

**iles and Amphibians of Yosemite National Park (1946) by Myrl V**

Myrl V. Walker  
none

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## About the Author

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r *Myrl V. Walker, 1931*r

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r Myrl V. Walker was born March 20, 1903.r He married Wilda O. Walker in the 1920s.r He also began collecting fossils in the 1920sr as a student of Dr. George F. Sternberg,r an early Kansas fossil collector,r and later studied under Dr. L. D. Wooster, a paleontologist.r Walker began teaching Junior High at Protection, Kansas, while attending Fort Hays State College during summer and later full time.r He received his bachelor's degree in 1927.r After graduating, Walker taught high school at Plainville, then at the biology

## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

department at Kansas State Teachers College in 1929 (now Fort Hays State University).r In 1930 he was high school principal, coach, and science instructor.r He received his master's degree in vertebrate paleontology from the University of Kansas in 1931.r

r r

r Walker became a seasonal ranger naturalist in 1933.r In 1944 he was appointed asr Associate Park Naturalist in Yosemite National Park.r He transferred in 1933 to Petrified Forest National Monument, then to Zion National Park, Crater Lake National Park, and Glacier National Park, and back to Yosemite in 1944.r In 1951 he was head of interpretation at Zion and Bryce National Parks.r Besides this booklet, Walker wrote a studyr His specialty was paleontology.r While employed for the National Park Service he wrote of Triassic insects in Petrified Forest National Monument (1940),r where he also discovered vertebrate tracks.r He also wrote anr interpretative program study for Dinosaur National Monument (1943),r and *Archeology of Zion Park* (1955).r During 1955-1973 he was director of the Division of Paleontology at Fort Hays Kansas State College Museum.r

r r

r Walker married Wilda Opdyke in 1930.r They had one child, Margaret Jean Walker.r Wilda Walker died in 1980.r Myrl V. Walker died May 1985.r They are buried at Ft. Hays Memorial Gardens, Hays, Kansas.r In 1988 a series of paleontology papers were published asr "Articles in Honor of Myrl V. Walker,"r *Fort Hays Studies*, 3d ser. v. 10 (Science series).r

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- "Ft. Hays Alumnus Serves as National Parks Naturalist," Hays, Kansas *Daily News*, February 18, 1951

r

- "M. V. Walker Transfers to Zion National Park, Utah." *Yosemite Nature Notes* 26(5) (1947)

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- 1931 M. V. Walker photographs inr Michael J. Everhart,r "Use of archival photographs to rediscover the locality of the Holyrood elasmosaur (Ellsworth County, Kansas),"r *Transactions of the Kansas Academy of Science* 110(1/2):135-143 (2007)r

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r Myrl V. Walker (1903-1985),r *Reptiles and Amphibians of Yosemite National Park* (Yosemite: Yosemite Natural History Association, 1946)r "Special Number"r of *Yosemite Nature Notes* 25(1) (January 1946).r 48 pages. Illustrated. 24 cm.r Saddle stitched with yellow paper wrappers.r

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r —Dan Anderson, [www.yosemite.ca.us](http://www.yosemite.ca.us)r

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r THE MONTHLY PUBLICATION OFr  
r THE YOSEMITE NATURALIST DEPARTMENTr  
r AND THE YOSEMITE NATURAL HISTORY ASSOCIATIONr

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**VOL. XXV**

**JANUARY, 1946**

**NO. 1**

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## **r REPTILES *and* AMPHIBIANSr**

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r ofr  
r YOSEMITE NATIONAL PARKr

r r

**r By Myrl V. Walker, Associate Park Naturalistr**

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## **r INTRODUCTIONr**

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r Numerous books, bulletins and notes have been published on ther Amphibians and Reptiles of North America, Western North America, and ther Pacific Coast. No effort has been made in this publication to present newr data, but rather to take the information already available and to apply it tor a rather restricted geographic unit in the Sierra Nevada region of California.r

r r

r The technical herpetologist may be disappointed when he finds that thisr bulletin has failed to indicate original authors and name changes by properr use of parentheses. He will also notice that a “middle of the road” courser has been followed in the selection of specific and sub-specific names. Nor attempt has been made in this bulletin to justify or defend the specificr names used, for such is not the primary purpose of this publication.r

r r

r The goal of this bulletin is to provide for the greatest number of people ar guide to the ready recognition of forms in a limited area, and furthermore,r to emphasize the value of the recognition of forms and their inter-relationshipsr as an influence in the maximum utilization of the interpretive recreationalr values preserved in such areas as our National Parks.r

r r r r



## r ACKNOWLEDGMENTSr

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r To the University of California Press and the California Academy of Sciences special thanks are given for the loan of cuts, photographs, and other assistance. The writer appreciates the assistance, counsel and guidance of John R. Slevin, Joseph S. Dixon, Hector H. Lee, Robert C. Stebbins, Berthar Lutz, Leo F. Hadsall, William G. Hilton, C. P. Russell, C. Frank Brockman, and all others who either assisted in securing cuts or gave of their time to read and check the manuscript. To Park Photographer Ralph H. Anderson special credit is due for his patience and skill in securing certain photographs.

