has a much greater tendency to take refuge in trees and hunt food in bushes. Consequently, it does not seriously compete with the others, which are largely ground dwellers.

For some reason, all chipmunks are scarce in Yosemite Valley, but they may easily be seen in the Mariposa Grove of Giant Sequoias, or near Glacier Point, as well as in the high country.

There is one species in Yosemite National Park that may be rather easily identified. The **alpine chipmunk** is very small, less than eight inches over-all, and quite pale in coloration. It extends its range into the rocky shoulders of our highest mountains. I have seen it at least 13,000 feet in elevation, very near the summit of Mt. Lyell, scampering among the polemoniums.

Our chipmunks are mainly seed eaters, utilizing the membranous cheek pouches for transporting their harvest. Their slender forefeet are better suited for handling and shelling small seeds than for digging, so extensive burrows in the ground are seldom made.

They prefer shelter obtained by tunneling in soft, decayed wood, or seek it among crevices in the rock. Apparently some of our chipmunks hibernate and others do not, but available information regarding their winter habits is very incomplete.

Sequoia Natl. Park Photo

Photo by Joe Grater Flying squirrel landing on tree trunk.

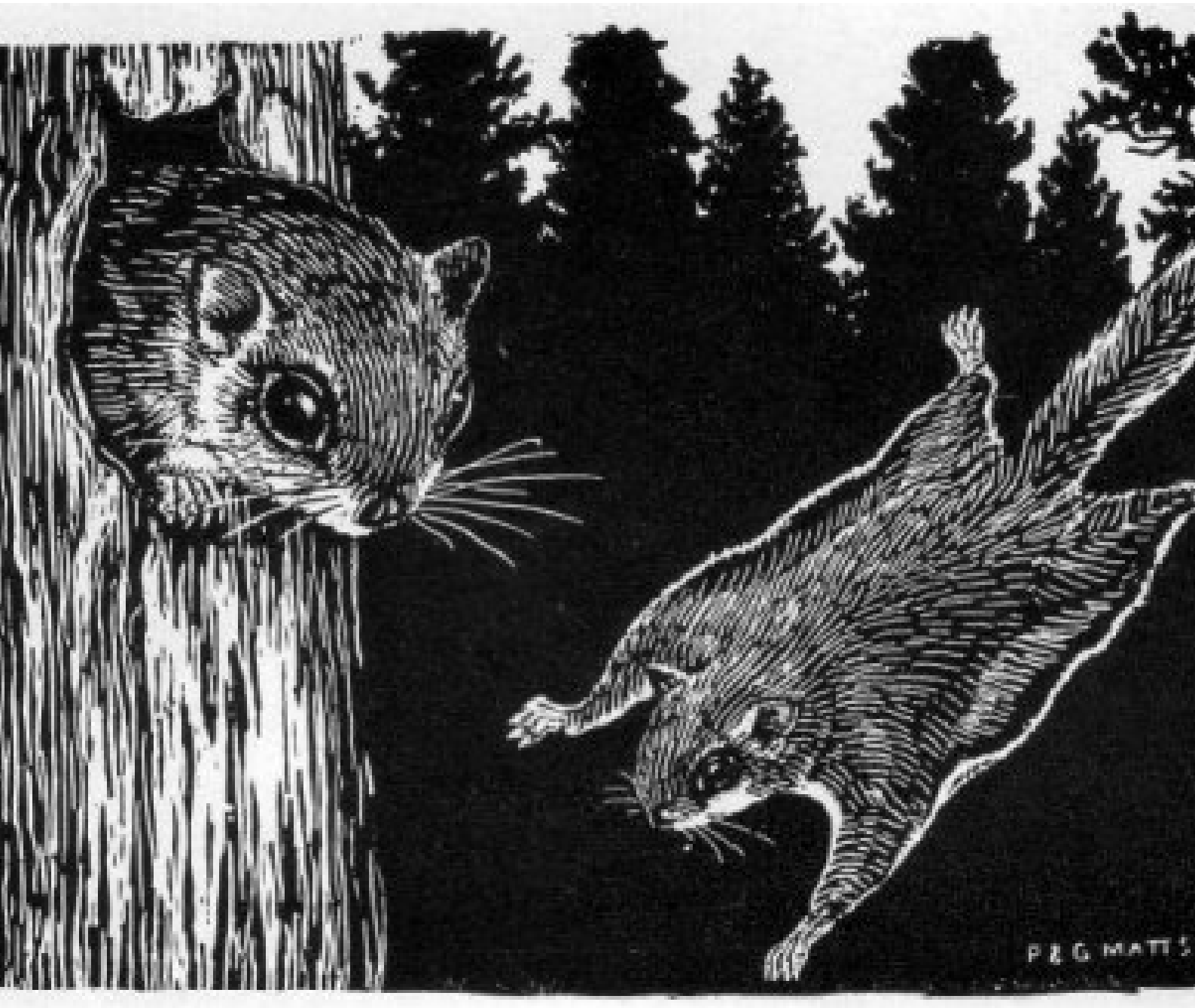
Captive Sierra flying squirrel, eating apple.

The **Sierra flying squirrel,** while quite common, is not likely to be seen by many Yosemite visitors. It is abroad only at night, spending the daylight hours curled up, with its tail over its face, in an old woodpecker hole or rotten snag. In winter, while skating at Camp Curry rink, I have seen these little gliders, zipping like tiny shadows across the lighted area as they leaped from the tall trees along the side of the rink. In summer, Valley campers find that their bacon and butter have been nibbled during the night by "some creature larger than a mouse."

Probably the most adept of the squirrels at traveling through the branches from tree to tree, it has the added ability to volplane across openings between trees where the branches are not close enough to be spanned by a simple jump. These glides are as near flying as the squirrel ever achieves. It leaps from a height, extends the web of furred skin that connects wrists and ankles, straightens out the flat tail and glides downward at an angle, sometimes covering as much as 150 feet at a single glide and usually landing near the base of the trunk of another tree. It has the power to change course while in flight, and can check its speed for landing by manipulation of the web and tail. Always it must have a height from which to start. It cannot fly by its own power, as does the bat.

The trail camper in the coniferous forest belt is most likely to encounter flying squirrels, especially if he sleeps without a tent and keeps a flashlight handy. If the bed is near a large tree, possibly a shower of bark will rattle down when a flying squirrel starts racing up the trunk

after completing a jump. Perhaps the disturbance created as one (or more) of them investigates the larder will awaken the sleeper so he can use his flashlight for observation. “Bob” McIntyre, now of Mt. Rainier National Park, once had a whole family of flying squirrels try to get the trout from the creel hanging above his sleeping bag while he was camped in the Ten Lakes Basin.* [* See *Yosemite Nature Notes*, (27)9: 113, September 1948. See also (29)4 36-41, April 1950, for an interesting account of a captive Sierra flying squirrel.]



From “Mammals of Lake Tahoe” by Robert T. Orr, California Academy of Sciences.

FLYING SQUIRREL

Seen at close range, the Sierra flying squirrel is a lovely creature. The fur, brownish-gray above, whitish below, is soft, silky, dense and warm. The flat tail looks more like a large feather from a bird. Besides serving as a “balance rod” as in the case of the other tree squirrels, it is believed to be used as a rudder during “flights.” The eye, large, dark and lustrous, is a beauteous thing. It is believed that the large size of the eye assists the flying squirrel to see better at night.

The diet includes more meat than is generally true of squirrels. Insects are taken, bird nests sometimes robbed, and other flesh relished when obtainable. The usual squirrel foods such as nuts, fruits, berries, fungi, seeds and buds are eaten. It is these that are stored by Sierra flying squirrels against the season of scarcity, for they are active the year around.

From Kodachrome by M. V. Hood

POCKET GOPHER

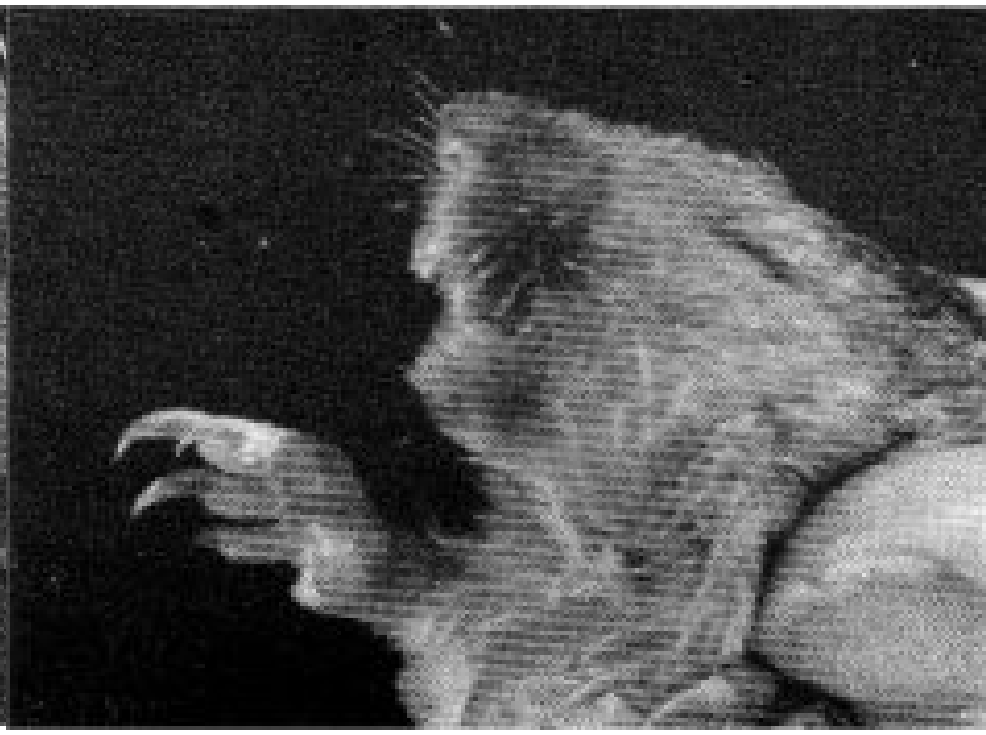
Pocket gophers, of which three kinds are found in the park, spend most of their lives underground. Yosemite forms are from light to dark brown in color, with head and body some six inches long, plus a tail of about the proportions of a match stick, bare at the end. With this bare tip the gopher can feel any obstruction that may be in the way when he needs to back up in a tunnel. The “pockets” are fur-lined pouches in the cheeks. The prominent chisel-teeth always show; the lips do not cover them. The gopher is able to close its lips behind them and thus keep the dirt out of its mouth when it uses the teeth to aid in digging.

The gopher has a heavy head and broad face, not pointed and streamlined as in the mole. The gopher’s eyes and ears are small but they are easily visible and much larger than those of the mole. The forefeet of the gopher are equipped with strong digging claws but are not modified into “paddles” as in the mole. The gopher’s fur is short and smooth, but not plush-like (reversible) as in the mole.

There may be confusion as to the identity of the workings of the two. When mole runways are just at the surface, the earth is always cracked. In winter, pocket gophers tunnel in the snow and pack some of these with earth from the deeper burrows so that a solid core is formed. When the snow melts, these “cores” are lowered to the surface of the ground and remain like giant “earthworms.” These are often mistaken for the work of the mole. The mole builds a symmetrical mound of earth from below by pushing it up through the hole, never leaving it open or showing himself in the process (p. 58). The gopher pushes the earth up to the hole, then dumps it outside so that a lopsided hill is built. He finally plugs up the entrance.

From Kodachrome by Anderson

Pencil indicates cheek pouch of pocket gopher.



From Kodachrome by Anderson

Forefoot of pocket gopher is fine for digging.

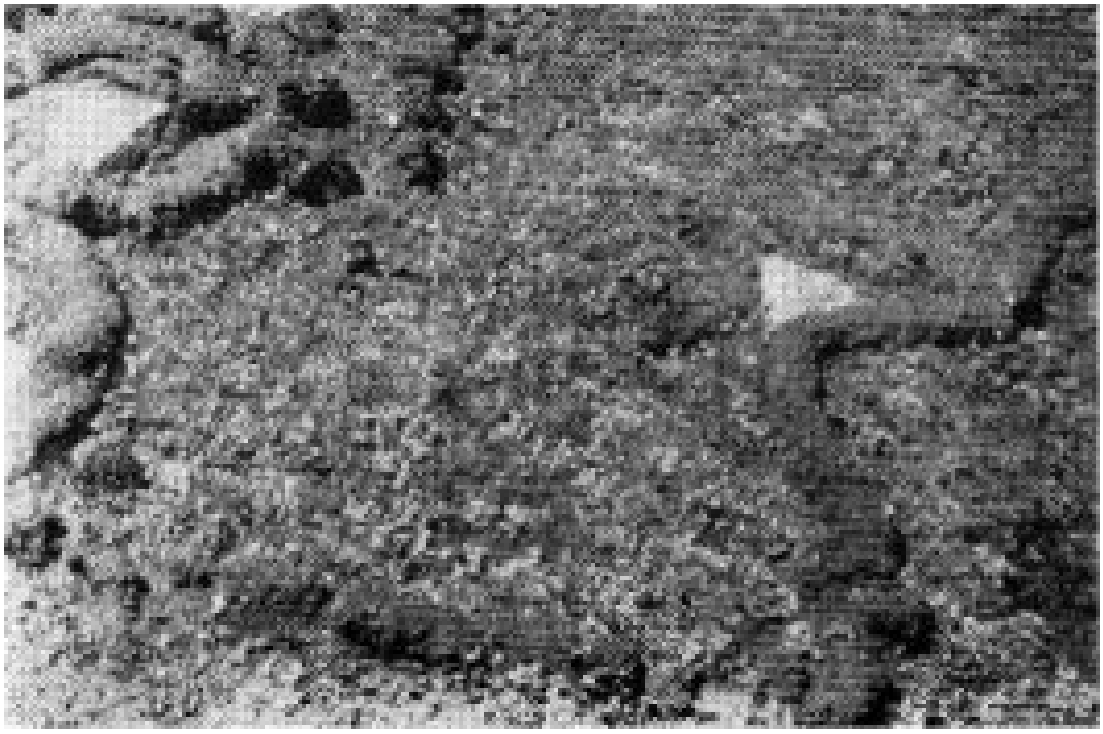
Photo by Author

Pocket gopher hole showing eccentric dirt pile.

Photo by Author

Pocket gopher mound. Note that it is lopsided.

Pocket gophers make long series of tunnels about half a foot below the surface, with dirt piles thrown up at different spots above them. These are mainly exploratory tunnels, thrown out in search of food which consists of almost any vegetable material, roots, stems and all. Occasionally a side vent will be put up to the surface so the animal may forage near by, but never far from the safety of his subway. Often a lower level of tunnels contains nesting and storage chambers.



From Kodachrome by Anderson

“Cores” of winter pocket gopher runs.

In wilderness country like Yosemite National Park, pocket gophers have long played an important part in the development of the soil. They bring up a very respectable amount of earth from below —in one area, 1.64 pounds per square yard, according to Grinnell and Storer. Thus the weathering of the subsoil is hastened by its being deposited on the surface. The extensive tunnels permit aeration and the introduction of water to hasten the weathering of more subsoil. These tunnels also, in time of rains or melting snow, take up water, retard the run-off and conserve water.

Pocket gophers are prone to store far more greenstuff underground than they eat. The result is that more humus is mixed with the soil. The population of pocket gophers and other burrowing animals in Yosemite appears heavy enough so that the above factors are of real consequence in the development of soils under natural conditions and are a contribution to the well-being of the natural wild vegetation.

The **Allen pocket mouse** was added to the park list on July 9, 1950, by Ranger O. L. Wallis. He found a specimen that had been killed by a car one-half mile above South Entrance on the road to the Mariposa Grove.

This subspecies is about 8 1/2 inches long. More than half this length is tail. The upper parts are a shiny, grizzled, brownish tan, with spiny hairs on the hips. The feet and underparts, including the underside of the tail, are white. Along the sides, between upper and lower parts, is a streak of beautiful, reddish tan. It has external cheek pockets, hence its name.

Courtesy Calif. Division of Fish and Game.

Golden beaver. Photographed immediately after release in Los Padres National Forest.

The **golden beaver** attains a length of nearly four feet and a weight of around forty pounds. The overall color is a golden brown, although this may not be readily apparent when the animal is seen at twilight, the fur wet from swimming.

A cautious observer may watch beavers at work in early evening or morning. The hours of greatest activity are from dusk to dawn. The loud splash of the flat tail, which may throw considerable water in the air when a beaver sounds the alarm, is a thrilling experience to see and hear.

Photo by Anderson

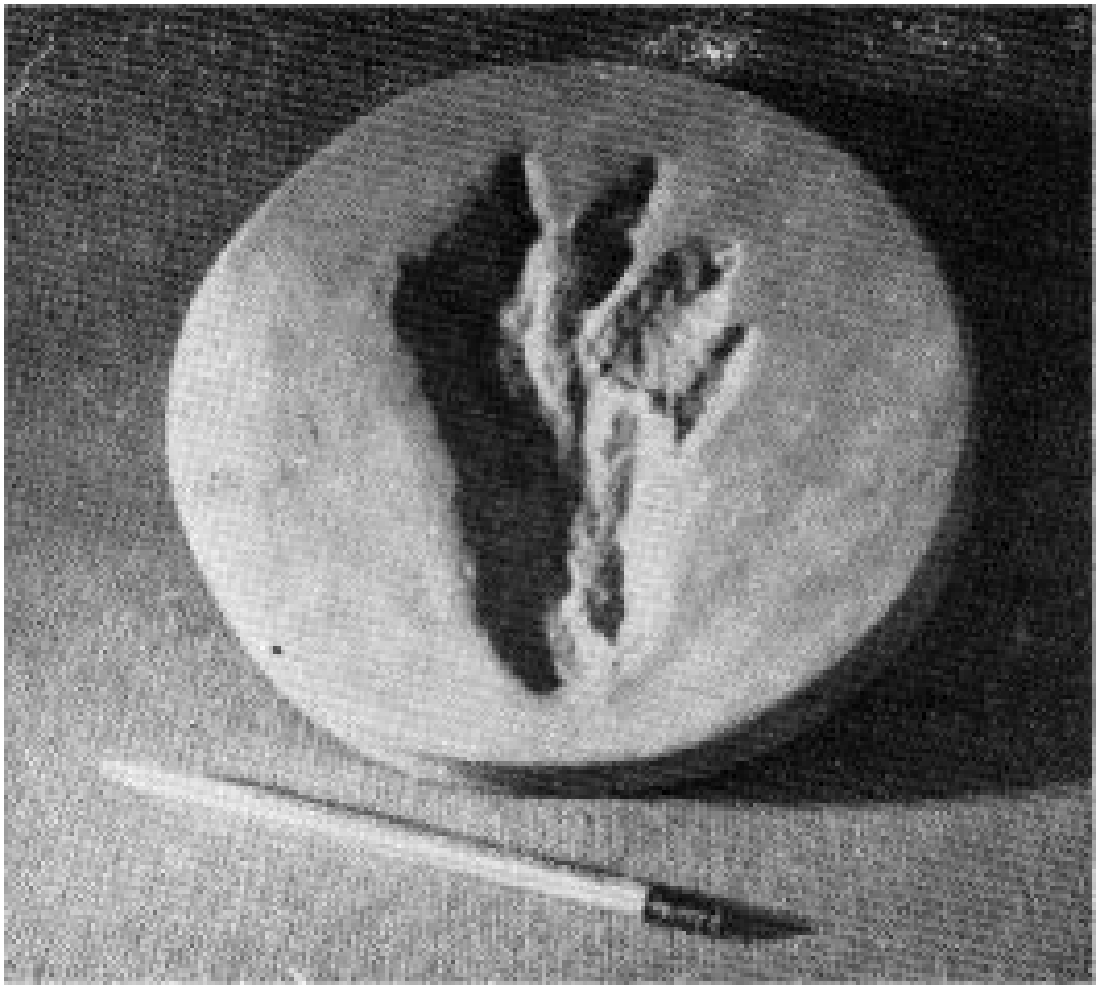
Beaver dam on Big Creek. Height of dam ranges from 5-7 feet.

The tail is also used for a rudder when swimming, or a prop when sitting up, and may assist by pushing when the animal is in full flight on land. However, there is no evidence to indicate that it is ever used as a trowel, despite traditional accounts to the contrary.

Photo by Anderson

Beaver tree on Big Creek.

So far as the records show, this was never a species native to the park. At any rate, we know that our present colonies are the result of introductions made by the California Division of Fish and Game at sites very near our southern boundary. Properly, golden beavers are denizens of the lower drainages of the Sacramento and San Joaquin Valleys, at elevations of not more than 1,000 feet.



From cast by M. V. Hood

Hind footprint of golden beaver. Six-inch pencil.

In 1944, the above-mentioned agency made two “plants” of golden beaver in Big Creek, near Fish Camp. Dams and other signs of activity may be seen from the road just below South Entrance, and have been noted well inside the park boundary. Another site of activity is in the stream by the golf course along the Wawona Road.* [* See *Yosemite Nature Notes* (27) 4:69-74, April 1948 and (30) 1.5-9, January 1951, for interesting accounts of beavers.]

The **long-tailed,** or **California harvest mouse** has been recorded in Yosemite but once, in 1936, near Cascades. It is very common at lower elevations outside the park, in grassy or shrubby situations. This form is easily mistaken for the common house mouse, but the tail is not nearly so scaly and the dark color of the upper surface of the tail is clearly differentiated from the dull white of the under surface. Further, the upper incisors of harvest mice have deep longitudinal grooves which are absent in the house mouse.

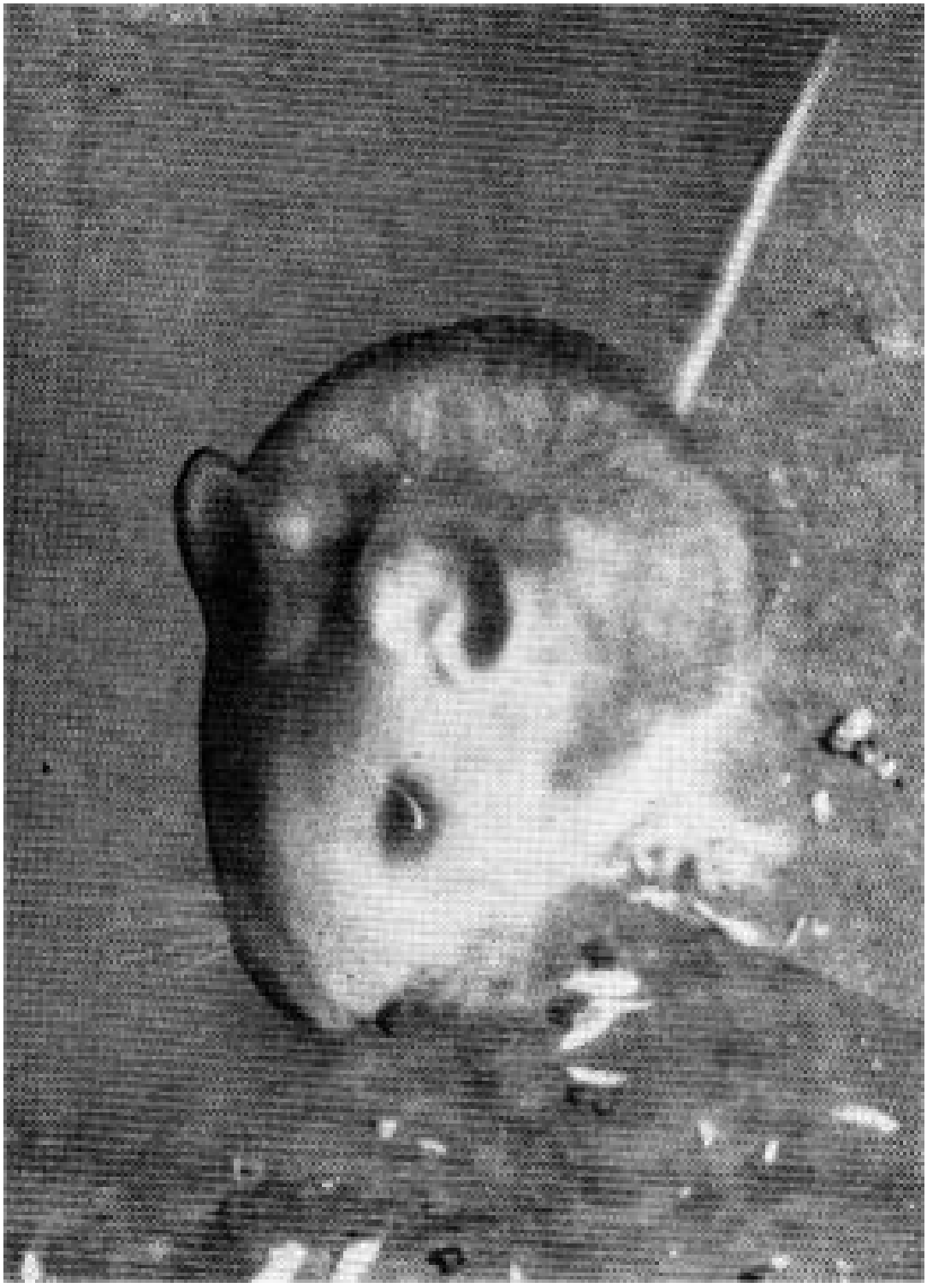
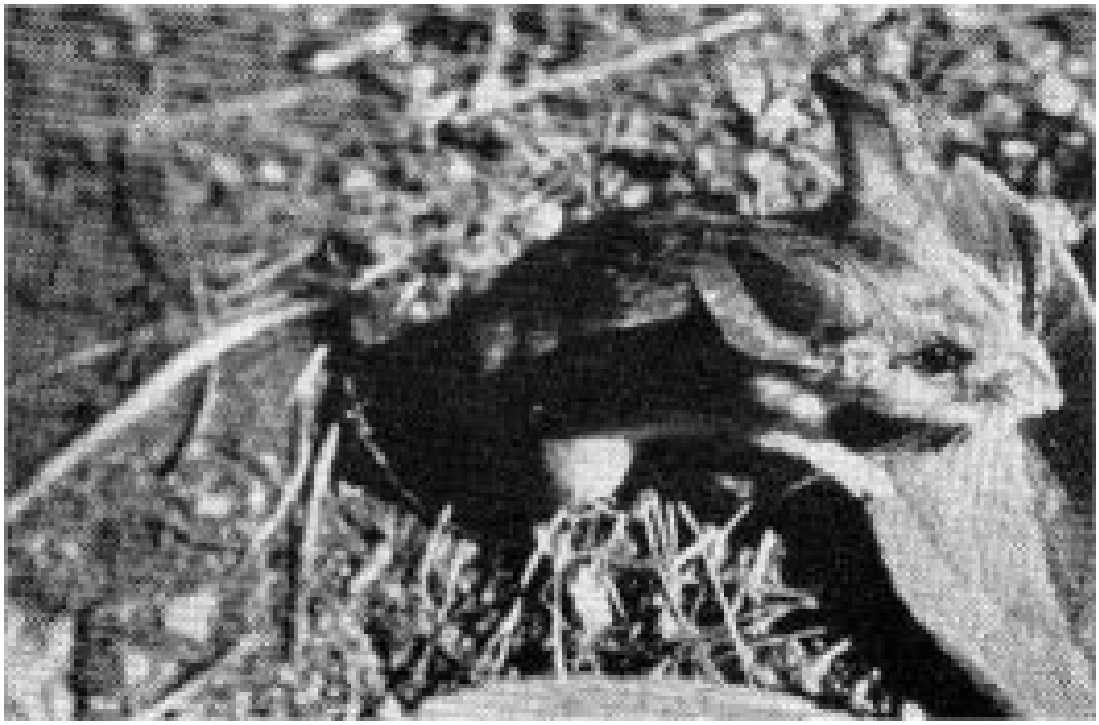


Photo by R. G. Beidleman

Gambel white-footed mouse.

White-footed mice are probably the commonest type of mammal to be found in Yosemite National Park. They live in all suitable habitats from the lowest elevations on the western boundary up to at least 10,800 feet. The adults are quite striking, with brownish-tan upperparts, bright fawn flanks, white feet and underparts and large lustrous eyes. The fact that they keep themselves well-groomed enhances their clean and attractive appearance. They do not warrant the traditional aversion generated by the term “mice.”

The young are marked much like the adults, but the upperparts are a bluish gray. In “adolescence” the color resembles that of adults, but is paler in tone. These variations, due to differences in age, often confuse the uninitiated into believing that they represent different species.



From Kodachrome by Turner

Gilbert white-footed mouse. Note big ears.

Actually, three kinds of white-footed mice are known from Yosemite, but identification of a single individual would be extremely difficult without technical knowledge or the comparative material available in a museum study collection, having the specimen in hand. A possible exception is the **Gilbert white-footed mouse.** It is found only at the lower elevations of the park and has comparatively huge ears, three-fourths of an inch long. Records are rare in the park for this subspecies.

Rather than the well-known house mouse, it is usually some form of this group that enters the haunts of man in Yosemite. Sometimes it is in search of food that whitefoots come into the house. However, many times they seem not to bother the larder, but rather seek to find shelter and to store food brought in from the outside.

In the autumn of a "good acorn year" in Yosemite Valley, residents may hear these mice drop acorns while in the space above the ceiling. The rolling nut resounds, comparatively, as though it were a billiard ball. These seem tiny creatures to lug acorns so far above the ground level, but they accomplish it, oftentimes making the cache in a spot such as the toe of a coot hanging upside down, where it would appear impossible for them to climb while carrying such a load. In addition to acorns, their natural food consists mainly of dried seeds, fruits, nuts and insects. The chief period of activity is at night.

Nesting places near the caches in buildings are not spurned. Overshoes, hats, dresser drawers, upholstery (even in cars) and, of course, the spaces between walls or under rafters are among spots chosen for a cozy home made of shredded paper, cotton, kapok or similar materials, fluffed up by the teeth and nails. Aside from these artificial situations, the nest may be made in brush, hollow stumps, under the ground, beneath rocks, in fact almost any sheltered spot, depending on the habitat of the species. The softest of materials available, such as grass and milkweed silk, will be used. The winter nest must be especially warm, for they do not hibernate.

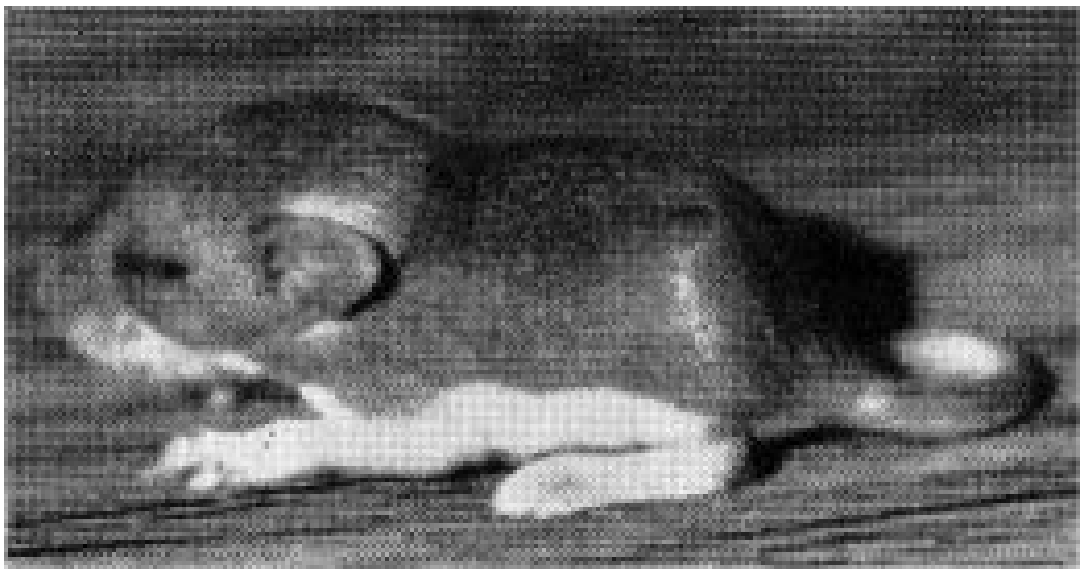


Photo by R. G. Beidleman

Young white-footed mouse. Probably Gambel.

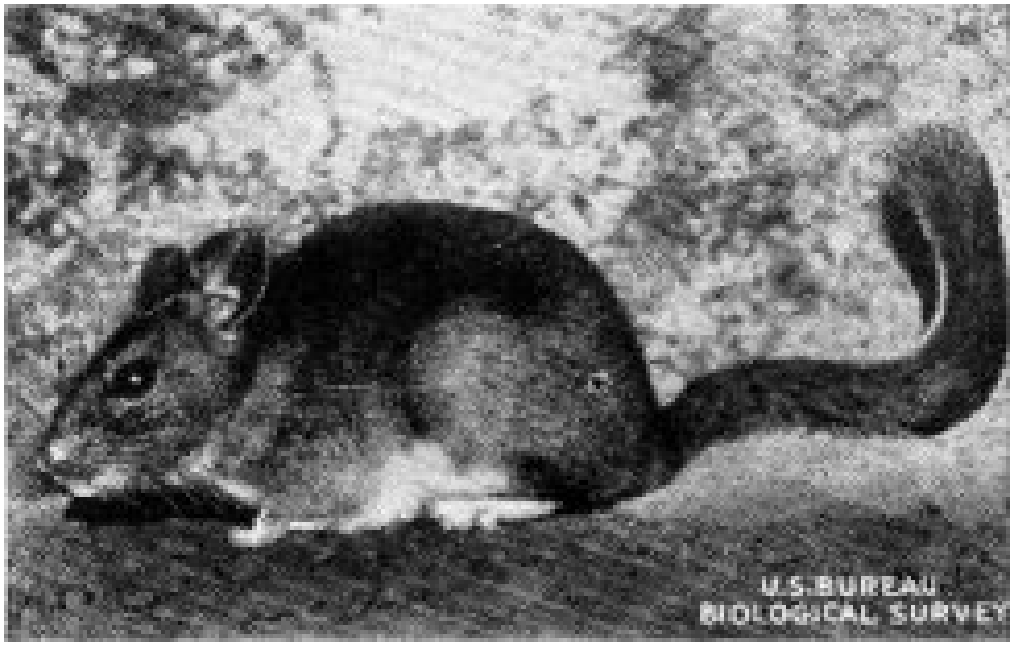
Certain studies in the Sierra indicate that there may be from five to ten whitefoots per acre. They are undeniably prolific, breeding when from five to eight weeks old, and having up to four litters a year. In such numbers, being mainly seed eaters, they must have an important impact on the plant life of the area. Natural checks, such as disease and seasons of poor food supply, have prevented them from becoming a plague here. As food for other interesting animals, from shrews to mountain lion, they make a significant contribution to the wildlife picture in the park.

The patient observer of white-footed mice in his camp or home may encounter two interesting types of behavior— "drumming" and "singing." The drumming is done by the rapid vibration of the forefoot or forefeet. It can easily be heard if the mouse is among dry leaves, or on a piece of paper, so that the sound is amplified. The singing is so high-pitched that not all ears may catch the sound. I have never heard it, but it has been described as being something like the trill of a bird, though much weaker; or, again, as a shrill buzzing. Certainly the white-footed mice will bear acquaintance, beautiful, attractive little animals that they are.

Two kinds of **wood rats** are in our area, both of which are found at one time or another in Yosemite Valley. Westerners may be accustomed to referring to these animals as **pack rats, trade rats** or **miner's rats,** varying with the locality. It is true that wood rats seem interested in collecting strange objects, and adding them to their nests. Sometimes other things may be brought back in place of those taken, but there is no evidence that this was done to *replace* them on an exchange basis. Nevertheless, many an interesting experience has arisen through the collecting habits of wood rats, especially the bushy-tail of the higher elevations.

Superficially, wood rats resemble the species of Old World rats which infest the haunts of man in "civilized" areas. Our native rats, however, keep themselves cleaner and present a more attractive appearance—soft fur, white feet and underparts, large, lucent eyes, and tail fully clothed with hair.

The **Streator wood rat** is grizzled brown above, with the short, brown hairs on the top of the tail contrasting with its white under surface. It ranges from the lowest elevations on the western boundary up to the level of Yosemite Valley, where it meets the range of the bushy-tailed wood rat. In the lower country this form makes conspicuous nests, on the ground or in trees. It may assemble nesting material in the crevices between the boulders of the talus slopes. These nests are constructed of almost anything that is available, but sticks play a large part in their makeup.



Bushy-tailed wood rat.

The **bushy-tailed wood rat** ranges from the Valley up to our highest mountain. It is larger than the other form, sandy tan above, with a flat, brush-like tail. The latter character is not so pronounced in the young. Rock slides at or above timberline are one locale for this species, where it nests back among the stones. It is reputed that the bushy-tail has a more highly developed "collecting instinct" than does the Streator.

Yosemite wood rats are chiefly nocturnal. Usually one is not aware of their presence unless attention is forcibly brought to them, as in a building or when they are the cause of some untoward event in the trailside camp. Their food consists mainly of vegetation — leaves, fruits, seeds, nuts, roots, bark, fungi and the like.

The **Sierra lemming mouse** is quite similar in appearance to the meadow mice (see illustration of latter), but has much softer fur, a shorter tail, and is sandy gray in color. It is sparsely distributed in the Sierra and not too much is known about its habits.

It is known generally as an inhabitant of the high meadows near patches of heather. However, a companion and I once captured one for the Yosemite Museum on a nearly barren ledge, two-thirds the way up Ragged Peak. On two occasions in the fall of 1949, I was present when Naturalist Robert N. McIntyre saw what must have been this species on the shoulder's of Mt. Lyell, well above any meadows or heather. These were startled where weathered cracks in the granite supported a limited growth of grass and sedge in otherwise barren country. On both occasions the animal sought shelter under some rocks near at hand.

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

MEADOW MOUSE

Among the commonest of wild mammals in North America are the **meadow mice,** often called "field mice" by the farmer. The species in our area are chunky, short-tailed, with ears nearly hidden in the dark brown, dense, fluffy fur. The eyes are placed to afford a wide range of vision, particularly overhead. This must be very useful, since vigilance is the price of life. No predator scorns the meadow mouse as an item of food.

Tough little animals, they can endure severe extremes in living conditions. The fur is water resistant and they can even live where the runways are more than half submerged. They are found from the lowest level of the park nearly up to timberline.

Photo by Author

Mouse runs in parted grass, Yosemite Valley.

These are the path-cutters. Part the lush grass in the drier portions of the meadows, and a maze of runways will usually be revealed. The covered passageways reduce detection of the mice from above by predators. A system of underground tunnels may also be employed and, if the site is dry, the nesting chamber placed below ground. Often, the nest is made in a clump of grass or sedge, above the water level. Many other creatures, such as shrews and weasels, find the runs convenient highways and use them frequently.