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## r Interest in Reptiles and Amphibiansr

r r

r For the most part the average person's interest in reptiles and amphibians is negative rather than positive. Many people are far more interested in the tall-tales commonly circulated about reptiles and amphibians than they are in their life habits, their relationships, or their economic value. Some people listen with interest to the stories of joint-snakes; snakes that swallow their young; hoop snakes, and milk snakes, but their interest soon lags when they delve into these mysteries and find them vanishing one by one— into thin air. Although we know that toads do not cause warts just because they are handled, there are some who still like to frighten the children with this old whip of parental control, which may if over-worked, develop into a phobia of considerable consequence. This latter fact is often a great deterrent to the proper understanding and appreciation of this division of vertebrate animals, and causes many to avoid even the casual study or observation of this interesting group.

r r

r Practically all young children show little or no fear of snakes, but rather a genuine interest. This attitude is certainly far different than the hysterical behaviour of those who have already developed a phobia because they have been frightened by older people.

r r

r All snakes are carnivorous in their habits and therefore belong to the group called "predators," meaning that they prey upon other animals or forms. This fact is of great importance in any study of snakes, for food supply is a limiting factor in their economic value, their abundance, and their distribution. Although some snakes are generally present in any given locality, their abundance or scarcity is limited largely by the three requirements: — temperature, food and cover.

r r

r A number of our snakes prey almost exclusively on amphibians, so in a study of this kind one soon realizes the control effect of snakes on toads, frogs and salamanders. Changing conditions, such as the draining of swamps or the disappearance of wet meadows which result in a sudden drop in toad, frog or salamander populations, will in turn soon act to lower the number of snakes of certain species.

r r

r ACKNOWLEDGMENTSr



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## **AMPHIBIANS**

r r The word **amphibian** is generally interpreted as meaning “two-lives,” and as applied to the salamanders, toads, and frogs, we usually visualize these forms as living the first life in water, the second life on land. The first life is called the larval or tadpole stage and is ordinarily spent in the water. There the larva breathe mainly through gills; they are without legs in their first stages, and have a peculiarly flattened tail which propels them through the water. When these larvae mature we expect them to lose their gills, grow some legs, and in the case of toads and frogs, to absorb their swimming tails. r r r

r These generalizations may be wholly acceptable, but when we study these amphibians more carefully we find that various forms have made short-cuts or have decided to shorten one or the other of their two lives, so as to enable them to survive in what would otherwise be an unfavorable environment. r

r r

r The amphibians are divided into two groups, one possessing and retaining tails throughout their entire life (the tailed amphibians), and the second (the tailless amphibians) which are without this appendage in the adult stage. The salamanders belong to the former, the toads and frogs to the latter division. r

r r

r Amphibians are usually distinguished from the reptiles by the fact that they have a moist skin which may be either slimy or warty, but in no case do they possess dry scales. For all general purposes this will serve to distinguish these two groups of vertebrates. r

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- r
- Salamanders

- r
- Toads

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- Tree Toads

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- Frogs

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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## **SALAMANDERS**

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r The name **salamander** probably brings to the average mind one of two thoughts; either a slimy, creeping creature, very repugnant and to be avoided, or stories of fire-loving amphibians that emerge from the flames very unexpectedly. Those who are interested in the confusion brought about by common names know that the name **salamander** has been used rather freely, even being applied to certain mammals (gophers or moles) in some of the southern states.

r r r r

r Salamanders have for the most part a very smooth and moist or “slimy” skin. They are amphibians and many species spend a portion of their life in water (larval stage), but when mature they usually leave the water and live on land but not on dry land. Their body processes are dependent upon a certain amount of moisture, so their skin must always remain moist or slimy; and for that reason they are to be found only in moist or damp habitats, under rocks, near streams or ponds, in dead or decaying logs, in caves or crevices in the rocks. Furthermore, some species of salamanders are known to give off a slimy secretion, especially when handled or irritated. This secretion may be slightly poisonous or distasteful to certain of their enemies, but it does not ordinarily affect man unless it reaches delicate membranes such as in the eyes.

r r

r The association of salamanders with fire is not without some significance, for undoubtedly many of the pioneers, in addition to the ancients, were occasionally struck with awe to see salamanders crawl from burning logs in the fire place. These observers were not aware that certain salamanders live under the bark of rotten logs, or within the moist center of the rotten log itself. Probably the salamander was just as surprised as his human observer to find himself suddenly subjected to a rapid increase in body temperature, and perhaps his only thought was to depart from his improperly selected abode and to locate a more moist and cool situation for a retreat.