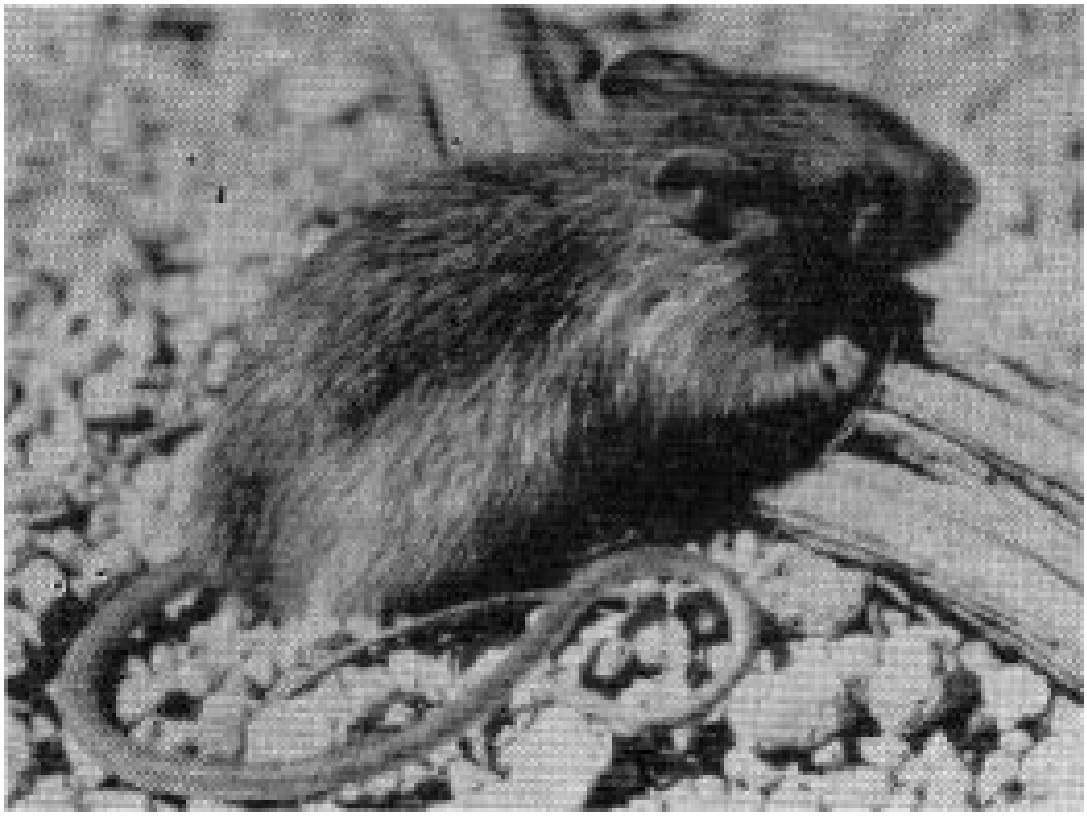
Activity is carried on through all seasons. In winter, tunnels are made in the snow and nests are often built beneath the surface, which insulates them from the colder ground below. In 1942, an individual was seen traveling on the surface of the snow, then 32 inches deep, near the Rangers' Club.

Meadow mice are among the most fecund of mammals. They start breeding when less than two months old and produce several broods, of half a dozen each, a year.

Green food, grass in the main, is preferred. Vegetable matter may provide 99 per cent of the diet. These prolific little creatures are part of the common currency which provides the carnivores with energy—energy which the grass gets from the sun, which the mouse gets from the grass, and which flesh-eaters cannot get in sufficient quantities directly from the plants because they are flesh eaters.

Three kinds have been recorded in the park, but they will be undistinguishable to the layman. Two are found in meadows and grasslands, not far from water. The Sierra meadow mouse is freer running, often using the ground under bushes and in thicket s. Generally, it makes no runways, though poorly defined paths may be found. Unlike the others, which are active any time, this form is not abroad so much in the daytime.

At the time of the Grinnell and Storer survey (1914-20), the **house mouse** was found about barns and dwellings in Yosemite Valley. The Yosemite Museum has a specimen of the **Alexandrine** or **roof rat,** taken in the valley in 1936. At this writing, I am unable to determine that Old World rats and mice, such as infest more "civilized" areas, are present in the park to a conspicuous degree. Mention has already been made of the differences between certain native forms and these species that were introduced from the Old World (see pp. 75-77).



From Kodachrome by M. V. Hood

Allen jumping mouse.

An **Allen jumping mouse** is a pretty thing. The bright tan sides and pure white underparts, contrasting strongly with the reddish dark brown area on the head and back, give a clean, attractive appearance. The long hind legs indicate the source of the bounding gait responsible for the name. The exceptionally long tail serves as a “balance rod” to the animal when it makes leaps.

Jumping mice inhabit the cool, wet meadows and stream banks in the middle elevations of the park. They swim readily. Being generally nocturnal, they are seen usually only by accident. Unlike most mice, they hibernate.

The food consists of seeds, mainly those of grasses, though stems and leaves enter into their diet also.

Yellow-haired porcupine.

There is a fair chance of seeing the **yellow-haired porcupine** anywhere in Yosemite from the lowest reaches up to timberline. If you find one, there is no need for apprehension, provided you keep out of reach. The “porky” is not aggressive. Porcupines cannot shoot their quills. The black, barbed outer tips of the yellow quills fasten themselves very easily into an “enemy” on contact or may be driven in firmly by the action of the thick, muscular tail.

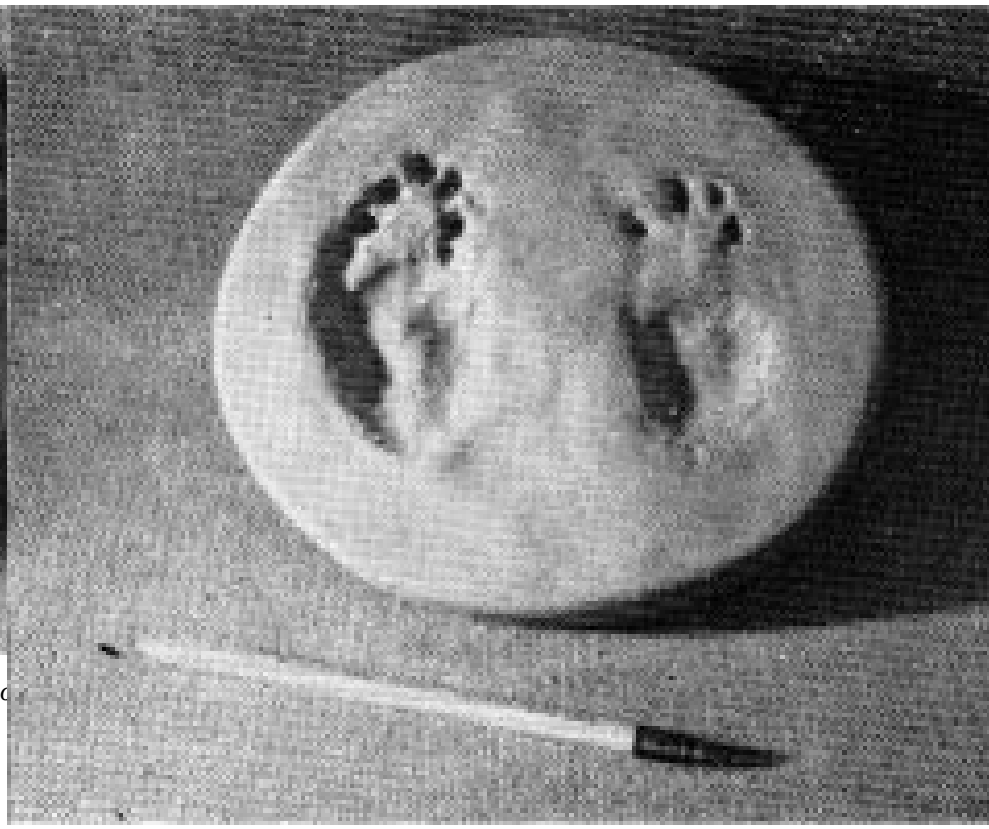
“Stickers” are not the only body covering. They replace part of the underfur, but may be kept so flat as not to show through the overhairs, except on the tail, unless the animal is excited or on the defensive. The fur is brownish black, with a coat cf yellow-tipped guard hairs. The underparts lack quills.

Some predators take advantage of this last fact and manage to kill porcupines by flipping them over and attacking the under side. There are, however, plenty of cases on record where coyotes, wildcats and others have been seen with a “faceful.” The young possess hair and some spines at birth.

While the yellow-haired porcupine is particularly fond of the inner bark of trees, it feeds on other types of vegetation, including fruits. In winter, an individual may climb up a tree and remain there for days without coming down, dining on bark or buds when necessary. Much has been made of the damage to trees by porcupines, but, here in Yosemite, they do not seriously affect the scenic values of the forest. They do, however, give the Park Engineer a headache with their gnawing of the boards in certain structures, such as pit privies!

Pho

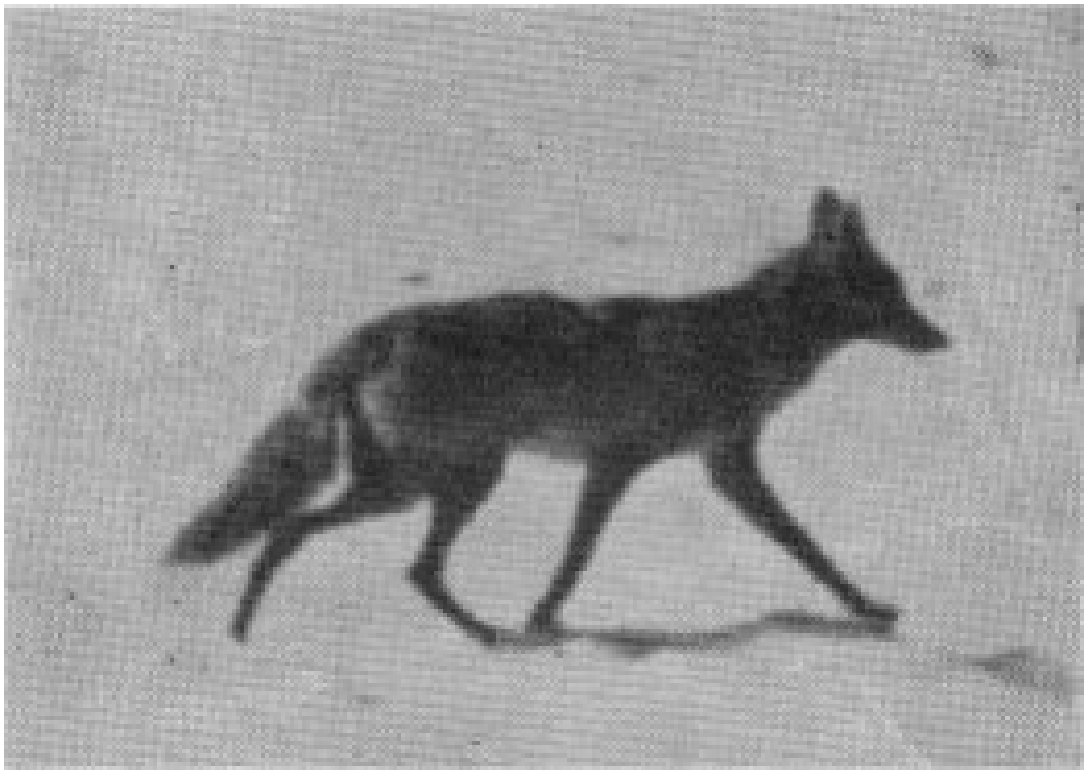
Remains of porcupine eaten by coyote.



From cast by M. V. Hood

Tracks of yellow-haired porcupine. Hind food on left, front on right. Six-inch pencil.

FLESH-EATERS — Carnivores



From Kodachrome by G. Gallison

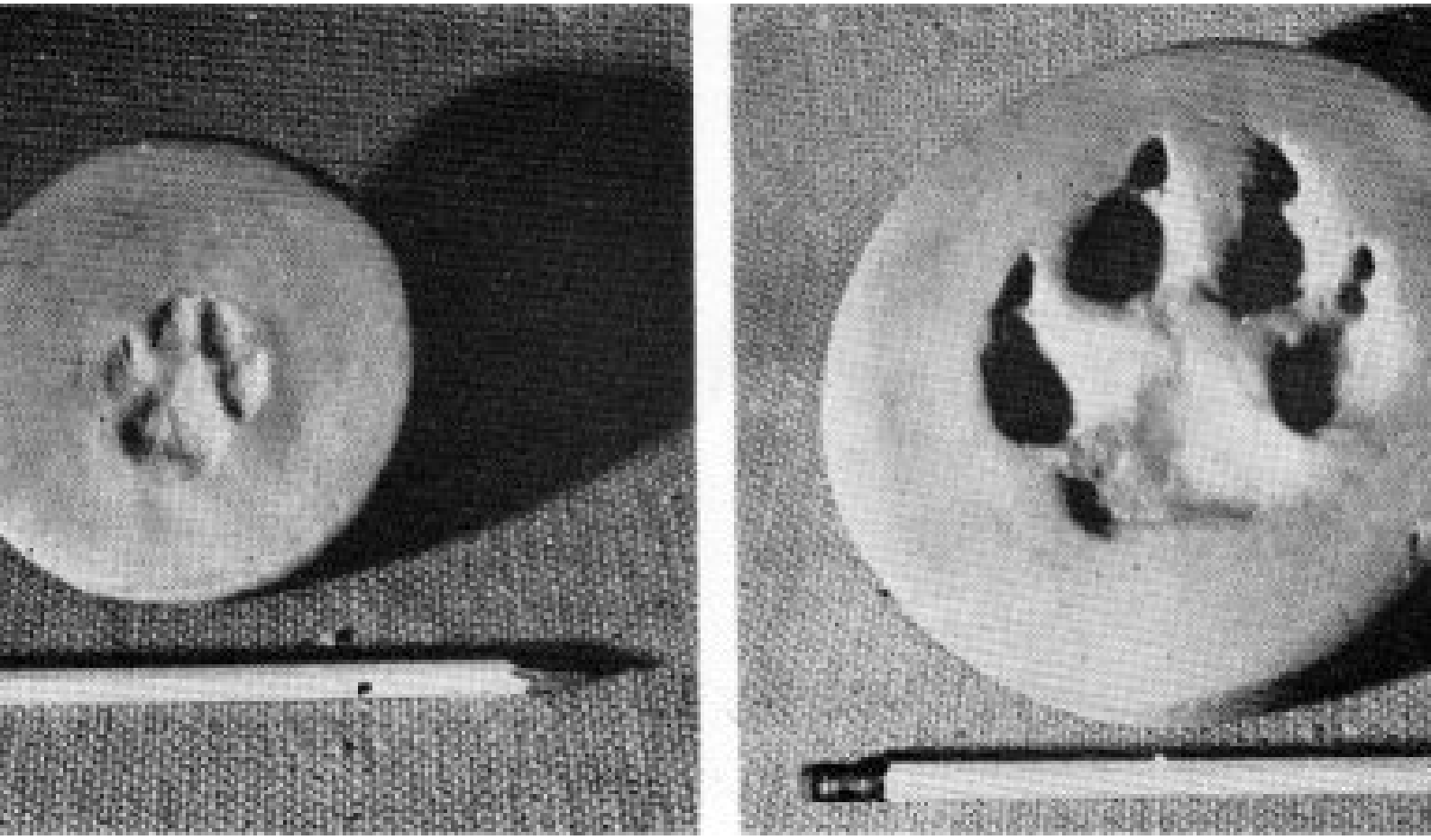
Young mountain coyote near Badger Pass.

Large, for a coyote, and "tame," the first impression given by a **mountain coyote** is that a German shepherd dog is at large in the park. The grizzled, grayish buff color also suggests a timber wolf. True wolves are much larger, of more powerful build, and have not been recorded in our area.

Coyotes are common here, ranging up to the very high country. In winter, they are more numerous in Yosemite Valley, presumably because deep snow reduces the availability of food up high. However, some are at Tuolumne Meadows all winter. It is interesting to

see coyotes hunting mice in the snow covered meadows of the valley. They seem to follow the mice by listening to them as they travel under the snow, then pouncing on them in cat-like fashion.

In heavy snow years, coyotes take toll of the fawns or yearling deer, which cannot escape readily in the heavy going. Ordinarily, a healthy, adult deer is a match for a coyote, and has been seen successfully to ward off an attack from two or more, given open ground and good footing. The deer population maintains itself successfully, notwithstanding the fact that the National Park Service gives equal protection to all predators. The usual food of the coyote consists of lesser game, such as rodents, various fruits, and carrion.



From casts by M. V. Hood

Tracks of gray fox, left, and coyote, right. Six-inch pencils.

The **Sierra red fox** is a rarity in the park, and few records come to our attention. One was seen at Tuolumne Meadows early in 1952. The gray fox is often mistaken for this species because of certain reddish portions of the coat. The upperparts of the red fox are a yellowish red and it has a large, bushy tail with a *white tip.*

This species produces the “cross,” “silver” and “black” phases associated with red foxes elsewhere. It is a denizen of the higher elevations and is found more commonly east of the crest, outside the park. It is more numerous in Sequoia-Kings Canyon National Parks.

Sequoia Natl. Park Photo

Gray fox. Note black-tipped tail.

In the middle and lower elevations of the park, the **Townsend gray fox** is quite likely to be seen. At night, the car headlights will often pick one up as it scurries away. The first impression may be that it is a cat, for the gray fox is slender and quick.

Sequoia Natl. Park Photo

Gray fox pup.

Visitors seem prone to mistake the gray for a red fox, doubtlessly misled by the reddish color along the sides and base of the neck, together with the reddish flanks. In reality, the larger part of the animal is iron gray, thereby justifying the name. The black stripe along the top of the tail, ending in a black tip, gives conclusive identification for the gray fox. At times, the hoarse, single bark will be clearly

heard coming from a rocky hillside. It sounds like a sharp “rawk,” and if one is not close enough to detect the hoarse quality, it may be mistakenly attributed to a “frog” or “night bird.” Often, a fox will emit one bark, then move a short distance and give another. Like other grays, our form has been known to climb trees, especially if the trunk is sloping. They are not animals of the deep forest, however, preferring areas with shrubbery, where they hunt for the small rodents and vegetable matter, particularly berries, which comprise their food. Garbage will not be spurned by them when available.

All the bears now in Yosemite are the **Sierra black bear,** a subspecies of the American black bear. Several color phases are found, ranging from coal black to light brown or cinnamon. Black phase females often produce brown cubs, or one black and one brown cub, and brown females do likewise.

Population estimates for the 1,189 square miles embracing Yosemite National Park vary between 300 and 400 bears. In summer, there are from 4 to 12 bears living on the valley floor. Under primitive conditions, the area would not be large enough to support over three or four individuals. The higher concentration now present is probably due to the presence of thousands of people, who furnish considerable food through garbage and the larders of unwary campers.

Little is known about the length of life of black bears in the wild. In captivity, bears often live 25 years or more. According to old-time rangers, individual bears in Yosemite are known to have appeared for 15 consecutive years. Most females have their first young when three or four years old. Full growth is not attained, however, until the sixth or seventh year.

Photo by Dixon

SIERRA BLACK BEAR

Live trapping of park bears is sometimes practiced in areas where bears are prone to raid food supplies. This is accomplished in a humane manner through the use of a large, iron cylinder, mounted on trailer wheels. There is a trap door in one end, and the bear is enticed into the trap by bait. The trailer can then be coupled to a car and transported to a more remote spot in the park where the bear is released.* [* The material on bears is largely an abridgement of "Bears of Yosemite" by M. E. Beatty, *Yosemite Nature Notes* 22 (1), January 1943. Mr. Beatty is now (June 1952) Chief Naturalist in Glacier National Park.]

In 1938, a very large male bear was captured in the above manner. This "garbage fed" bear was found to weigh 680 pounds, which, according to all available data, is a record for California.

In late summer and fall bears eat unusually heavily in order to build up heavy layers of fat necessary to carry them through their winter "sleep." With the first heavy storm of winter most bears go into hibernation. The den is usually a sheltered cave among the rocks, or a hollow tree. They remain until late March or early April, depending on the severity of the winter. They hibernate alone, except where cubs of the year occupy the den with the mother.

As a rule, bears do not eat or drink during the hibernation period. The breaking down of the fatty tissues built up during the previous fall sustains life. However, they have been observed outside their dens during mild winters. Several observations recorded by Yosemite naturalists have indicated that, at this latitude, bears sleep rather lightly during hibernation.