r r

r It is unfortunate that so many people have developed a fear of salamanders. Many seem to have only the one desire—that is, to “kill the slimy creature.” All salamanders are harmless as far as human beings are concerned. Moreover, they are of considerable economic value because of the large numbers of insects, spiders, and larvae that they destroy in securing their food. They are worthy of some protection. On the other hand it is fortunate for the salamanders that so few are ever seen by man. Their habit of retreating to the moist or damp situations, under rocks, logs, or in caves or crevices, seems to give them a certain degree of security. Few people, except experienced collectors are aware of the fact that fairly large numbers of salamanders are present in many localities. They are sometimes found where conditions appear rather

unfavorable.r

r r

r Another reason salamanders are seldom seen by the average person isr because twice each year certain forms are forced to retreat from the surfacer due to seasonal change. Some hibernate, disappearing from the surfacer with the beginning of cold weather. These may burrow down into the soilr or retreat downward in cracks in rocks or logs to a point where they avoidr freezing temperatures. Others retreat in a similar fashion during the later summer and early fall months, especially in regions where there is a longr dry or extremely warm period. This summer retreat is called *aestivation*,r and it carries them over until the fall rains make it possible for them to mover around freely when moisture is again abundant for their sensitive thin skins.r

r r r r

r Only three species of salamanders have thus far been collected from withinr the boundaries of Yosemite National Park, although at least two othersr approach quite closely and may someday be taken within the Park.r

r r

r The great divergence in adaptations and habitats of the three forms foundr in this area is most interesting. Only one possesses lungs, the other two arer without normal lungs. Only one lays its eggs in water. There they hatch andr the young pass through a larval stage with feathery gills, a stage requiringr several months. One spends most of its time under or inside moist, dampr and rotten logs, and never even goes to water to deposit its eggs. Althoughr not definitely known, it is believed that the eggs are laid singly or in clustersr and attached to the underside of old damp logs. There the young pass entirelyr through their larval stage within the egg and emerge as fully developedr but immature young. This form seems peculiar in not possessing lungs,r although it lives entirely on land. The third species is even more stranger than the other two for it lives far from either water or logs, usually under flatr rocks where there is damp soil, yet it possesses no lungs. There is a possibilityr that this form does not lay eggs and that the young are broughtr forth alive, fully developed, but small and immature.r

r r

r A brief description of each of these salamanders is given in the followingr paragraphs; however, those who are particularly interested should readr some of the references listed at the end of this publication.r

r r r

## **SIERRA NEWTr** **r Triturus sierraer**

r r

r The Sierra newt, often commonlyr called water dog or mud puppy, isr probably the most common salamanderr found in Yosemite National Park.r This is due largely to the fact thatr this salamander returns to the waterr each year to lay its eggs and causesr the individuals to become fairlyr abundant in the vicinity of goodr water holes or ponds. When ther young hatch they are typical larvaer with feathery gills. They must remainr in the water a year or so beforer they develop to the point where they can leave the water and live on land.r

r r

r The Sierra newt is about seven inches in length when full grown; however, the tail accounts for about half of this length. The color of the back and sides is a chocolate-brown to burnt umber, sometimes very dark, but the underside is in sharp contrast, being either burnt orange or in some instances a shade of light red. This species is never spotted and is easily distinguished from the other salamanders in this area.

r r

r This species and some of its closer relatives are quite unique among the salamanders since the skin of individuals living on land away from water actually becomes rough, due to the development of many tiny wart-like tubercles, but when they return to the water for depositing eggs, the skin again becomes smooth and slimy.

r r r r

r A few newts have been taken on the floor of Yosemite Valley, along the road below the Wawona Tunnel, and near Fern Spring; however, most of our collection came from the vicinity of Swamp Lake, Vernon Lake.

r r

r r

r

r N. P. S. Photo by Anderson

r SIERRA NEWT

r r r Laurel Lake, and in the Miguel Meadows. This may not be a true index of distribution but rather a result of conditions favorable for collecting.

**r SIERRA NEVADA SALAMANDER**  
**r *Ensatina sierrae***

r r

r The Sierra Nevada salamander is the only spotted salamander found within the boundaries of Yosemite National Park. The general body color is blackish or deep brown on the back and sides, but with many large and small irregular spots or blotches of dull orange to orange yellow. The underside of the body is a fairly uniform pale slate fading to gray on the tail. The adults average about five inches in length.

r r



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These salamanders are interesting due to the fact that, although they seldom go near pools of water but live entirely on land, they have no lungs. Furthermore, they do not deposit their eggs in water, but presumably lay them singly or in small clusters which are attached to the underside of damp or rotten logs and bark. If like a closely related species the females will sometimes remain and either stand guard or actually curl their tails around the cluster, perhaps to aid in keeping the eggs moist by means of glandular secretions. Some observers believe that the eggs are well advanced in development before they are deposited. The young do not spend a larval stage in water, but pass through this entire stage within the egg and emerge as fully developed but immature forms.

r r

It seems a bit strange that this salamander, which never spends any portion of its life in water, should have such a very fine, delicate, smooth and slimy skin. But when it sacrificed its lungs it became necessary that it do a certain portion of its breathing through the skin. It must always stay where sufficient moisture is available to keep its skin moist. These forms are usually found under the damp and moist bark of old rotten or decayed logs, beneath the logs themselves, or occasionally in cavities within the rotting logs.

r r

This salamander has a peculiar constriction near the base of the tail which makes it possible for the animal to readily release its tail when attacked by an enemy. The enlarged portion of the tail contains poison glands which secrete a fluid that probably serves to protect these salamanders to a certain degree.

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*N. P. S. Photo by Anderson*

SIERRA NEVADA SALAMANDER

to readily release its tail when attacked by an enemy. The enlarged portion of the tail contains poison glands which secrete a fluid that probably serves to protect these salamanders to a certain degree.