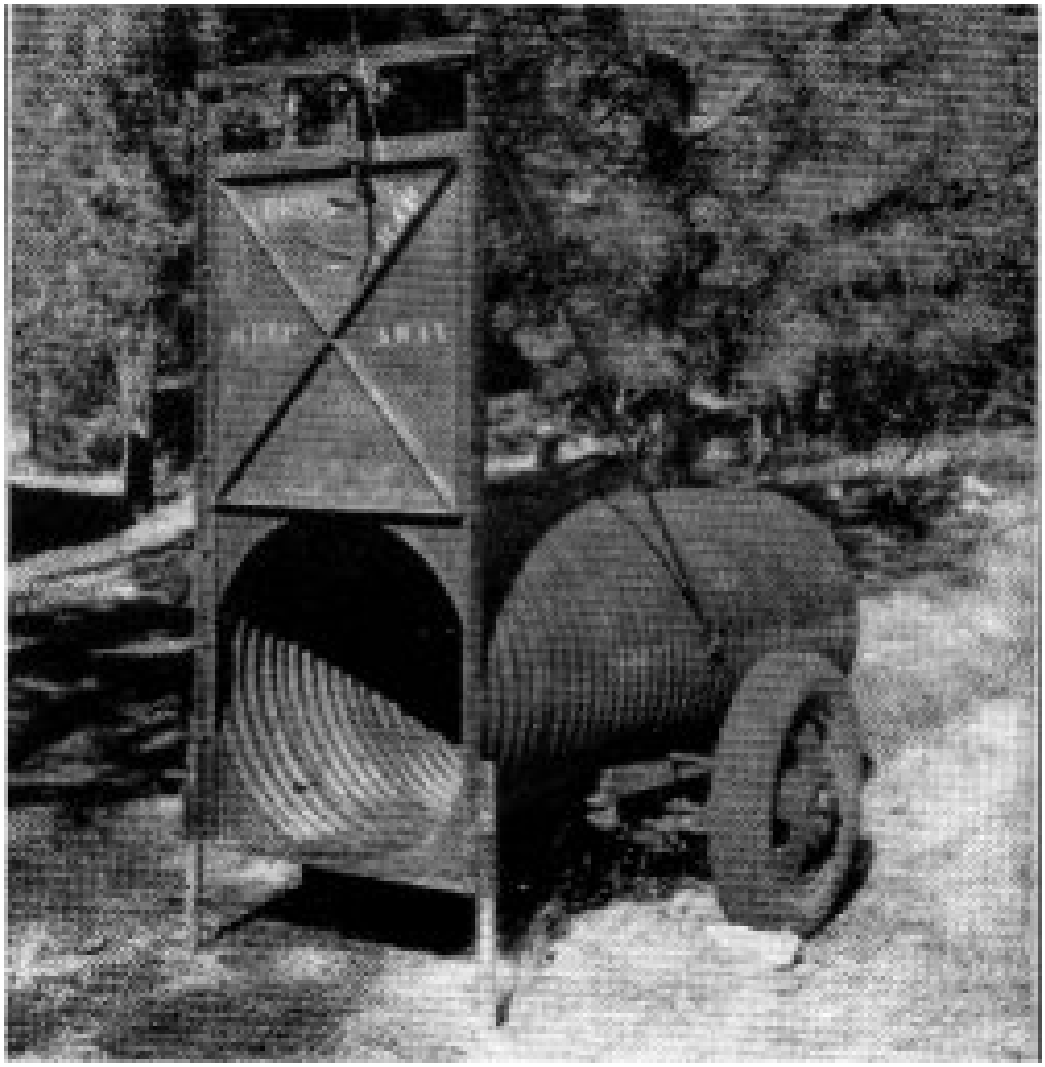


Photo by Anderson

The bear trap.

It has been generally supposed that hibernation was to enable the bears to escape the cold weather of the winter months. Observations in Yosemite indicate, however, that the availability of food during this period is the chief controlling factor.

It is believed that late June is the time when most Yosemite bears mate. Cubs are, for the most part, born around the latter part of January, or early February, while the mother is in hibernation. Cubs are generally born in pairs, although triplets or even solitary cubs are not uncommon. Rarely there are quadruplets.

At birth, they are extremely tiny, weighing less than a pound. Their growth and development are at first very slow. In one case, it was 39 days before the cub opened its eyes. The nursing period lasts for about six months, but the cubs will be with the mother their first year, usually hibernating in the same den with her, or in a den nearby.

In Yosemite, new-born cubs seldom emerge with their mothers until late April, and are rarely observed on the Valley floor before May or June. They are then about 14 inches long, a foot high, and weigh 10 or 12 pounds. They soon supplement their milk diet with other food and put on weight rapidly.

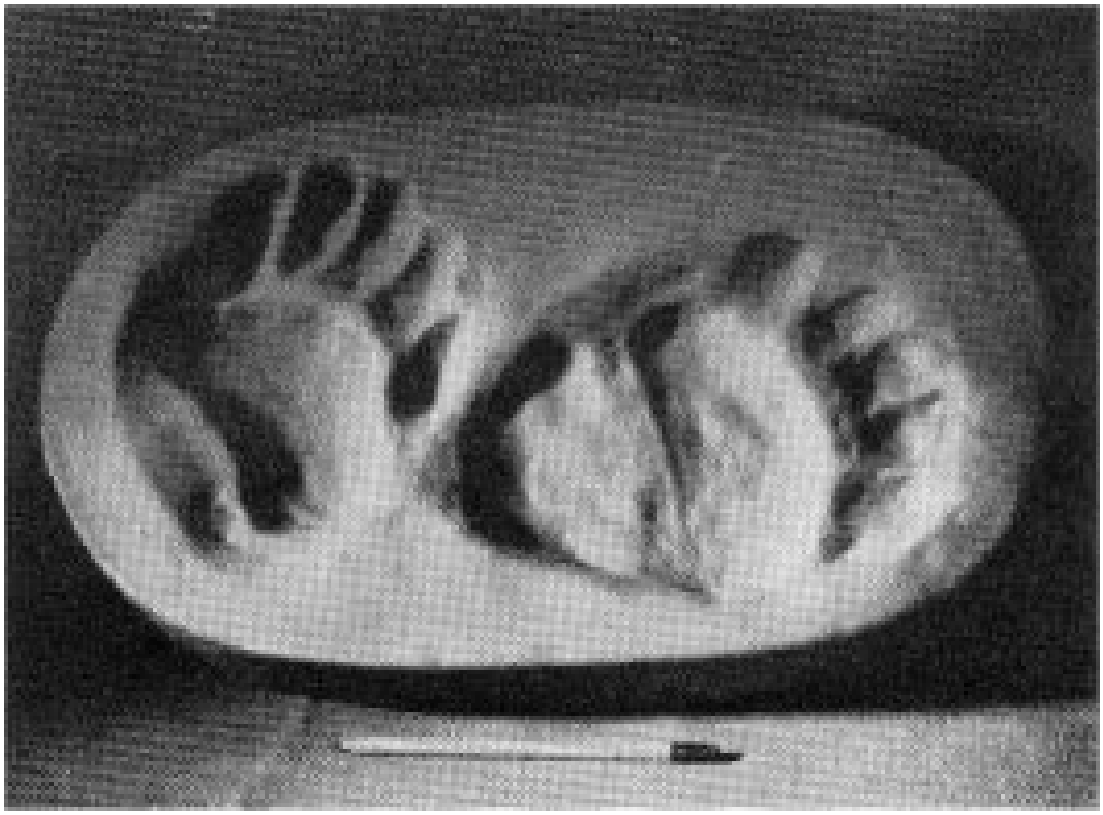
The mother bear is usually quite solicitous of her cubs, fondling and playing with them, and protecting them when in danger. They soon learn to scramble up a tree at the first warning sound from the mother. A mother has been observed cuffing her cubs because they did not go up a tree quickly enough after she had given them a warning of danger.

Despite maternal care, however, as the cubs grow in size, they usually dwindle in number. Sickness and accidents take their toll. The male bear may try to kill or injure any cub that might come within his reach, including his own offspring.

The adult female normally produces young every other year. Cubs hibernating with the mother the winter after their birth will generally be put “on their own” during the second summer when the mother again prepares to mate.

January 28, 1950, a small cub was discovered by the rangers in the area behind Government Center in Yosemite Valley (see back cover). About 17 inches in length and 11 inches high at the shoulder, weighing between 8 and 10 pounds, it could not possibly have been born in the current winter. Yet the presence of small, sharp “milk teeth” characteristic of an animal less than a year old, precludes the idea that it was born in January 1949, the time of the previous cub crop. The logical conclusion based on these facts is that it was born not earlier than August 1949, though the writer (H. C. P.) is unable to find any records of late births for the species in the literature.

Although classed as carnivores (flesh-eaters),



From cast by M. V. Hood

Sierra black bear tracks. Front foot, left, hind
foot, right. Six-inch pencil

vegetable matter forms a large portion of the diet of bears. After first emerging from hibernation, adult bears eat sparingly, seemingly preferring grass and other herbage for a two or three weeks’ period. As the season progresses, their appetites increase, and the diet changes. In Yosemite the food includes “almost anything": Insects, berries, apples, pine nuts, acorns, grass, roots, fish, rodents, carrion, and garbage. In addition to the above, they show a decided liking for most types of food used by humans, as is attested by their raids on campers’ food supplies.

Several cases are known in Yosemite of bears stumbling onto fawns hidden in the tall grass of our meadows, which then, due to their inability to run, fall ready victims. Such instances are rare. New-born fawns are the largest animals killed and eaten by bears in Yosemite. Although essentially nocturnal by nature, some of the bears in Yosemite are active throughout the day. During the warmer parts of the day, the majority will bed down in some secluded spot from which they can quietly slip away if disurbed.

They are good tree climbers, and climb both large and small trees apparently with equal ease, the main requirement being a tree of sufficient size to support the bear’s weight, even though it “teeters.”

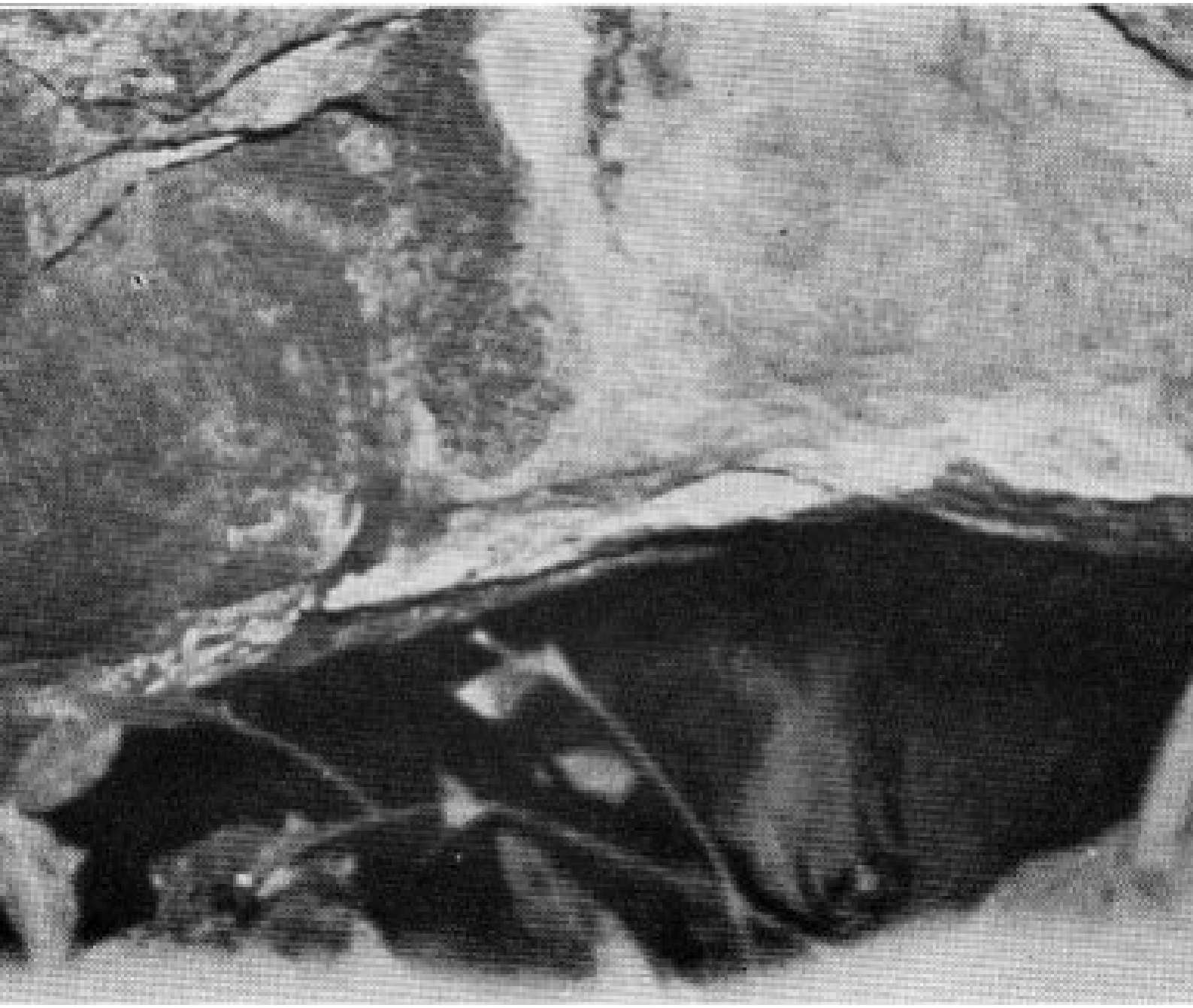


Photo by Cole

Bear in den, Indian Canyon

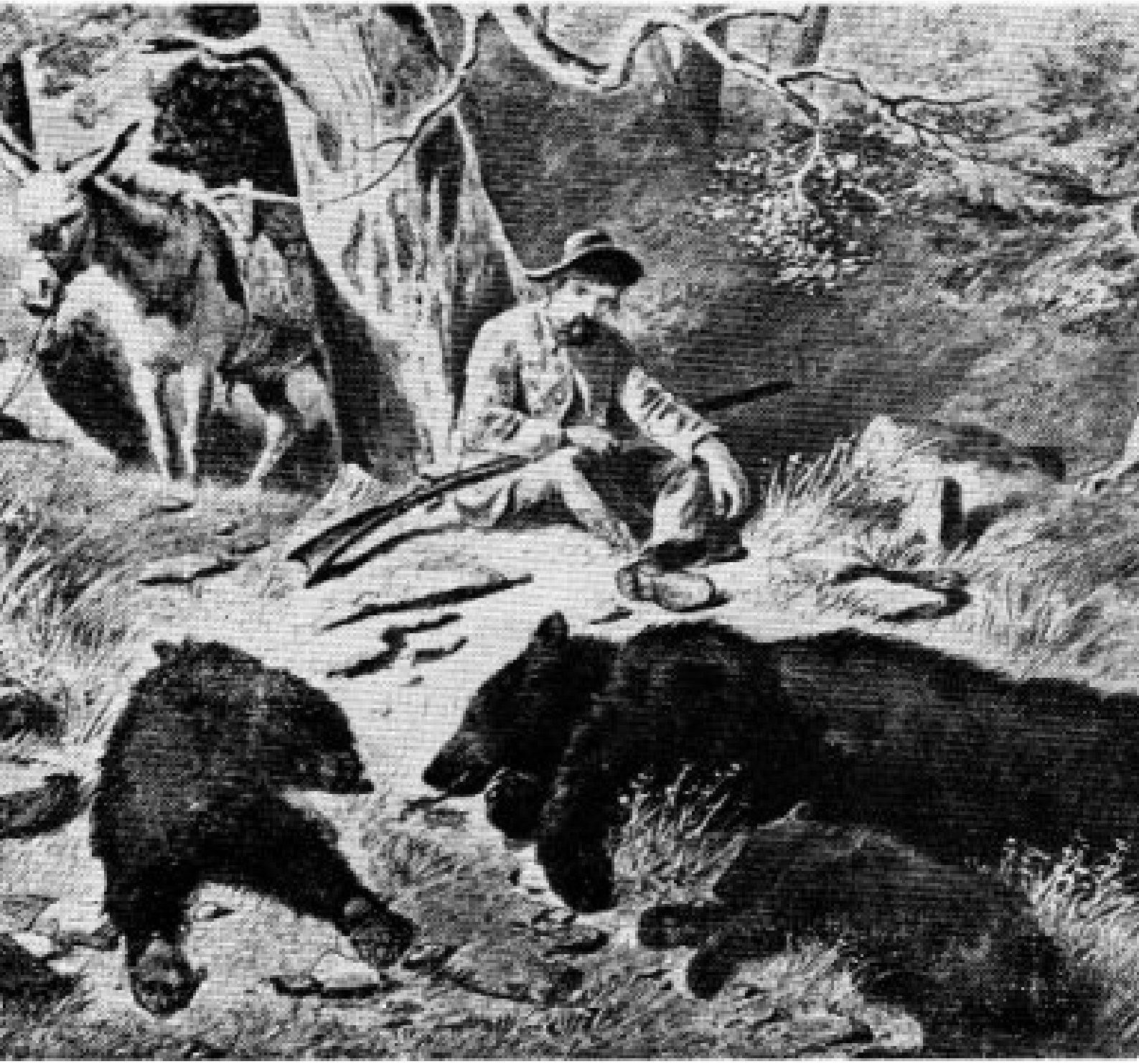
Bears habitually follow a given route, stepping each time in the footsteps previously made. Trails have been found in Yosemite where they have stepped in the same tracks as their predecessors, until a series of alternating depressions nearly six inches in depth have developed.

Other signs left by bears, besides footprints, consist of bear wallows, rotten logs and stumps ripped apart in the search for insects, turned-over rocks, droppings, and bear trees.

These bear trees are of interest, particularly when the trees happen to be quaking aspen, for they permanently record the marks left by bears. Arriving at such a tree, the bear usually stops, and, standing erect on its hind legs, reaches up as high as possible, biting and scratching the tree. The reason for this action is not definitely known, although writers have suggested that it my be some type of “social register.”

The black bear, being the largest mammal in the park, has practically no natural enemies. The largest bear is generally the boss of his domain until a still larger one comes along to displace him. A female with cubs will sometimes stand against a larger bear, but, as a rule, the smaller bear gives ground without engaging in any serious battle.

Bears have the greatest respect for skunks. On many occasions, our naturalists have observed skunks repeatedly refuse to be outbluffed by a bear. Generally, the bear gives way after a few halfhearted attempts to frighten away the skunk, and allows it to take over the remains of its unfinished meal.



Indiscriminate hunting exterminated the grizzly in California.

The name “Yosemite” was derived from the Miwok Indian word for **grizzly bear.** [Editor’s note: For the correct origin of the word *Yosemite* see “Origin of the Word Yosemite.”—DEA.] One of the earliest accounts of grizzlies in Yosemite is by “Grizzly Adams,” who captured and trained grizzly cubs for his traveling animal show. Adams visited here in the spring of 1854, and, according to his diary, discovered a grizzly bear on the “headwaters of the Merced Rivet.”

The last grizzly known to have been killed in Yosemite was shot “about 1895” at Crescent Lake. The skin of this bear is now in the Museum of Vertebrate Zoology at the University of California. The last authentic record of the killing of a grizzly in the State of California was in August 1922, in Tulare County.

The grizzly differs f[r]om the black bear both in structure and habits. In general, grizzlies are larger than black bears. It is believed that the Yosemite subspecies, henshawi, was one of the smaller of the California grizzlies.

The external outlines of the mature grizzly differ from the adult black bear in being higher in the shoulder region, giving the appearance of a hump behind the neck. The most reliable field distinguishing character of the grizzly, however, is the length of the front claws, averaging three or more inches, as compared with two inches for a large black bear. The claws of the grizzly are less curved, making it difficult for the adult to climb trees.

It is unfortunate that they are no longer a part of our living wildlife. For them conservation came too late.

THE PRESENT BEAR POLICY AND ITS PROBLEMS

Some thirty years ago visitors to Yosemite Valley considered themselves fortunate to get even a fleeting glimpse of a bear. With the gradual increase in human visitors came a corresponding increase in the number of bears, attracted by the campers' foodstuffs and by enlarged garbage pits. Soon bears started raiding camps for food, and, after many visitor complaints, the National Park Service began a bear feeding program, the food consisting mainly of garbage scraps.

The result was that the bears would remain throughout the day in the vicinity of the feeding pits which, due to the geography of the valley area, could not be located any great distance away from the main highways. The bears soon turned into beggars, stopping cars, and lining the roadside in hopes of receiving some tid-bits.

To the visitor, the situation seemed ideal. Here was a chance to see bears and to feed them. Few appreciated that these were actually wild animals, with the ability to inflict serious damage to those coming too close to them. Accidents became more frequent until more than sixty hospital cases were recorded during one season.

The service, in an attempt to reduce the number of accidents and to restore normal conditions, then issued a new regulation prohibiting the visitor from feeding, teasing, or molesting the bears. Even this failed to solve entirely the problem.

Nature was badly out of balance. The bears were no longer accustomed to shifting for themselves. The valley was far too small to supply sufficient natural food for such a large population, and so the animals continued to raid camps and garbage cans and to hold up cars. Accidents from bear injuries were still too high.

The policy under which our parks operate in respect to wildlife is to keep conditions as nearly natural as possible. The artificial feeding of bears was therefore not the solution to the problem.

"Bear show" feeding in Yosemite Valley was discontinued in September 1940. A total of 45 bears were trapped during the fall, and moved to outlying areas above the valley rim. This still left too many bears for an area that would hardly supply normal food for more than three or four individuals. Since then, additional bears have been moved; particularly, those individuals that insisted on begging food along highways or were confirmed raiders of camps. *No bears were released outside the park boundaries.*

Results in general are most encouraging, and accidents from bears have dropped to only a few cases a season. It is hoped that, through this policy, the bear situation will continue to show a steady improvement.

Visitors commonly ask, "Where are the bears? And where can we go to see them?" It is difficult to answer, as bears seldom remain at one fixed spot for any great length of time.

They are often encountered along the roads and trails, in the old apple orchards, or in the campgrounds. Bears on trails faithfully follow every zig and zag, and the hiker had best step off the trail, giving up the right-of-way.

Campers usually have no difficulty seeing bears, particularly, if they have such odorous foods as ham or bacon in their larders. Foodstuffs should be protected by caching in a box or sack and suspending with a rope between two trees, or from a horizontal limb. Make sure the food supply is high enough above the ground so that a bear will be unable to reach it, and far enough away from the tree trunk that the bear can't reach it by climbing. Bears may break into cars in search of food they can smell there.

Raiding bears can usually be frightened away by loud noises and flashlight beams. It should be remembered, however, that a bear can both outrun and outclimb a human, and that loss of food is preferable to risking serious injuries through too persistent defense of property.

At times, it is possible for the rangers and naturalists to advise visitors as to locations where bears have been recently observed. It is believed that the visitor will get a far greater thrill out of seeing a bear in natural surroundings than in seeing dozens of bears feeding on garbage.

It is dangerous and unlawful to feed, tease, or molest bears in a national park.

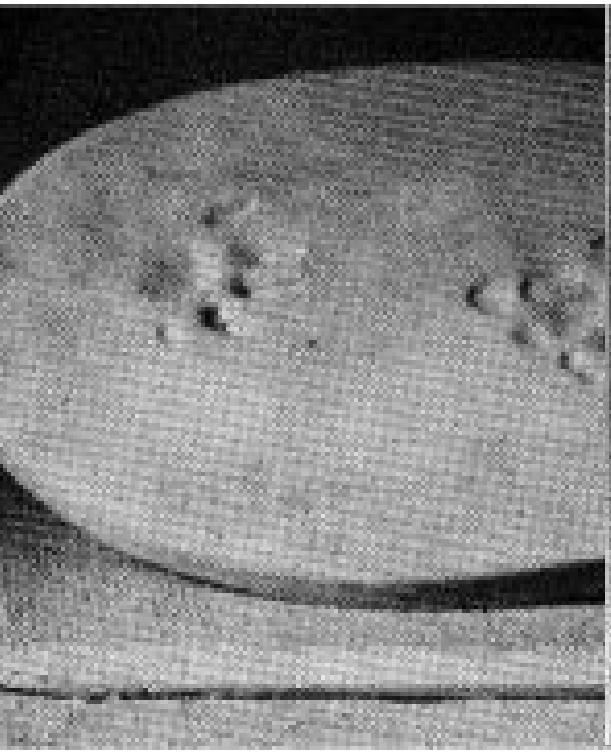
[Editor's note: For current bear safety tips and regulations see http://www.nps.gov/yose/planyourvisit/bears/—DEA.]

Drawing by C. P. Russell

California ring-tailed cat

Small wonder that the naturalists are often asked to identify the **California ring-tailed cat.** Seen at night in the headlight beam, the long, bushy, ringed tail and the short legs preclude its being a cat; the squirrel-sized body rules out the raccoon; the head is fox-like. In the dark, the body seems gray, but it is really a light brown. Despite the name, it is not closely related to a cat. It is commonly found at the lower elevations.

Ringtails are entirely nocturnal, seeking their food, rats and mice, at night. They enter buildings, including the attics of Yosemite homes, in this search. Nuts, fruits, and other sweets are also acceptable to these lovely creatures, according to hotel guests who sometimes feed them.



From cast by M. V. Hood

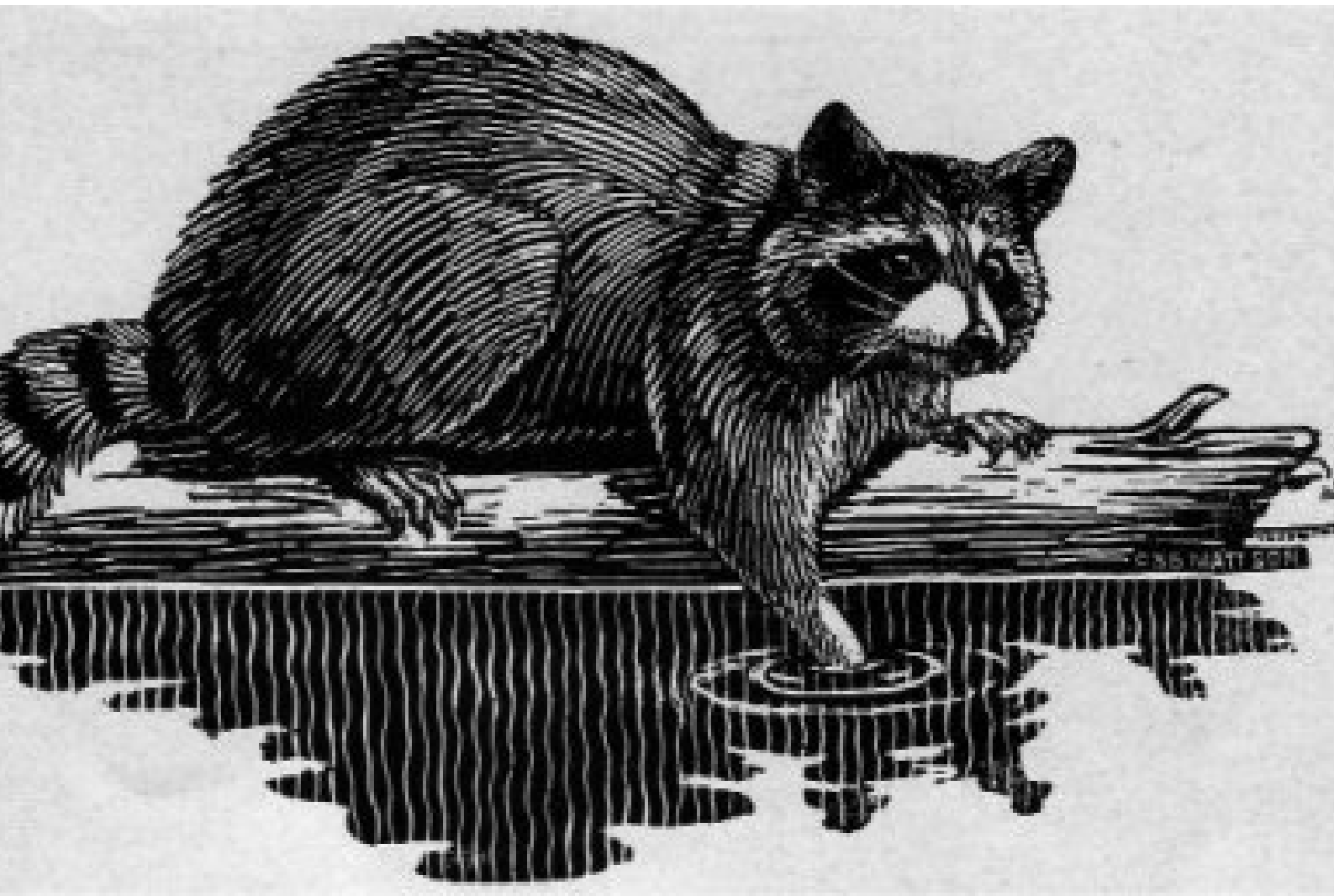
Tracks of ring-tailed cat. Six-inch pencil.

From cast by M. V. Hood

Tracks of coon. Front foot, left, hind foot, right. Six-inch pencil.

Though uncommon, save in the lower country, the **California coon** (or "raccoon," to be affected) is occasionally observed in Yosemite Valley. It is seen more frequently at Wawona and South Entrance (5,130 ft.).

Nocturnal, like the ring-tailed cat, coons are often confused with them. The tail of the coon is much shorter, proportionately, round rather than flattened, and the rings go entirely around it. The ringtail lacks the black mask, and is a much smaller animal.



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

CALIFORNIA COON

Contrary to a popular idea, it is not necessary for coons to wash their food before they eat it. While never without some water near by, it is surprising how seeps, or even dribbles, are sufficient for them during the summer drouth. Favorite foods are fish, birds, small mammals, carrion, insects, vegetables, fruits, and acorns. In fact, they will eat "almost anything."

Drawing by L. M. Smith

Mountain weasel.

The **Sierra least weasel** is but 8 or 9 inches in length, including the short tail. It can go down a mouse burrow, and undoubtedly does, for mice are one of the chief foods.

Related to the ermine of the Old World, in Yosemite, its upperparts change from brown in summer to white in winter. The range is from the red fir forest above the rim of the Valley on up to the rock slides at timberline.

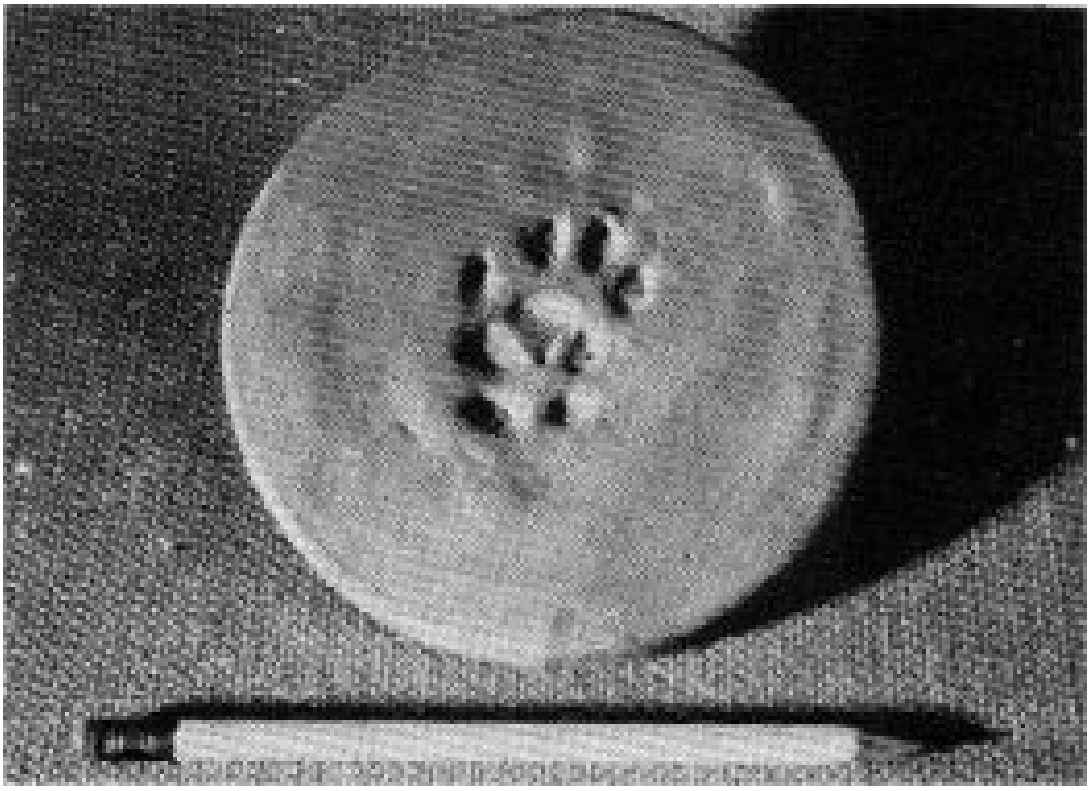
Chickaree-sized, the **mountain weasel** has a tail that comprises about half the total length of the animal. In summer, the upper parts are brown, the underparts yellowish or orange. In Yosemite, the winter coat is white overall except for the blackish tip of the tail. Tough, lithe and wiry, weasels can get around into all sorts of places.

Found throughout the middle elevations of the park, mountain weasels are active the year around, day or night. They have been seen between the Yosemite Museum and the Administration Building a Lumber of times. The meadows near Swinging Bridge and Sentinel Bridge are also well-known localities.

The double-distilled essence of courage, mountain weasels will kill anything that they can overcome. Their predominant food is small mammals.

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

MINK



From cast by M. V. Hood

Tracks of mink, superimposed. Six-inch pencil.

The **Pacific mink** is considered a rare furbearer in Yosemite. It is sometimes found, in suitable territory, at the lower elevations. It is a very dark brown, weasel-like animal, but larger than our weasels and lacking the light underparts displayed by the latter in summer. In winter, our weasels are white. The marten, often mistaken for a mink, has a fox-like face, prominent ears, and an orangy or yellowish throat.

Minks are generally found in or near water. They are good swimmers, so it is not surprising that they feed on fish and frogs. Mice, rabbits and birds are also taken.

Photo by Anderson

SIERRA PINE MARTEN

The **Sierra pine marten** ranges from the red fir belt up to timberline. The light brown body is about the size of that of a half-grown cat. The fox-like face and the throat patch will separate it from others of the weasel family.

Martens are active day or night, summer and winter. Though forest animals, they are found in Yosemite around high country rockslides and rocky meadows in summer. They eat small rodents and such birds as they can catch.

In winter, when small rodents are under deep snow, martens revert to the forests. There they can travel through the trees with squirrel-like facility. Other tree-dwellers, such as the chickaree, are then caught and eaten.

Like others of the weasel family, martens have scent glands, though the odor is more musky. Only skunks can throw theirs. I believe that the introduction of such scents around the premises of man causes the mouse population to decline noticeably.

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

FISHER

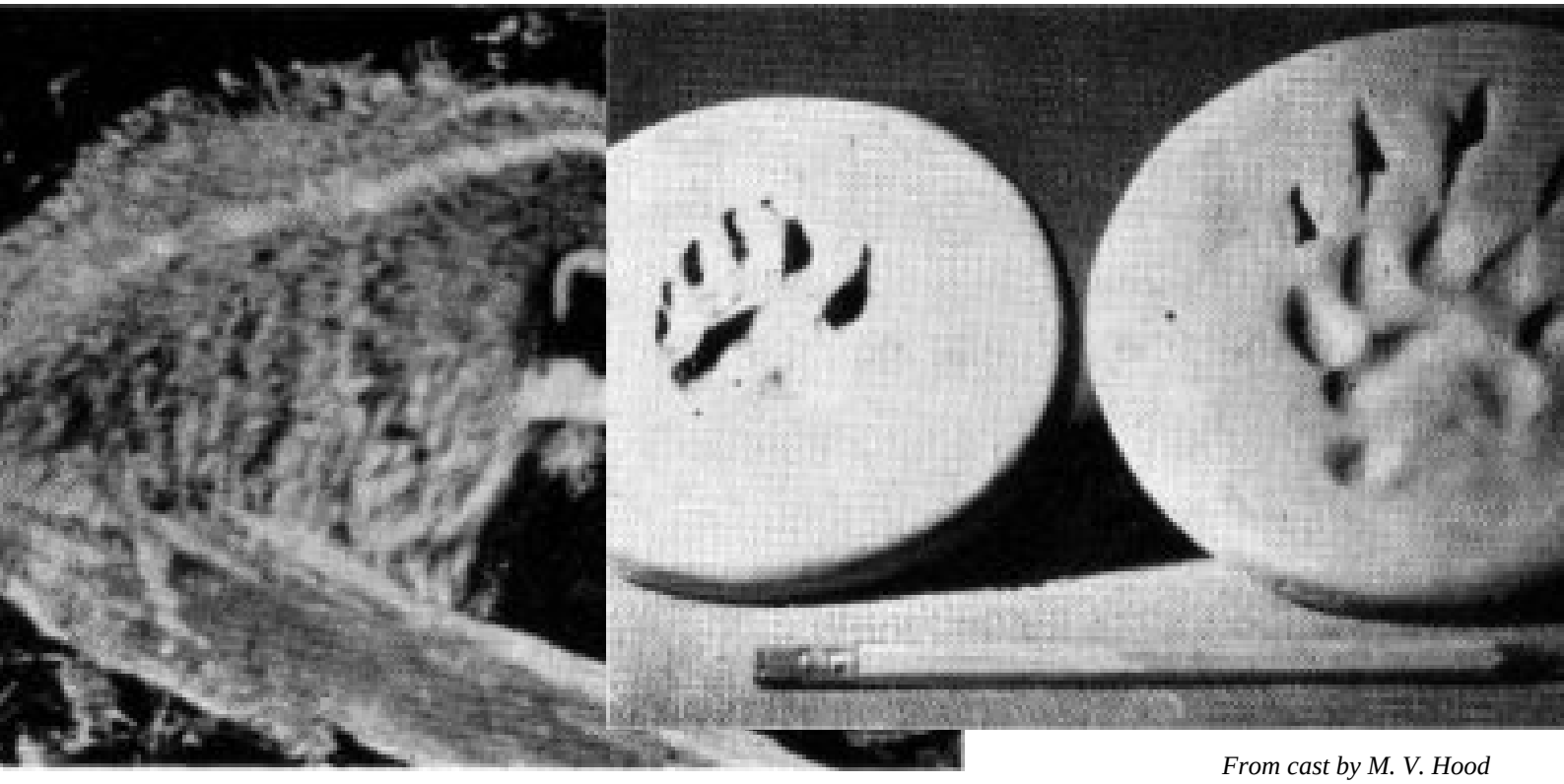
Nowhere common, the **fisher** is rare in Yosemite. About 3 to 3 feet long, it is a blackish brown with a grizzled effect on the back of the head, shoulders, and along the sides. Often, there is an irregular white spot on the chest. It ranges from the red fir belt on up to the higher country.

Active day or night, summer and winter, the fisher is well adapted for getting prey in trees. It catches squirrels and even pine martens. It successfully kills porcupines. Other rodents, and, probably, some birds are also taken for food, along with occasional vegetable matter.

There are few sight records of the **southern wolverine,** but, occasionally, tracks are reported in the Yosemite high country. It is terrier-sized, dark brown, with a light band across the forehead, along the sides and across the rump. The back is notably arched, the tail short and the feet well-clawed. It can emit a vile stench.