Although nowhere abundant, these salamanders appear to be widespread over the Park below 7500 feet. They have been taken on the floor of the Valley, above Inspiration Point, at Wawona, in the Mariposa Grove, in Miguel Meadows, and in the Hetch Hetchy Valley.

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**r MOUNT LYELL SALAMANDER**  
**r Hydroinantes platycephalus**

r r

r Of all the forms of vertebrate life found in Yosemite National Park, probably no other is so well known to the scientific world, yet so little known to the average Park visitor, as this very strange species of salamander. It was not known to scientists until 1915 when the first two specimens were accidentally caught in a mouse trap at a camp near the base of Mount Lyell. It was nearly twenty years later before anyone learned of its abundance within the Park. Even today there is still much to be learned of its life history.

r r

r The Mount Lyell salamander is the smallest of the three species of salamanders found here, being less than five inches in length when fully mature. They are a general dark chocolate or slate color on body and sides but with many lighter markings throughout the dark except on the underparts back of the throat, which is a uniform dilute chocolate to slate. The head appears to be quite broad

r

r

r

r N. P. S. Photo by Anderson

r MOUNT LYELL SALAMANDER

r r and flattened, and there is considerable webbing between the toes.

r The Mount Lyell salamander differs from the more common salamanders by not possessing lungs, and in being able to live far from ponds or water. It is presumed, that like a European relative, it does not deposit eggs, but rather the young are born alive. Its isolation along the west slope of the Sierra Nevada mountains is indeed significant, for its nearest relatives are found—not in the New World—but in Italy and France of the Old World.

r r

r During the past few years this salamander has been taken at widely separated localities in Yosemite National Park; however, most of the specimens came from above 7000 feet in elevation. Due to the fact that they are in no way dependent on running water, pools, or fallen and decaying logs, but are found under flat rocks that are resting on soil kept wet by seepage water, many times by melting snow water, they are found in such unexpected places as on the very top of Half Dome. A regular “colony” make their home



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## **TOADS**

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r Nearly everyone is acquainted with our common toads. The toads have become quite tolerant of civilization and have found the garden a good place to secure food and with the necessary moisture to keep their warty skins functioning properly in the process of respiration. The gardener is also well aware of their economic value, for he has no doubt seen them snap up many bugs, beetles, and other pests of the garden. Often they gorge themselves until they are hardly capable of hopping, but instead their movements are limited to an awkward crawl.

r r

r Although their warty skin helps to prevent loss of body moisture, they are still somewhat limited in their range. They are more active at night than in the day time. They spend most of the day in a small burrow or shelter that they have formed by literally “backing down” into the moist soil. The toads have a sharp tubercle on the inner sole of the hind foot that assists them greatly in this backward digging activity.

r r

r The adults live on land, often some distance from water, but once each year they return to the ponds and streams to deposit their long double-strand string of eggs. Here the young tadpoles (larva) hatch and for some time live in the water very much like a fish, for they have only gills—no lungs or legs—in the tadpole stage. Some toad tadpoles require several months to grow up and do not acquire their legs or lose their tail until the next summer season rolls around.

r r

r In all areas where seasonal variations are severe, the toads hibernate in the winter time, burrowing down in the soil, in old gopher holes, or in cracks alongside buildings, until they reach a point where they are safe from frost and freezing weather.

r r

r Although toads have warts, they do not cause warts to grow on human hands that touch them. The warts on the toad help him to conserve his skin moisture, and secondarily may secrete a substance that is somewhat poisonous if taken internally, or if it touches delicate membranes like those in their eyes; but on the hands it is generally harmless. Any dog that makes a mistake and takes a toad in his mouth suffers for his foolishness. This secretion seems to afford the toad some measure of protection.

r r

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r Toads have also developed a rather large bladder-like organ which is used for water storage. This is something that the toad can draw upon to keep his skin moist if he gets too far from moist soil or leaves. The almost clear, colorless liquid often discharged by toads when first picked up is this supply of storage water, for its weight often greatly hinders the movements of the toad. He simply lightens his load by discharging this water, which has absolutely no poisonous or irritating properties.

r r

r Only two species of toads are found in Yosemite National Park. They are usually easily distinguished, not just because of their color variation and size, but because they each occupy a particular altitudinal range or habitat.

r r r r r

**r CALIFORNIA TOAD**  
**r Bufo boreas halophilus**

r r r

r I I I  
I r  
r N. P. S. Photo by Anderson  
r CALIFORNIA TOAD

r r

r This large toad is commonly found in Yosemite Valley and other areas in the Park at comparable elevations. It does not appear to live above 4,500 feet in elevation, so that there is an unoccupied space of nearly 2,000 feet, that is, between 4,500 and 6,500 feet where few if any toads are found, for the other species of **Bufo**, the Yosemite toad, does not descend to elevations below 6,500 feet.

r r

r The California toad has a much heavier body than the Yosemite toad; in fact, they are so bulky that they seldom hop as do most toads, but instead move forward in a most interesting slow awkward crawl. In the daytime they hide under boards or fallen logs, under flat stones, or even occupy the open burrows of field mice or ground squirrels. At night they come out to feed, and are often seen under the street lights where they have been attracted by the larger number of insects which often gather around the lights.

r r

r These large toads have suffered greatly because of our modern age. The asphalt surfaced highways which retain many small pools of water after light summer showers, especially evening showers, seem to attract many toads. Here they are killed by the hundreds because with their slow awkward crawl they cannot escape the wheels of the motor cars that dash down the roads at terrific speed.

r r

r r

**r YOSEMITE TOAD**  
**r Bufo canorus**

r r

r This small toad with its peculiarly rounded parotoid glands and strange sexual dimorphism has been found thus far only in or near the Yosemite National Park. Within the Park its range seems to be very limited, that is, to areas at or above 6,500 to 7,000 feet, and only in wet meadows. The Yosemite toad was first discovered by members of the University of California

r r

r

r r

r N. P. S. Photo by Anderson

**r YOSEMITE TOAD**

r r scientific expedition when they were making their study of the fauna of the Yosemite National Park region in 1915. The Yosemite toad differs from the California toad in many respects. They are considerably smaller, they have fewer and smaller "warts," and they have a very peculiar spring song, a long melodious trill, hence their specific name **canorus**. As they live at high elevations where the winters are long and snow remains on the ground for several months, these toads must hibernate for five or six months each year. They appear to be solitary at all times except during the spawning season when both males and females may be found near pools in the larger meadows.

r Yosemite toads in our collection have come from near Mount Dana at 10,000 feet elevation, Research Reserve at 8,300 feet, Kerrick Meadow at 9,300 feet, Slide Canyon at 10,000 feet, Lyell Base Camp at 10,400 feet, Virginia Canyon at 10,000 feet, and near Upper McCabe Lake at 10,600 feet.

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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r r

## **TREE TOADS**

r r r

r Another of our interesting amphibians is the small tree-toad or tree-frogr which is so often heard but seldom seen by the average person. Althoughr the tree-toad is the smallest of all the amphibians found in Yosemite Nationalr Park, it is, nevertheless, one of the most interesting. The tree-toad does notr spend all its life in trees, as one might infer from the name. Instead the tree-toadr must go to ponds and streams to deposit eggs which hatch into tinyr tadpoles that spend two or three months in the water before being able tor maintain themselves on land. Of all our toads and frogs, the tree-toad is ther only one equipped with the necessary tools to climb up into trees or bushes.r This it does quite often as an adult and it may occasionally be found sittingr on a leaf patiently waiting for some insect to come along. This special equipmenr consists of small round sucker-like discs which it has on all its toes,r both fore and aft, and these make it possible to climb with ease; in fact, itr seems to delight in walking up the glass panes of the aquarium jar, and out,r if the cover is not always kept in place.r

r r

r But the most interesting feature, as far as our amphibians are concerned,r is the fact that it can change skin color to match the color of the background;r hence, it is quite inconspicuous among the low leaves of vines or shrubs.r Only when it visits the water holes in the spring, or after sudden rain storms,r are we aware of its presence, but at that time it puffs out its throat and singsr a song no one can mistake, a non-melodious “crack-it” which is all out ofr proportion to the size of the individual making the noise.r

r r

r Although the tree-toad is an expert in the art of camouflage, there is oner color feature of its anatomy that seems to change very little, and that is ther dark black line or bar that extends from the snout through the eye and backr through the ear membrane nearly to the shoulder. This tell-tale mark is alwaysr present for ready identification of the little tree-toad.r

r r r r r r

### **r PACIFIC TREE-TOADr r *Hyla regillar***

r

r In one respect the Pacific tree-toadr differs from all other of our amphibians,r for it seems to pay no attentionr to life zones, changes in elevation orr forest cover, but is found from ther lowest elevations in the park up tor over 10,000 feet. No other amphibianr has been able to adapt itself to suchr r r



r r

r

r r

r From Slevin: *The Amphibians of Western North America*. Courtesy of the California Academy of Sciences

r PACIFIC TREE TOADr

r r r divergent life zones or habitats. Evenr in areas where conditions seem to ber extremely arid, it manages to absorbr enough moisture from the earlyr morning dew, or from the leaves andr foliage, so as to keep its skin moistr and functioning properly.r r r

r The tree-toad is small and usuallyr measures less than two inches inr length, and is always readily recognizedr by the small rounded discs onr the ends of all toes. The color isr variable, being gray, green, or nearlyr r black. The underside is less variable,r being nearly white and unspotted,r but with a blackish patch on ther throat of the males. They are usuallyr found singly except during ther spawning season.r

r r

r Tree-toads have been taken on ther floor of Yosemite Valley, in the poolsr along the Merced River, and evenr around the houses where watering ofr r lawns and shrubs provides an attraction.r They have been taken atr Tuolumne Meadows, Yosemite Researchr Reserve, Lukens Lake, Yosemite Falls, Miguel Meadows, andr even on the back porch of the Museum.r They seem to be abundantr nearly everywhere, but it takes quick,r keen eyes and a little knowledge ofr tree-toad habits to be able to locater them at the various seasons of ther year.r