The footprint is about 5 1/2 inches long, often showing all five toes. The hind portion is divided, rather than a single triangle, unlike any other Yosemite carnivore track that size.

The wolverine has been known to drive away the mountain lion, coyote and bear from their kills. Their food includes carrion, rodents and larger prey. Limited now to a few spots in the Rockies and the Sierra, it is hoped that this interesting member of the native fauna will survive with the protection afforded by the national parks.



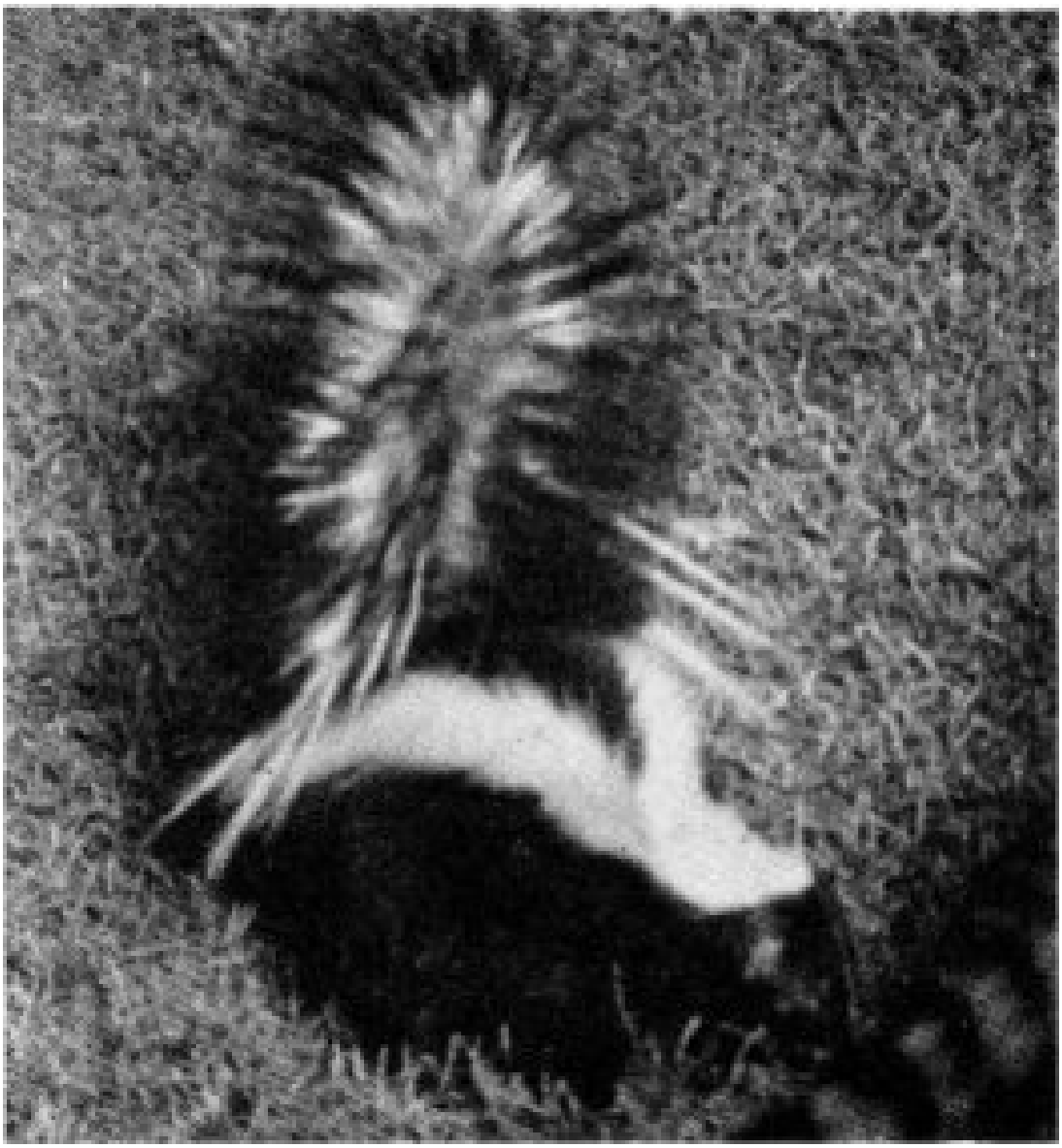
From cast by M. V. Hood

Sequoia Natl. Park Photo Badger tracks. Front foot, left, hind, right.

California badger

Watch for the **California badger** in the open country of the higher elevations. There it finds a supply of ground squirrels and other rodents available for food, where the digging is easy. This grizzled tan animal is admirably adapted for going underground, with very strong claws and powerful muscles. When waddling along, it looks more like a turtle, but the white streak along the center of the head and neck are quite striking. The scent emitted by a badger is not especially virulent.

A badger digging out a ground squirrel's nest is interesting to watch. It is not advisable to take liberties with one, for they can inflict severe wounds with their powerful jaws.



Sequoia Natl. Park Photo

California striped skunk.

Skunks are commoner in lower country, but do live in the park. Despite the fame of their “chemical warfare,” there is no need for fear if you encounter one. The musk is not thrown unless the animal has been startled, or after great provocation. Let him go his way and he’ll do you no harm.

Warning of defense usually comes in this sequence: First, elevation of the tail; next, stamping the front feet on the ground; followed by standing up on the “hands” (in the case of the spotted skunk). The scent can be thrown accurately for about a dozen feet.

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

SPOTTED SKUNK

Two sorts are in Yosemite, the **northern California striped skunk** and the **California spotted skunk** (see illustrations). The former is about the size of a cat, the latter half that or less.

The spotted skunk is also known as "civet cat," but, like "polecat," that name belongs to an Old World mammal. There is no special tendency toward hydrophobia in this species.

Both species are mainly nocturnal and eat "anything." Insects, mammals, carrion and fruit are largely the diet. It is doubtful that they go into profound hibernation in this climate.

Despite their chemical defense, skunks are caught and eaten by some predators. Fishers and Pacific horned owls, among others, often take them.

From cast by M. V. Hood

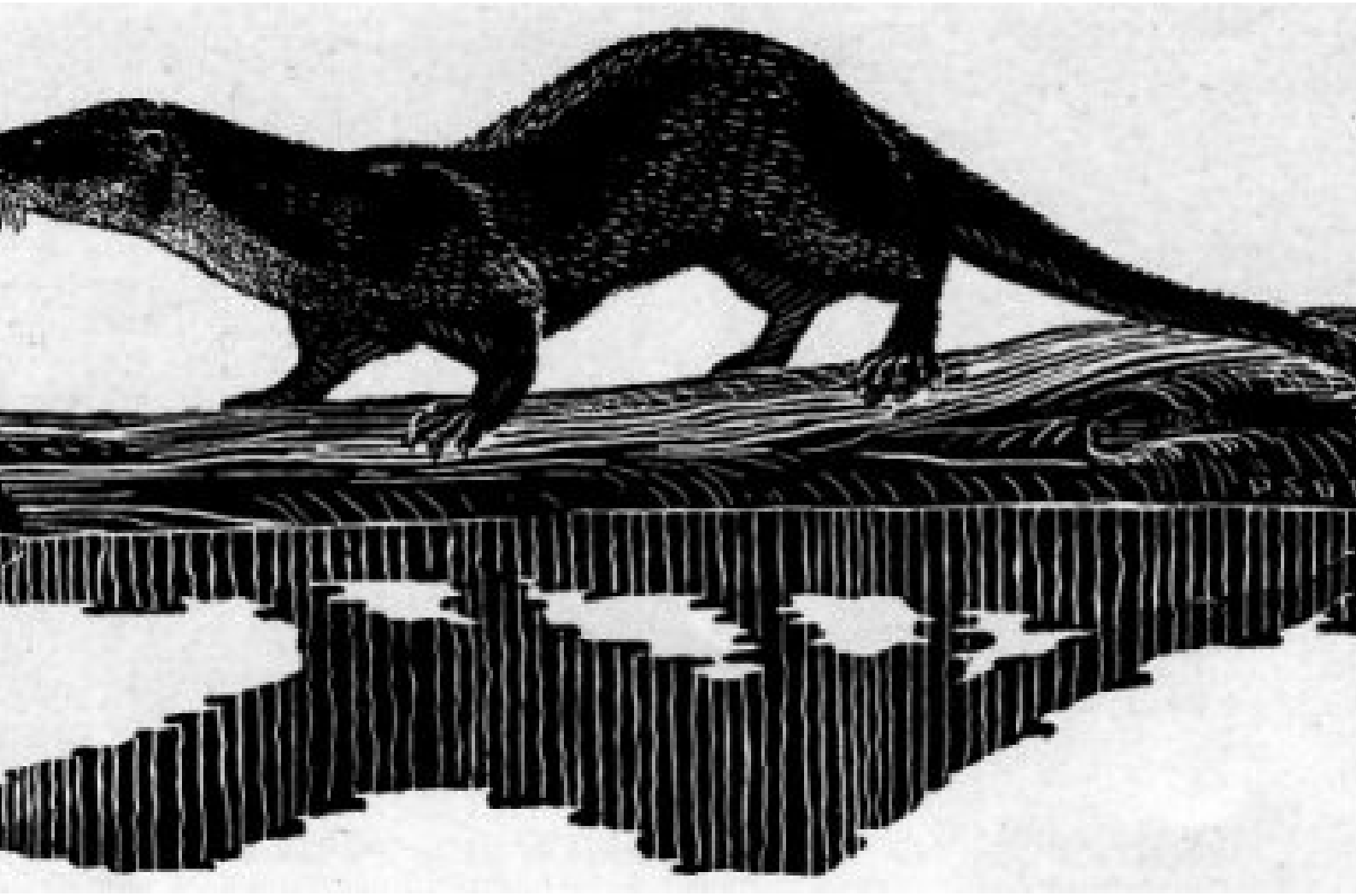
Tracks of California spotted skunk.
Six-inch pencil.

From cast by M. V. Hood

Tracks of striped skunk. Hind foot on left,
front, right. Six-inch pencil.

The **California river otter** is dark brown in color and runs from to 4 feet in length. Otters are well suited to life in the water, with all four feet webbed and the body streamlined. They swim well enough to catch fish and frogs for food. On land, they have a “loping” gait, arching the body greatly.

Uncommon, otters may appear at lakes in the northwest part of the park. They are usually quite shy. They often make slides in mud or snow, leading to the water, and seem to enjoy themselves thoroughly on these “chutes.”



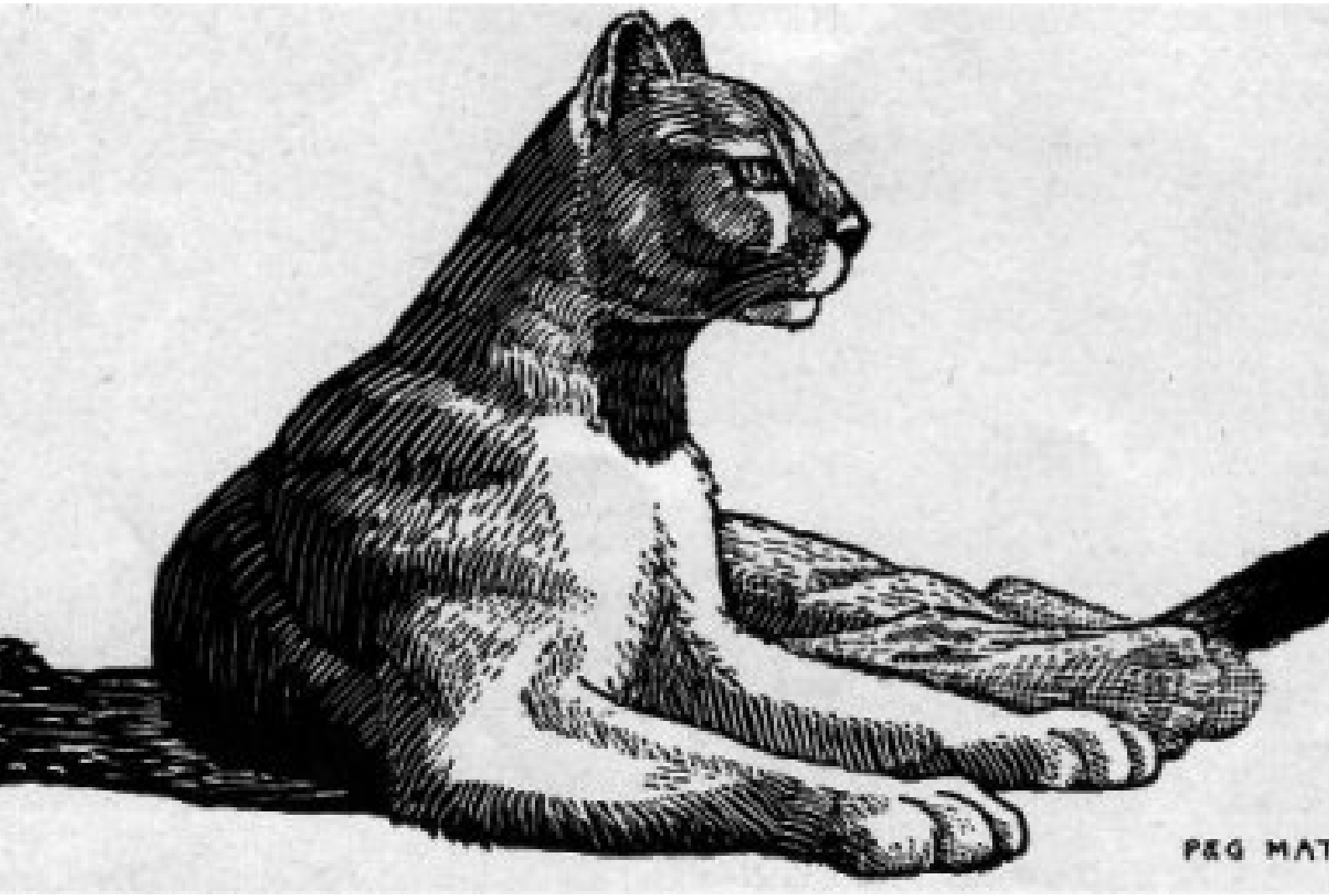
From "Mammals of Lake Tahoe" by Robert T. Orr, Courtesy of publisher, California Academy of Sciences.

CALIFORNIA RIVER OTTER

There are possibly 12 **California mountain lions** in Yosemite National Park. This need give little alarm to the visitor. Never in park history has one molested a human. Only by good fortune are you likely to see one, because they habitually avoid people. They have been seen along the Wawona Road, in Yosemite Valley, and near Mather. Sometimes tracks are found near Mirror Lake.

A mountain lion is 6 to 8 feet long, tawny, or grayish brown, with a *long, rope-like tail.* Kittens are spotted and may retain some evidence of this until six months old. The tail is longer than that of young wildcats.

The range in the park is mainly that of the deer. Since deer drop into the country outside the park in winter, lions are often killed there. Therefore, the number in the park is not likely to increase. Besides deer, mountain lions feed on lesser animals.

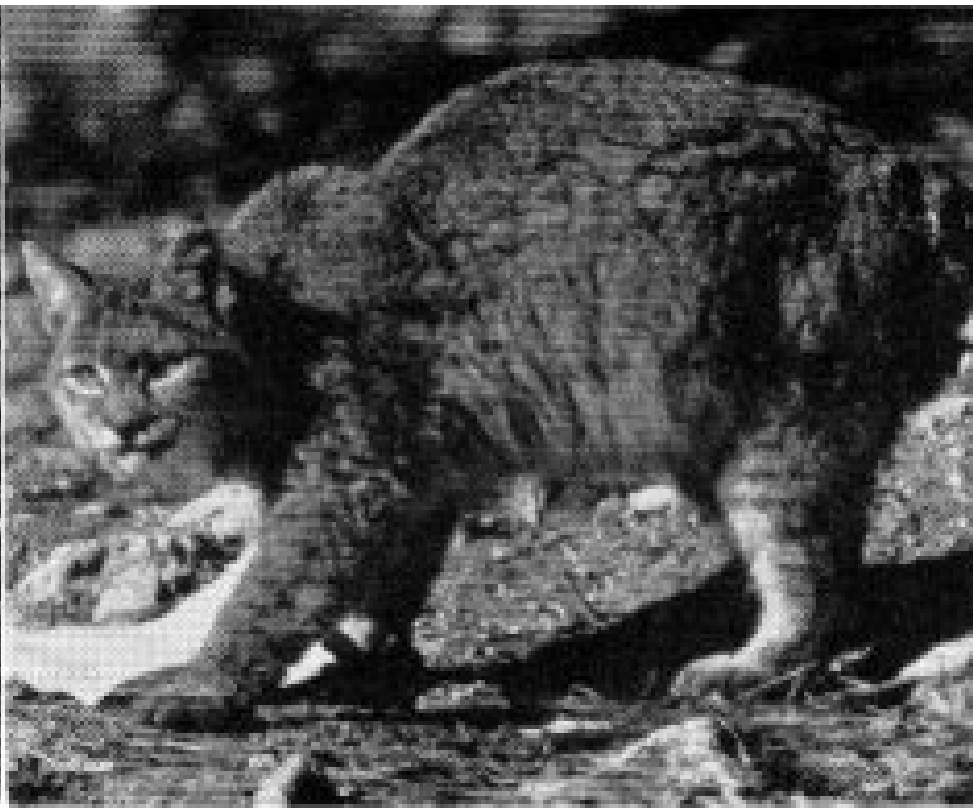


From "Mammals of Lake Tahoe" by Robert T. Orr, Courtesy of publisher, California Academy of Sciences.

CALIFORNIA MOUNTAIN LION

From Kodachrome by Anderson

California wildcat kitten



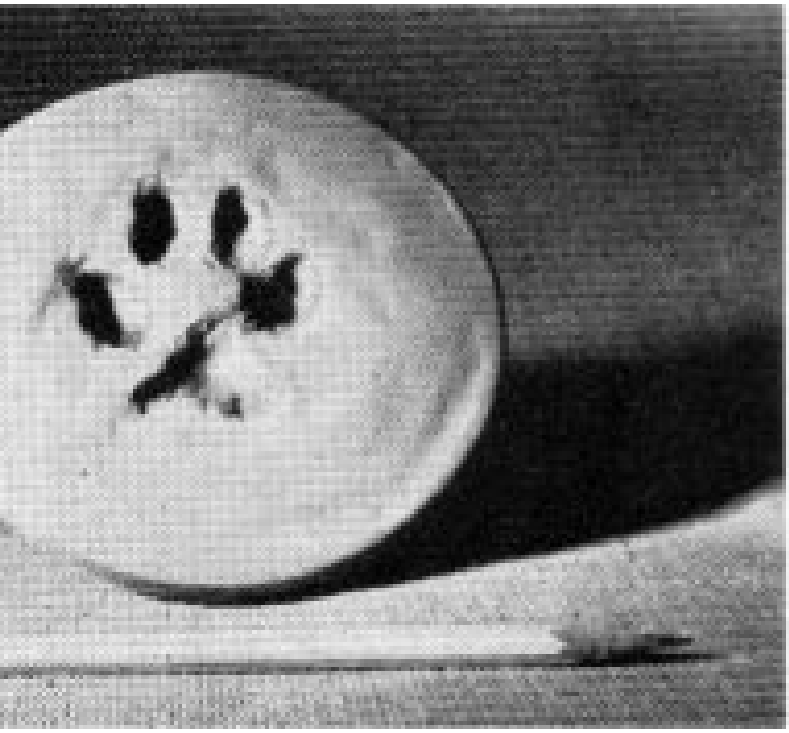
From Kodachrome by Anderson

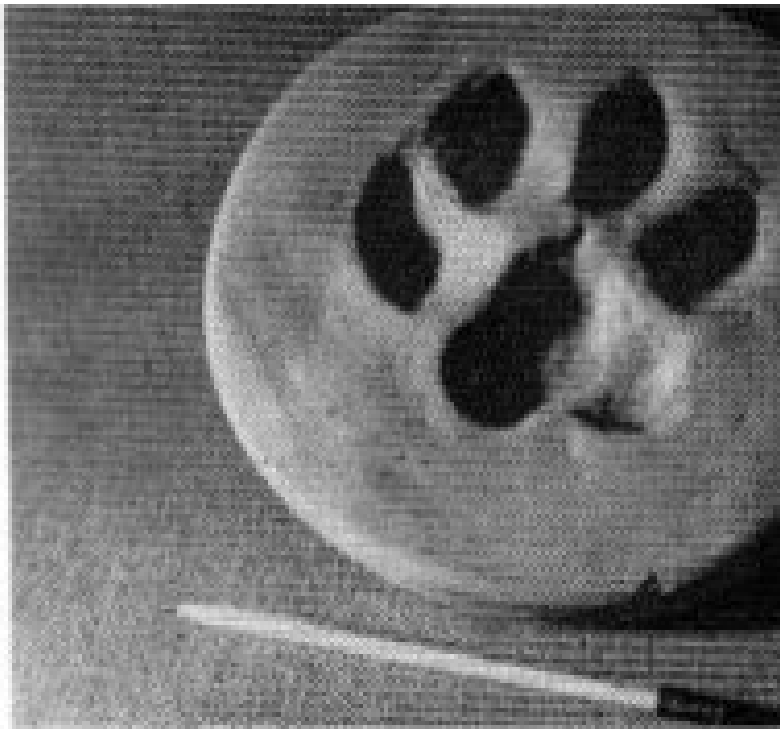
California wildcat

California wildcats are far from uncommon in Yosemite. They are from 2 1/2 to 3 feet in total length, including the very short tail which gives rise to another name, "bobcat." In summer, the general color is tannish brown, but in winter it is much more grayish.