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## **FROGS**

r r r

r The frogs, unlike the toads and tree-toads, must always remain close to permanent pools of water. Although their skin allows them to leave the water temporarily and to bask on floating logs or debris, they must ever so often moisten themselves by plunging into the pool. When it comes to the matter of protection, frogs are far more dependent on pools of water than are the toads and tree-toads, for they escape from most of their enemies by diving into the water and hiding either under rocks, or going down to the bottom of the pool where they either partially or completely bury themselves in the muddy ooze and are lost to the sight of most enemies.

r r

r Unlike the toads, they are not warty nor do they carry an extra supply of water with them. They do not have digging tools on their hind feet, nor have they developed any poison glands comparable to the toads. They are far more at home in water than on land, and their long hind legs push them through the water with remarkable speed.

r r

r Nearly everyone has at some time or another seen the large jelly-like masses of frog eggs in quiet streams or pools, and upon returning a few days later, noticed the great number of tiny tadpoles. In the warmer regions these larvae mature at the end of the first summer, but in the higher and colder elevations, where the summer seasons are short, they pass the first winter as tadpoles, becoming adults some time the second summer.

r r

r Three species of frogs are found in Yosemite National Park, although one form is confined to the lower elevations. One of these frogs reaches sufficient size to be considered of some value for food, and outside the Park these frogs have sometimes been collected in large numbers and furnished to the markets. The other two frogs found in the park are much smaller and are of economic value only because of the number of insects or insect larvae they destroy, or in their value as fish food. It has been found that trout in their higher mountain lakes and streams feed heavily on the small frog tadpoles, and in many instances, sooner or later, almost eliminate the frogs from these lakes.

r r

**r CALIFORNIA RED-LEGGED FROGr**  
**r Rana aurora draytoniir**

r r r

r r

r r

r

r *From Slevin: The Amphibians of Western North America. Courtesy of the  
California Academy of Sciences*

r CALIFORNIA RED-LEGGED FROGr

r r r

r The California red-legged frog isr by far the largest frog found in ther Yosemite National Park. They sometimesr measure four or five inches inr length. The adults may be readilyr identified by the red and pink markingsr on the underside and inner sider of the big hind legs. They are lightr to dark hi-ewe above and with larger or small black spots on the dorsalsr surface and on the thighs. They appear to be much more hump-backedr than the other two species of frogsr found in Yosemite.r

r r

r The red-legged frog seems to showr a preference for the big ponds alongsider streams that are filled to theirr maximum during the high water andr flood stages in the spring. They seemr to he more of a pond or lake frog,r r r r rather than a stream frog, and seldomr are found in association with swiftlyr running water.r

r r

r The California red-legged frog doesr not appear to be very abundant inr Yosemite National Park, and thusr far has been found only in the lowerr elevations: in fact, our first museumr r r accession of this frog was not mader until 1938 when specimens werer taken at Swamp Lake. Other specimensr have since been taken inr Miguel Meadows and Sand Pit Lake.r Perhaps careful collecting will prover that this frog is more widespreadr than our records thus far haver seemed to indicate.r

r r

r r

**r YELLOW-LEGGED FROGSr**  
**r Rana (See key for species)r**

r r r

r I

I

I r

r *Photo courtesy Calif. Acad. of Sci.*r

r CALIFORNIA

YELLOW-LEGGED FROGr

r r r

r These two species of frogs appear to be so closely related that it seems unnecessary to treat them separately; hence they are discussed only in a general manner. They are moderately sized frogs with an average length of three inches or less. They are blackish, dark green or brown above, and with a few rather indistinct markings. The markings on their underside are more distinctive, being yellow or whitish, with the yellow underside of the hind legs being their most diagnostic characteristic. Their most apparent characteristics which distinguish the two species are as follows:—The California yellow-legged frog has an ear membrane which is quite rough and with a “pebbled” texture; the hind leg is rather long, and in addition this frog lives largely below 6,500 feet in elevation. The Sierra yellow-legged frog has an ear membrane which is relatively smooth, not pebbled; the hind leg is only moderately long, and they live at elevations mostly above 6,500 feet.

r r

r The range of the California yellow-legged frog, especially in their lower elevations, allows it to remain active throughout the entire year, but the Sierra yellow-legged frog must hibernate for long periods either along the shore lines or in the bottom of muddy pools and lakes in the high alpine country. These streams and lakes are sometimes almost completely frozen for several of the mid-winter months.

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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r r

## **REPTILES**

r r r

r The few reptiles that live in the world today are but a small remnant of a once mighty race or division of our vertebrate animals. Those people who today are frightened at the sight of a little garter snake or spiny lizard would have been shocked beyond description had they met face to face some of the giant dinosaurs or other reptiles of the ancient past. Even if such a meeting had occurred, there is little doubt but that most of the reptilian giants would have been little interested in their human observers. Many of these ancient reptiles were for the most part herbivorous and subsisted on plant life. Only in recent times (geologically speaking) and in a last effort to maintain their race, have the majority of reptiles become carnivorous or flesh-eaters, rather than herbivorous.

r r

r If we could but piece together each and every adaptation made by these reptiles of the past in their effort to secure food, find shelter, and reproduce their kind, we would unravel in detail a most marvelous story. This story would tell us why snakes have lost their legs, why some lizards are legless, blind, and burrowing, why some lizards are covered with spines, and why some snakes have developed a poison apparatus for use in securing their food.