They can easily climb trees, but rocky situations seem to be preferred for dens. However, wildcats have been seen in the open meadows of Yosemite Valley hunting rodents. They often hunt in the daytime, relatively unafraid of man.

The chief food seems to be medium-sized to small mammals and birds, but they also have been known to attack deer, especially when the snow is deep. On at least one occasion, a deer put to flight an attacking wildcat in Yosemite Valley. Fawns are taken very readily, when found.





From casts by M. V. Hood

Tracks of California wildcat, left, and California mountain lion, right. Six-inch pencils.

Photo by Harwell

DOE WITH NEWBORN TWIN FAWNS

A delight to the visitor in Yosemite are the “tame” **deer.** These animals are not domesticated; they are merely unafraid of man.

This concentration of deer in the valley is attributed to “handouts” provided by the increasing number of visitors in the past 35 years. This has probably led the animals to give up the habit of leaving the Valley for the regular wintering grounds each year. Association of humans with food, together with no hunting, accounts for the misleading appearance of tameness.

Until about 1915, deer did not winter in the Valley, but moved out to the western feeding grounds below the park line just as deer from the “wilder” parts of the park now do.

Tails of Yosemite forms of deer.

Yosemite National Park is a meeting ground for three subspecies—the **Rocky Mountain mule, California mule,** and **Columbian black-tailed deer.** It is possible to find animals that display some characteristics of each or mixtures of any two. In sections lying near the normal range of black-tailed and Rocky Mountain mule deer, individuals appear clearly recognizable as to subspecies. For instance,

the so-called “granite bucks” of the very high country may usually be identified as of the Rocky Mountain variety. In Yosemite, it is not always possible to rely on field identification of deer.

From Kodachrome by Beatty

Buck with growing antlers “in the velvet.”

Joseph S. Dixon, after over thirty years of observation, felt certain that black-tailed deer always elevate the tail vertically when frightened, while mule deer always hold it below the horizontal under those conditions. He further based identifications on the length of the meta-tarsal gland, which is located on the hind foot above the toes and below the hock or heel. It is at least 5 inches long on mule deer and but slightly over 3 inches on blacktails. This determination can not always be used on certain hybrids.

Because of characteristics which predominate in most of them, we usually refer to the deer of Yosemite Valley as California mule deer, although certain individuals may show some features of the other two forms. Since these are so easily approached, much information about the habits of the California mule deer is available, thanks to patient studies by Dixon, Russell and others. Most of what appears here is drawn from their work.

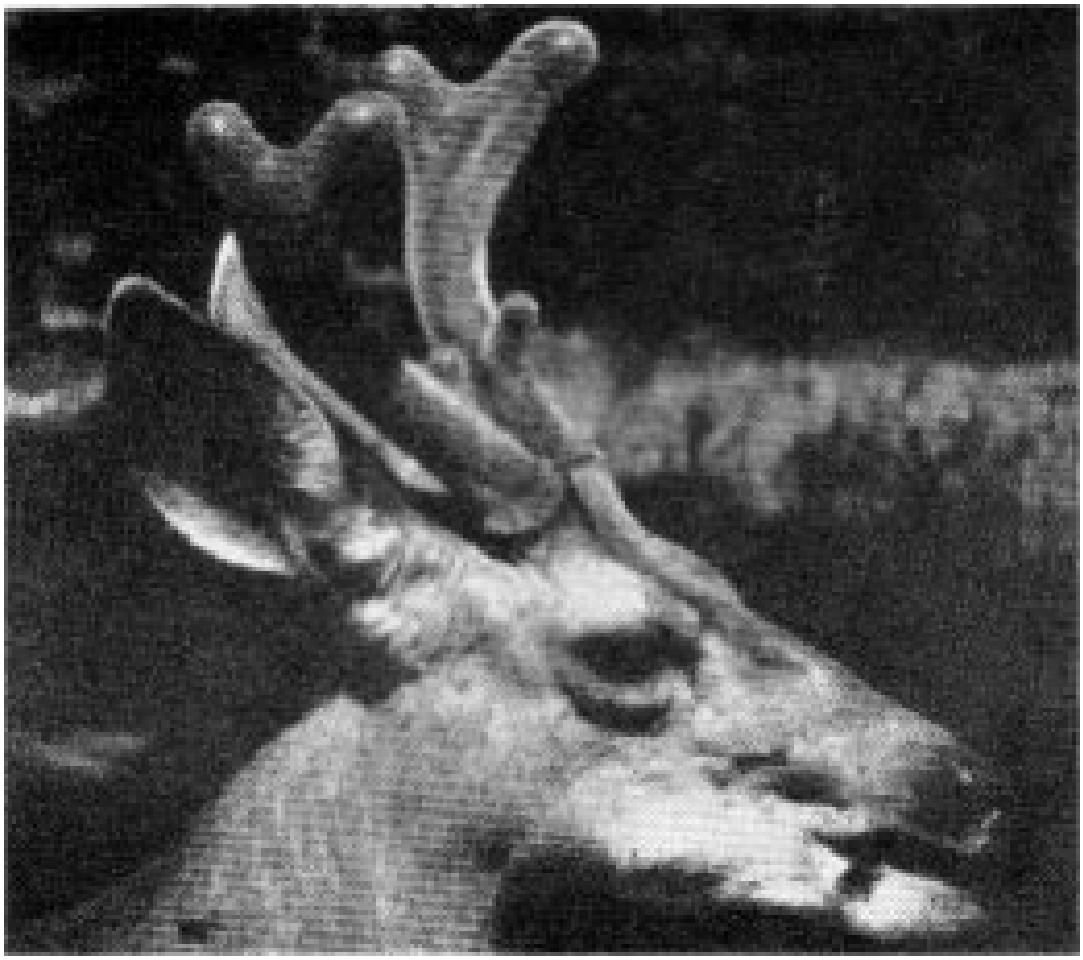


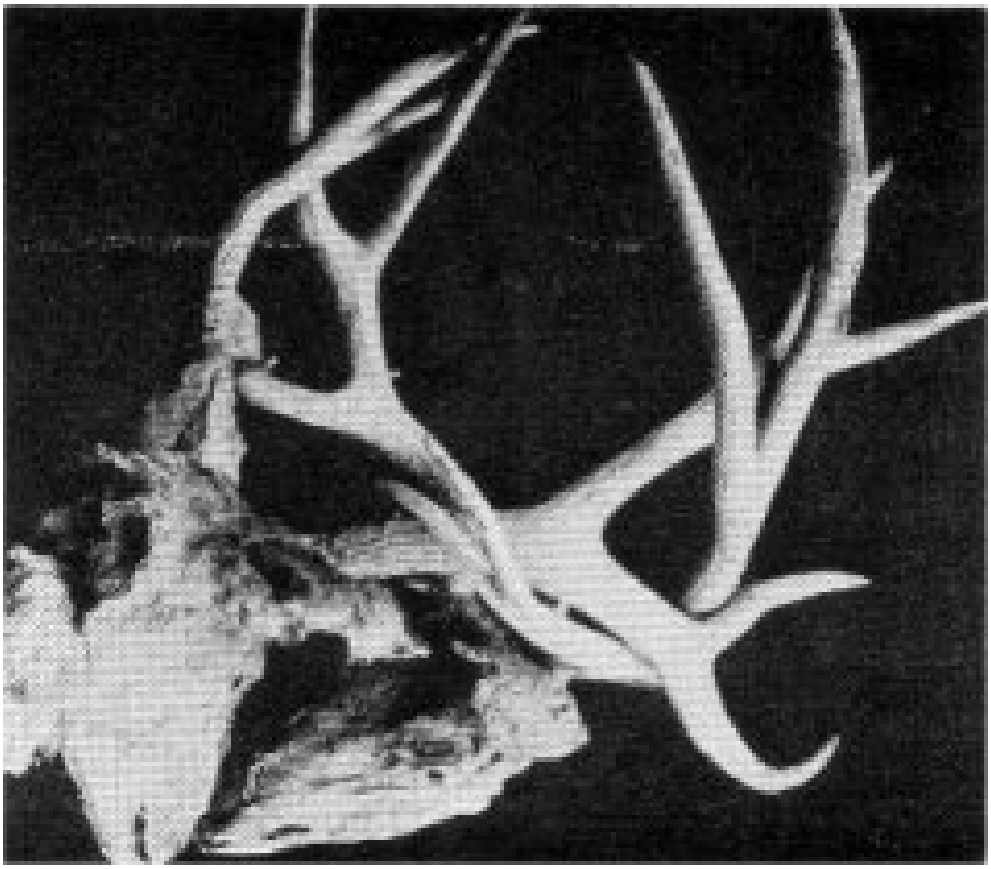
Photo by R. G. Beidleman

Buck with one antler shed. Note the scar.

I have known men to come to the Yosemite Museum and ask us to settle a bet as to whether deer actually shed their antlers! They do shed them, normally once a year.

Deer do not have *horns* in the true sense of the word. Horns, in most animals that have them, are permanent, not shed seasonally, and are hollow with a bony core. The antlers of deer are solid, bony structures grown anew each year. They should never be referred to as “horns.”

A common misbelief is that the age of bucks (normal does never have antlers) can be told from the number of “points” on one antler. Four points, exclusive of any “eyeguards” is the regular number for a buck in the height of physical development. This is ordinarily attained at the age of four years, but will also continue for several seasons, perhaps until the age of eight. After the years of greatest vigor, the number of points is reduced from year to year until there may be three, two, or one. Thus it is possible for a *twelve-year-old buck* to carry antlers consisting of only one large spike each!



Hopelessly locked antlers brings lingering death
to bucks.

As worked out by Dixon, the following sequence of development ordinarily takes place in the antlers of Yosemite deer:

Yearling	single spike or “forked horn.”
Two year old	forked or rarely, three point.
Three year old	three pointer, rarely “forked horn.”
Four to eight year old	four pointer.

Females with antlers have been known and certain bucks never lose the velvet from their antlers (called “stags” by hunters), When properly examined, such specimens have proven to be sexually abnormal. It is believed that the male sex hormone governs the production of antlers, but the whole story is not yet known.

“Old Horny” was a buck famous in Yosemite Valley in the 1920’s. He possessed a *third* short antler growing midway between his eyes and his nostrils. The extra antler was 2 inches high, had a basal diameter of one inch, and developed two, prongs. Later, another “forked horn” buck with a third antler was discovered in Yosemite Valley. He was promptly dubbed “Unicorn Junior”!

The antlers may be shed as early as January and from two to four weeks later, new ones start to grow. The average season for dropping falls in March with new growth started in May.

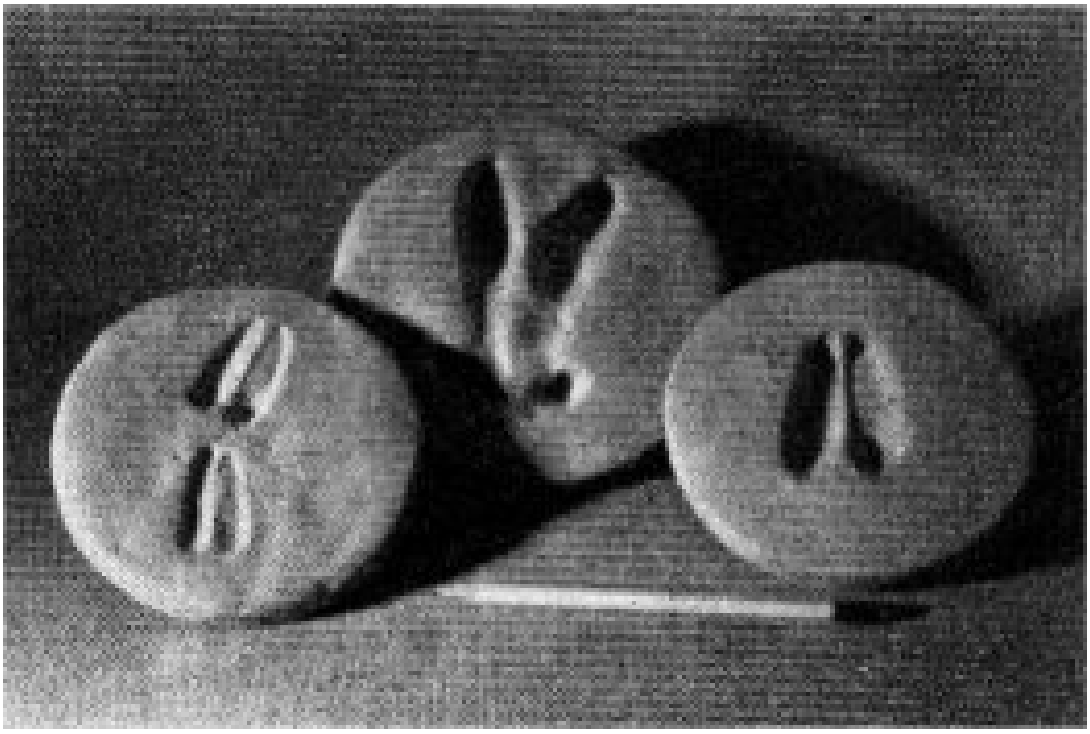
The new, growing antlers are covered with velvety skin, very rich in nerve and blood supply. Until growth is nearly complete, this “velvet” is quite sensitive. It is not safe to touch it, for the buck might strike out with sharp hoofs, with serious injury to the person taking that liberty.

By July, the first forking of the new antlers has been achieved. Mid-September usually finds the growth completed. The bucks then “horn” brush and small trees to remove the dead velvet, now mainly dead tissue.

In October or November, the rutting, or mating season begins. The necks of the bucks become quite swollen and they are inclined to try out their armament against rivals. Once they have made contact, the fight is usually a “shoving bout,” and when one has been forced to his knees a few times he goes away.

Cases are known where the antlers of the adversaries became permanently interlocked, which ended in death for both. Serious casualties are quite rare, the match seeming merely to determine which buck can drive the other away.

The dominant buck will follow a doe for several days, much of the time with his head thrust stiffly out before him. This behavior culminates in the actual mating, whereupon he selects another doe and repeats the “running” process. Mating season lasts well into January and may extend into February.



From cast by M. V. Hood

Deer tracks. *Left*, fawn; *center*, very soft mud;
right, adult.

Rutting season over, the bigger bucks lose their antagonism toward each other. Among younger bucks, antagonism may be displayed at any season.

In Yosemite, most fawns are born in July, but they may arrive as early as June or as late as August. About a quarter of them are twins; very rarely triplets, or even quadruplets, may be born.

For the first week of life, the fawn lies hidden in the tall grass where its spotted pattern blends well, and the mother returns to it for nursing.

The young will not follow its mother in daytime during the first month, but evidence from tracks shows that it may accompany her to water at night after it is six days old.

These habits work for protection. When a lone fawn is found curled up, this does not mean that it has been orphaned; the mother is merely away feeding. Please help us to pass this information on. Each summer, several fawns are brought in to the rangers and the naturalists by misguided visitors who believe they have found an orphan.

The thing to do is to return the animal to where it was found so the doe can reclaim it. Unfortunately, the finders can seldom identify the spot, and we are then faced with a problem. Rearing a baby deer requires two cases of canned milk a month, for which the National Park Service has no funds. The responsibility then devolves upon the employee and constitutes a real financial burden, unfairly imposed. No one who has seen an innocent looking little fawn can bring himself to let it starve.

Even though the fawn may be reared there is another problem. We then have a half-domesticated animal scarcely suitable in a wilderness area such as a national park. Furthermore, when it reaches maturity, especially if a male, it becomes dangerous to little children, often charging them.

Young fawn hidden in meadow.

If a fawn is found in its resting place, *it should be left strictly alone*. During the first week it apparently has no odor, which means that the predators are unlikely to discover and destroy it. If a human touches the fawn, of course it is no longer scentless. Even the trail left by persons walking too close to the spot might also lead a curious coyote, mountain lion, wildcat, or bear to the fawn. Some does are very zealous in the protection of their young and have inflicted severe injuries upon people by charging them unexpectedly.

The spotted coat of fawns begins to disappear in August. By the end of September, they are clothed in gray, similar to the color of the adults, which are predominantly blue-gray in winter and reddish in summer.

The Yosemite Valley herd of listless, unafraid deer which do not leave in the winter represent probably less than one per cent of those in the entire park (1189 square miles).

In the autumn, migration of deer from higher to lower country begins. The first big snow storm may initiate this movement, or it may anticipate bad weather. If there is a considerable moderation in weather, some of the deer move back into the park until forced to leave because of the deep snow covering food and making defense against predators difficult or impossible.

Photo by Harwell

Mummified bighorn on the Mt. Lyell Glacier.

The chief enemy of deer is the mountain lion. A lion is said to average a kill of 50 deer a year. Since we probably have not more than a dozen lions, the annual loss from this source would not be more than 600 deer out of the thousands that are in the park. The animals taken are usually those most susceptible to attack, the old, the crippled, and the less alert. The predators thus help keep the deer herds "thrifty," except in Yosemite Valley where lions seldom come.

Coyotes, wildcats, and bears also prey on deer, though we have little evidence to prove that they are serious enemies. Coyotes and wildcats will do the most damage when there is extremely heavy or crusted snow, making escape difficult for the deer. Bears may kill a weak or sickly deer, but, as noted above, a spotted fawn is the largest native animal they normally kill for food. All three will clean up the remains of a deer killed by other predators when they can find such a "banquet."

Golden eagles attack spotted fawns when they can find them away from cover. If the doe is present, she may succeed in protecting her young by standing directly over them. At the close approach of the bird, the mother may attempt to strike at it with the forefeet.

According to Russell, in 1924 and 1925, some 22,000 deer were slaughtered because of the foot and mouth disease epidemic which had affected certain Sierran deer. Those thus removed normally had resorted to the northern part of the park in summer, so for some years afterward deer were scarce in that region. For several seasons a certain number of surplus animals in the valley were captured and released in the sparsely populated area. Whether due to this experiment or to natural influx, the northern deer herd is now considered to contain normal numbers.

Ordinarily, California mule deer eat parts of woody plants, such as leaves, twigs and fruits. However, at certain seasons green grass may form 90 per cent of the food. More than 200 kinds of food have been taken by the different races of mule deer in California. They range in variety from pine needles to acorns.

Nowhere in the natural diet of deer is anything akin to the food offered to them by park visitors. Feeding deer bread, candy and other human foods causes stomach disease which makes the animals sick and may cause their death.

Pampering deer which are regularly fed by hand is dangerous. Several people, including children, have been seriously hurt in national parks by the sharp hooves of does or the antlers of bucks. **It is dangerous and unlawful to feed the deer.**

Sierra bighorns once lived in the higher parts of what is now Yosemite National Park. However, the park was created too late (1890) to save enough of the "mountain sheep" from the larders of the hunter, sheepherder and miner. They are now all gone.

Grinnell and Storer give the 1870's as the latest period when bighorns were here, except for stragglers. A few scattered records exist as late as the turn of the century.

Mountaineers still find horn cases and skulls on the ridges and peaks of the crest. Such locality records are carefully kept at the Yosemite Museum, for they will help to reconstruct the former range of the bighorn. Accordingly, persons finding skull or horns in the park are requested to bring them to the Yosemite Museum. Careful note should be made as to the exact location. Mark it on a topographic map if possible. Even without the specimen, an accurate record of the locality will be of service. [Editor's note: this statement is out-of-date. Please do not collect skulls, horns, or other artifacts in the park. It is illegal—DEA.]

The Yosemite Museum has on display the mummified body of a bighorn found on the surface of the east lobe of the Mt. Lyell glacier in 1933. Evidence indicates that it fell into the bergschrund at the head of the glacier and was carried in the ice for several centuries until it melted out, 1,936 feet away.

Bighorns still live in the high country of Sequoia-Kings Canyon National Parks. It is to be hoped that protection there will continue to be successful so that they will always be a living part of the Sierran fauna.

California
gray squirrel
tracks

HOW TO ENJOY THE MAMMALS OF THE PARK

Any reader who has come this far in our account must be interested in observing the mammals described. A number of them can be seen and enjoyed by the visitor who seeks them in a proper fashion. Animals that have never known trap or gun are relatively unafraid of humans. For the bighorn, protection came too late. Some forms are quite rare. Many are difficult to identify in the field. Others are abroad mainly at night. Still others are rarely surprised above ground. However, cultivating the “seeing eye,” being alert as you travel the roads and trails, will prove rewarding.

A little, furry ball scurries across the road in front of the car. Is it a meadow mouse, or a whitefoot? Perhaps a shrew? By process of elimination, often a determination can be made. At night, a larger mammal may dash across the road, then stop and look back. At such times a spotlight or flashlight will be of great value, if the car can safely be stopped (no close following car, a clear road, not on a curve) and backed up in time. Certain mammals, notably coyotes, may get off the road before the car comes along, and watch from along the shoulder.

Whether travelling by car or on the trail, school yourself to note the slightest sign of movement in the country about you. Travel on the trails as quietly as possible. For a rest, or lunch, select an inconspicuous spot and be quiet.

If a mammal is running away, oft-times it can be stopped or slowed by a sharp whistle or loud smacking of the lips. You may often have a better look at an animal that you have discovered at work, if you continue casually on your course right past it, as though you have no intentions of stopping or molesting it.

If you intend to take a photograph, get your camera set when well away from the spot, then, as you walk past, take the picture, almost without interrupting your course. There is also the obvious pleasure in simply watching with stony patience a den or burrow that you know is occupied until the owner comes forth.

To see the most mammals, get away from people. For example, in Yosemite Valley, chances are better if you travel the 34 miles of trail than if you stick to the roads. At night, the roads at the extreme upper and lower ends of the Valley are richer “hunting” than the populous central portion, except perhaps in winter.

The sounds made by mammals can add to the pleasure of your visit. The calls of the chickaree, the squeaking of bats overhead, the primeval howls of coyotes will give a thrill to those who have come to the park for a change from an urban environment.

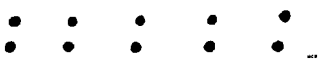
Great satisfaction can also be gained from tracks and other signs, even if their makers are never observed. Part the grass in the meadows and look for runways of small mammals. To find the most signs, go on the trails and keep an eye to the ground. To interpret every sign found requires years of experience and profound knowledge, but certain elementary points will help to understand a few things about mammalian signatures:

1. Know what species belong to the region, what the possibilities are.

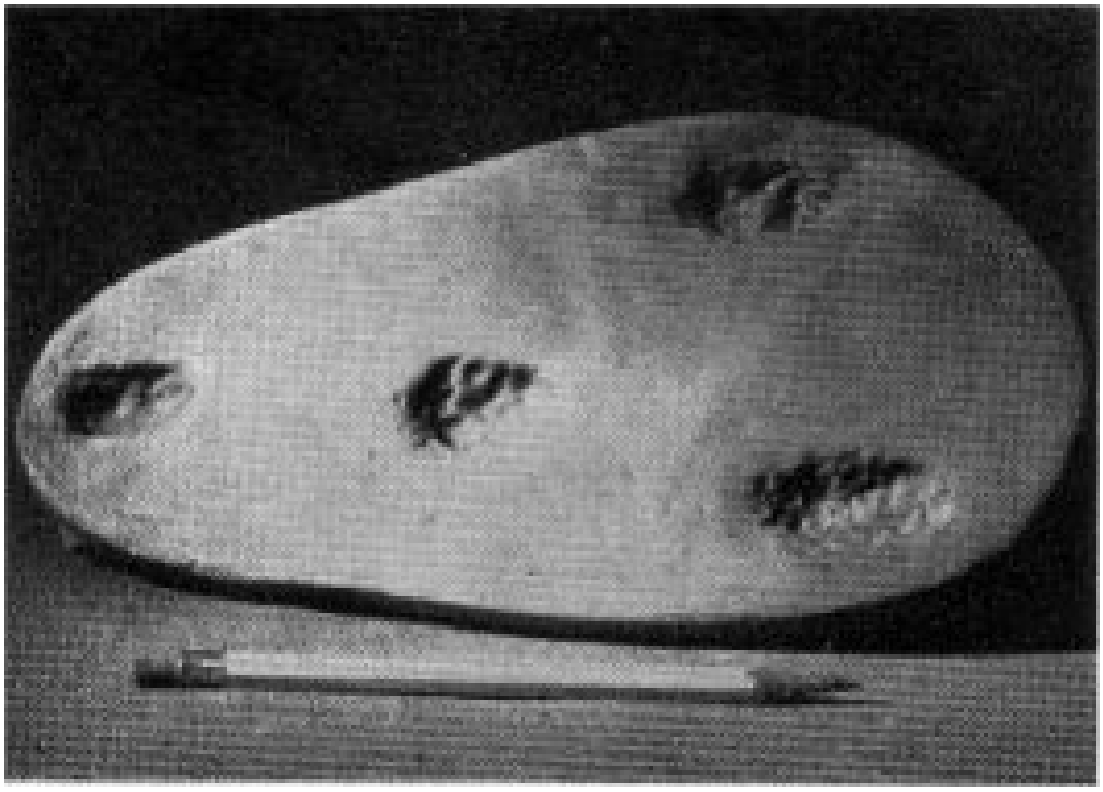
2. Learn some basic track patterns. Mr. Anderson’s photo in the margin demonstrates fundamental squirrel pattern: large hind feet. Hind feet show direction of travel. This squirrel went from the bottom to the top. When the animal hurries, it swings hind feet past the front, plants them, then takes off with the front ones, and so on. Rabbit resembles squirrel, except that the latter, being a tree climber, travels with front feet nearly parallel, while the bunny, mainly terrestrial, a “runner,” staggers the front paws.

Some mammals “register,” nearly or exactly superimposing hind foot marks on those of front, as in the case of coyote, wildcat, or fox:

These are also “singlefooters,” making an almost straight line of tracks instead of in pairs alongside each other, as do the bounding weasels, by and large:



White-footed mice do this. Usually they leave a tail mark, as the weasels sometimes do in snow. Short tail of meadow mouse does not usually show, likewise the shrews, unless snow is proportionately deep. Detailed knowledge must come later, with study and practice.



From cast by M. V. Hood

Rabbit tracks. Direction of travel, to the right.
Six-inch pencil.

3. Detail revealed in a track depends on condition of ground or snow. Do not expect always to find every hair and toenail in tracks as pictured in books. Mrs. Hood's excellent casts represent many hours of searching during a number of seasons.

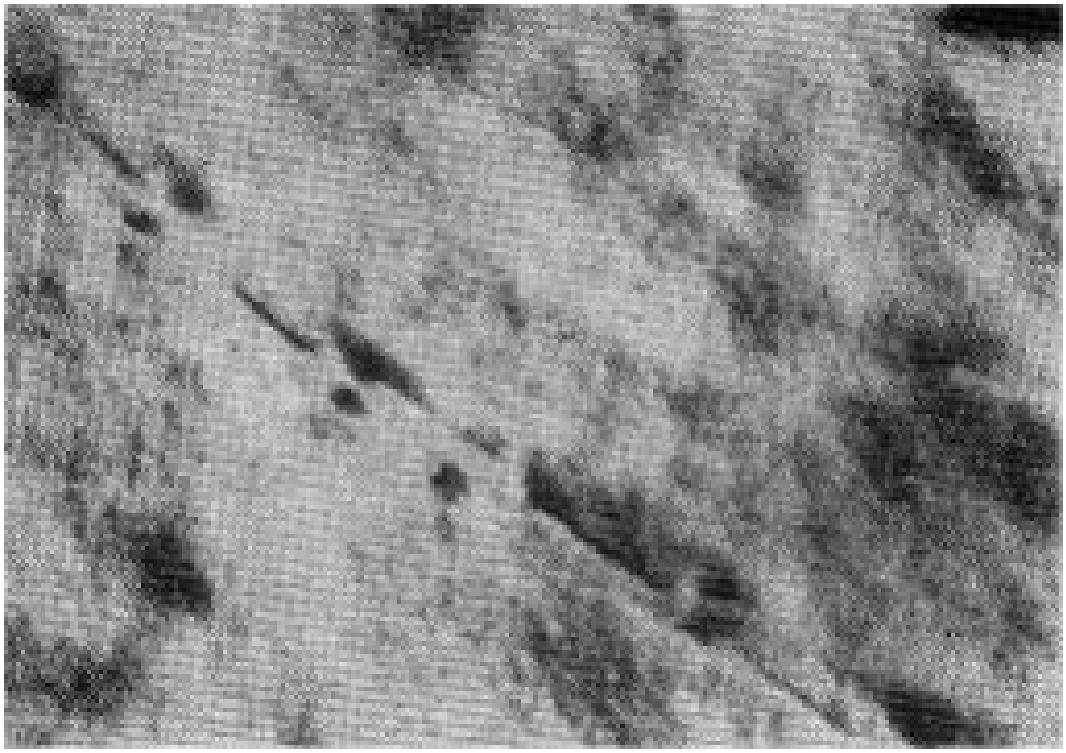


Photo by Anderson

White-footed mouse tracks. Note center track
where it dragged one foot.

4. Always examine a muddy place for tracks, but f mud is soft, tracks larger than average, maybe huge. Wet, sandy beach good tracking too. If track in snow is old, it will melt out to a larger size; wildcat's print becoming the size of that of mountain lion. In many of our pictures of casts, a six-inch lead pencil has been added to aid in judging the size of tracks.

5. Remember to practice when you go back home. The dog provides a primer for trailing a coyote; the house cat for a wildcat. Mrs. Hood's hobby of making plaster casts is intriguing; consult the public library, practice on domestic animal tracks.

6. Scats, or droppings, tell much about mammals. Idea not revolting, if you take a common sense approach, particularly in the Sierra, where normally dry climate causes scats soon to become dessicated and innocuous. Many times you can tell at a glance something interesting about an animal's food habits. Identification cannot be discussed here. Consult the old master, Seton.

7. Watch for tracks, scats and other signs at likely natural shelters, such as under rocks, holes in the earth or trees. Sometimes a few hairs attached where rubbed off the owner, as it used entrance.

8. Kitchen middens, or piles of refuse left after mammal has dined, will give clue to presence of certain species and their food habits, as will food stores, such as cones laid up alongside log by chickarees.

9. If you are a camper, smooth out a dusty spot near your camp before you go to bed; sprinkle it, if you wish. Then look the next morning to see "who" has been around. If it looks as though a man had walked past barefooted, Lady, that was a bear!

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

CHECKLIST OF THE MAMMALS OF YOSEMITE NATIONAL PARK

Note: The arrangement and nomenclature of orders, families, and genera are according to Simpson's classification of 1945 (Bull. Am. Mus. Nat. Hist. (N. Y.), Vol. 85).

Family	Genus	Species	Subspecies	Common Name
Order INSECTIVORA—Moles and Shrews				
SORICIDAE	*Sorex*	*lyelli*		**Mount Lyell Shrew**
	Sorex	*trowhridgei*	*mariposae*	**Yosemite Shrew**
	Sorex	*vagrans*	*amoenus*	**Sierra Wandering Shrew**
	Sorex	*obscurus*	*obscurus*	**Dusky Shrew**
	Sorex	*palustris*	*navigator*	**Mountain Water Shrew**
TALPIDAE	*Scapanus*	*latimanus*	*sericatus*	**Yosemite Mole**
Order CHIROPTERA—Bats				
VESPERTILIONIDAE	*Myotis*	*lucifugus*	*carissima*	**Yellowstone Little Brown Bat**
	Myotis	*yumanensis*	*sociabilis*	**Tejon Bat**
	Myotis	*evotis*	*evotis*	**Little Long-eared Bat**
	Myotis	*thysanodes*		**Fringed Bat**
	Myotis	*volans*	*longicrus*	**Long-legged Bat**
	Myotis	*californicus*	*californicus*	**Little California Bat**
	Myotis	*subulatus*	*melanorhinus*	**Black-nosed Bat**
	Pipistrellus	*hesperus*	*merriami*	**Merriam Canyon Bat**
	Eptesicus	*fuscus*	*bernardinus*	**San Bernardino Brown Bat**
	Lasiurus	*cinereus*	*cinereus*	**Hoary Bat**
	Euderma	*maculatum*		**Spotted Bat**
	Antrozous	*pallidus*	*pacificus*	**Pacific Pallid Bat**
MOLOSSIDAE	*Eumops*	*perotis*	*californicus*	**California Mastiff Bat**
	Tadartda	*mexicana*	*mexicana*	**Mexican Free-tailed Bat**
Order LAGOMORPHA—Rabbits and their allies				
OCHOTONIDAE	*Ochotona*	*princeps*	*muiri*	**Yosemite Cony or Pika**
LEPORIDAE	*Lepus*	*townsendi*	*townsendi*	**White-tailed Jackrabbit**
	Lepus	*californicus*	*californicus*	**Black-tailed Jackrabbit**
	Sylvilagus	*bachmani*	*mariposae*	**Mariposa Brush Rabbit**
Order RODENTIA—Rodents or gnawing mammals				
APLODONTIDAE	*Aplodontia*	*rufa*	*californica*	**Sierra Mountain Beaver**
SCIURIDAE	*Sciurus*	*griseus*	*griseus*	**California Gray Squirrel**
	Tamiasciurus	*douglasi*	*albolimbatus*	**Sierra Chickaree**
	Marmota	*flaviventer*	*sierrae*	**Southern Sierra Marmot**
	Citellus	*beldingi*	*beldingi*	**Belding Ground Squirrel**
	Citellus	*beecheyi*	*sierrae*	**Sierra Ground Squirrel**
	Citellus	*lateralis*	*chrysodeirus*	**Sierra Golden-mantled Ground Squirrel**

	Eutamias	*alpinus*		**Alpine Chipmunk**
	Eutamias	*speciosus*	*frater*	**Tahoe Chipmunk**
	Eutamias	*townsendi*	*senex*	**Allen Chipmunk**
	Eutamias	*quadrimaculatus*		**Long-eared Chipmunk**
	Eutamias	*merriami*	*merriami*	**Merriam Chipmunk**
	Glaucomys	*sabrinus*	*lascivus*	**Sierra Flying Squirrel**
GEOMYIDAE	*Thomomys*	*monticola*	*monticola*	**Sierra Pocket Gopher**
	Thomomys	*bottae*	*mewa*	**Digger Pine Pocket Gopher**
	Thomomys	*bottae*	*awahnee*	**Yosemite Pocket Gopher**
HETEROMYIDAE	*Perognathus*	*californicus*	*dispar*	**Allen Pocket Mouse**
CASTORIDAE	*Castor*	*canadensis*	*subauratus*	**Golden Beaver**
CRICETIDAE	*Reithrodoitomys*	*megalotis*	*longicaudus*	**Long-tailed Harvest Mouse**
	Peromyscus	*maniculatus*	*gambeli*	**Gambel White-footed Mouse**
	Peromyscus	*boylei*	*boylei*	**Boyle White-footed Mouse**
	Peromyscus	*truei*	*gilberti*	**Gilbert White-footed Mouse**
	Neotoma	*fuscipes*	*streatori*	**Streator Wood Rat**
	Neotoma	*cinerea*	*acraia*	**Bushy-tailed Wood Rat**
	Phenacomys	*intermedius*	*celsus*	**Sierra Lemming Mouse**
	Microtus	*montanus*	*yosemite*	**Yosemite Meadow Mouse**
	Microtus	*californicus*	*mariposae*	**Mariposa Meadow Mouse**
	Microtus	*longicaudus*	*sierrae*	**Sierra Meadow Mouse**
MURIDAE	*Rattus*	*rattus*	*alexandrinus*	**Roof or Alexandrine Rat**
	Mus	*musculus*		**House Mouse**
ZAPODIDAE	*Zapus*	*pacificus*	*alleni*	**Allen Jumping Mouse**
ERETHIZONTIDAE	*Erethizon*	*dorsatum*	*epixanthum*	**Yellow-haired Porcupine**
Order CARNIVORA—Flesh-eaters				
CANIDAE	*Canis*	*latrans*	*lestes*	**Mountain Coyote**
	Vulpes	*futva*	*necator*	**Sierra Red Fox**
	Urocyon	*cinereoargenteus*	*townsendi*	**Townsend Gray Fox**
URSIDAE	*Ursus*	*americanus*	*californiensis*	**Sierra Black Bear**
	Ursus	*horribilts*	*henshawi*	**Henshaw Grizzly Bear**
PROCYONIDAE	*Bassariscus*	*astutus*	*raptor*	**California Ring-tailed Cat**
	Procyon	*lotor*	*psora*	**California Coon**
MUSTELIDAE	*Mustela*	*erminea*	*murica*	**Sierra Least Weasel**
	Mustela	*frenata*	*nevadensis*	**Mountain Weasel**
	Mustela	*vison*	*energumenos*	**Pacific Mink**
	Manes	*americana*	*sierrae*	**Sierra Pine Marten**
	Manes	*pennanti*		**Fisher**
	Gulo	*luscus*	*luteus*	**Southern Wolverine**
	Taxidea	*taxus*	*neglecta*	**California Badger**
	Mephitis	*mephitis*	*occidentalis*	**N. California Striped Skunk**
	Spilogale	*gractlis*	*phenax*	**California Spotted Skunk**
	Lutra	*canadensis*	*brevipilosus*	**California River Otter**
FELIDAE	*Felis*	*concotor*	*californica*	**California Mountain Lion**
	*Felis**	*rufa*	*californica*	**California Wildcat**
Order ARTIODACTYLA—Even-toed, hoofed mammals				
CERVIDAE	*Odocoileus*	*hemionus*	*hemionus*	**Rocky Mountain Mule Deer**
	Odocoileus	*hemionus*	*californicus*	**California Mule Deer**
	Odocoileus	*hemionus*	*columhianus*	**Columbian Black-tailed Deer**
BOVIDAE	*Ovis*	*canadensis*	*sierrae*	**Sierra Bighorn**

*Given as *Lynx rufus californicus* in most of the references listed in the bibliography.

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