r r

r Taken all in all, the reptiles have not been outstandingly successful in their efforts to maintain themselves, and those few forms that we still have with us today are all the more interesting because of their varied and often seemingly useless variations, habits or adaptations. We often wonder why some reptiles are so brilliantly colored, why some reptiles "play dead," and why some reptiles spread their heads. And again why do some reptiles vibrate their tails, and why have other reptiles developed a rattle on the end of that vibrating tail.

r r

r Generally speaking, reptiles may be identified by the fact that their body covering is composed of rather dry scales, easily recognized in most common snakes and lizards, but somewhat modified in the turtles and tortoises. They differ from the mammals and birds, above them in the scale of life, by having "cold blood" and thereby being restricted in their habitats by the temperature of their surroundings. They rank above the amphibians and fishes since they are far less dependent on water. They have no larval stage, and the development of their bony skeleton, especially their skulls and jaws, often set with firmly attached teeth, is a specialization which distinguishes them from the amphibians.

r r





Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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## **TURTLES**

r r r

r The turtles and tortoises are very poorly represented in the reptilian faunar of the Pacific Coast, and only one species reaches the Yosemite Nationalr Park area.r

r r

r This group of reptiles is well known to nearly everyone, for their veryr specialized protective shell is a feature not found in any other of our Americanr reptiles. The scaly body covering of the reptile division is still plainlry seen, especially on the legs; however, the upper and lower shells, commonlry called carapace and plastron, are so modified that their scale characteristicsr are practically lost.r

r r

r Like most of the other reptiles they possess sharp claws on their toes, ar feature which helps to distinguish the reptiles from the amphibians. Theirr jaws are quite unlike the lizards or snakes for they do not possess teeth, andr furthermore, the jaws are modified into a type of beak.r

r r

r A majority of the turtles and tortoises have not ventured far from water,r but a few have managed to exist on land, some actually going so far asr to adjust even to the arid deserts of the southwest. All seem to be ratherr variable in food habits, with both animal and plant food being taken. Thoser forms that live in ponds or streams secure their food either in the water orr near the water's edge, and some even seem to be unable to swallow unlessr the head is submerged beneath the surface of the water. For protection ther pond and stream types dive to the bottom of the pond either to partly buryr themselves in the mud, or to become lost to view in the depths of the water.r

r r

r In regions where winter temperatures drop rather low, turtles may hibernater during the coldest winter months. In common with many of the reptiles,r they deposit eggs that have a very leathery shell. These are buriedr in sand or decaying vegetable matter where incubation takes place, ther parent showing no interest in the young.r

r r

r Unfortunately, perhaps, because of the brightly colored shells of the youngr of many species of turtles, these tiny specimens are now handled in the petr shops and each year are sold by the thousands. Because so few

people know or seem to care about them, after the novelty has worn off, they are often left to starve, or in many instances, are gently dropped out the back door. A number of the latter find their way to ponds where they soon establish themselves, so that today the naturalist can never be sure that the turtles he observes in the ponds and streams are native there, or whether man has been involved in their unnatural distribution.

r

## **r WESTERN POND TURTLE**

### **r Clemmys marmorata**

r

r The western pond turtle is found only in the lower elevations along the western boundary of the Park, and to date has been collected only from the vicinity of Swamp Lake, near Eleanor Dam, and in the Miguel Meadows. These turtles are fairly abundant at lower elevations in the San Joaquin Valley.

r r

r This turtle is only about eight inches long when fully mature. The top shell (carapace) is dark brown or blackish in color, but each individual plate is marked with yellowish spots or lines, the latter sometimes tending to radiate from the center of the plate. The plates of the carapace are relatively smooth, not roughened. The individual plates in the undershell (plastron) are mainly yellowish in color but are often bordered with black. The legs, head and neck are generally brownish, but often spotted with black or yellow.

r r

r These turtles are difficult to observe because they seem to dive into the water at the slightest disturbance and remain submerged for some time. They crawl out on logs or rocks that project above the surface of the water and bask themselves for long periods unless disturbed. Fishermen are often surprised to find that these turtles will take a small hook baited with meat or worms. These turtles are sometimes utilized for food, and occasionally will be found displayed in the markets along the Pacific Coast. It is doubtful if many visitors will ever see this turtle, for its habits and the fact that its range is limited in Yosemite causes it to be one of the least seen of our reptiles, except of course, for some of the nocturnal snakes.

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r r

## **LIZARDS**

r r r

r If we were to ask the average person how he distinguished the lizards from the snakes he would probably reply that the lizards are reptiles which have four legs and can run over the ground, while snakes are legless and only crawl. This happens to be true for the lizards found in Yosemite National Park, but in other sections of the United States there are legless lizards, lizards with only two legs, and lizards that are not only without legs, but in addition are blind and burrowing. A more careful observation of lizards and snakes will reveal that the lower jaw bones of all lizards are solidly joined in front, while in the snakes the lower jaws are held together by a somewhat elastic type of cartilage. A further difference which may be observed between the lizards and snakes of Yosemite is that the lizards have eyelids which they can close over the eye, while the snakes are without these movable eyelids. This distinction does not hold true in other sections of the United States.

r r

r A majority of the lizards deposit eggs which are left to hatch without further attention from the parent; however, a few lizards produce their young alive. Included in this latter group are some of the horned lizards, commonly but erroneously called horned toads.

r r

r Nearly everyone is well acquainted with the fact that a number of the lizards easily break off or "throw" their tails when roughly handled or pursued by an enemy. This seems to be a method of self preservation and does no particular harm to the lizard, for it will in time proceed to grow another tail, although the new member may be slightly smaller and with scales more variable in size and character.

r r

r Although some of the lizards are herbivorous, they are for the most part insectivorous and few people ever stop to realize their economic value in the control of insect pests. All forms found in Yosemite are prolific insect eaters and are active mostly during the daylight hours. Lizards are cold blooded and must of course hibernate during the cold winter months when temperatures drop below certain levels of tolerance.

r r

r Lizards are very interesting and are easily studied, but they are difficult to maintain in captivity for any great length of time. Many will attempt to bite if roughly handled, and their small sharp teeth may puncture the skin and draw blood, but otherwise they are harmless. In fact, the only poisonous lizard in the entire United States is the Gila monster which is found in the arid and desert regions of the southwest.

r r

r The different species of lizards are not so abundant in Yosemite National Park as they are in areas that are warmer and more arid, so that we are able to list only nine species native to this area. Even one of those may have reached the park as a result of being introduced by man.

r r

**r THE SPINY SWIFTS, FENCE LIZARDS  
r OR BLUE-BELLIED LIZARDS  
r Sceloporus (See key for species)**

r r

r In Yosemite everyone is aware of the existence of a number of small lizards commonly called by such names as spiny swifts, scaly lizards, fence lizards, or blue-bellied lizards. They belong to the genus **Sceloporus** and because they are so much alike few people ever try to distinguish the different forms. For that reason no attempt is made to discuss each species separately but all are considered in a general manner.

r r

r Four species of **Sceloporus** are found in Yosemite National Park. Three of them are closely related and are grouped into the blue-bellied lizard division, while the other one is commonly called the mountain lizard, although perhaps a better name might be brush lizard. The name blue-bellied lizard is of course descriptive and refers to the blue under-markings so characteristic of this form. The name fence lizard is applied to one species because of its interesting habit of congregating in the vicinity of or on rail or log fences. Here these lizards climb about either to sun themselves or to secure certain insect food.

r r

r The three species of blue-bellied lizards seem to have each selected a particular niche in the Yosemite region. The western fence lizard is found in the lower elevations on the western side of the Park, up to and including the floor of Yosemite Valley. The Pacific blue-bellied lizard tends to occupy the space above the fence lizard, that is, from the Yosemite Valley up to and including

r r

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*From Slevin: The Amphibians of Western North America. Courtesy of the California Academy of Sciences*

Upper: WESTERN FENCE LIZARD

Lower: PACIFIC BLUE-BELLIED LIZARD

the areas with elevations comparable to the rim of the canyon. Here it shares this zone with the mountain lizard; however, the latter is definitely an underbrush or ground form, while the former is at home among the big talus boulders or on the rough rocky areas at this elevation.

The third species of blue-bellied lizard, the Tenaya blue-bellied lizard, is a large form occupying a rather limited and restricted zone of higher elevation in the vicinity of Merced Lake, Washburn Lake, Tenaya Lake and Glen Aulin. It is apparently well adapted to the open and well lighted areas of glacially polished rocks at this elevation. This last species is of particular interest in view of the fact that Yosemite National Park has been designated as the type locality for this form.

r r

The **Sceloporus** lizards are all small, the mountain lizard seldom reaching a length of five inches. The blue-bellied lizards are larger, being from six to eight inches in length, with the body averaging from three to four inches and the tail from three to five inches. All are covered with small scales and the dorsal scales usually have a ridge or "keel" running down the center of the scale which ends in a short but sharp projecting spine. This is soon discovered when one attempts to rub them the "wrong" way.

r r

THE SPINY SWIFTS, FENCE LIZARDS OR BLUE-BELLIED LIZARDS *Sceloporus* (See key 67 species)



## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

The **Sceloporus** lizards, like many of the other lizards, have that ability to break or throw their tails when attacked by an enemy, and to regenerate or grow a new tail just in case such an emergency might arise again. These lizards are of economic value because of the larger number of insects they destroy. But they are in turn preyed upon by several of the snakes and by some of the hawks, owls, and shrikes.

r

### **CALIFORNIA HORNED LIZARD** **Phrynosoma blainvillii frontaler**

r

The small horned lizard, more commonly called horned toad, seldom exceeds three to four inches in total length. It is probably better known to the average person than any other of our North American lizards. Its flattened form and peculiar appearance with its set of tiny sharp pointed horns are so distinctive that it is usually recognized at a glance.

r r

It ordinarily dwells in the more open, arid, rocky and sandy areas, and where the temperature remains rather warm. Few places in Yosemite offer the ideal habitat for this lizard, and although a few specimens have been taken on the floor of the Valley, it is questioned whether or not these should be considered valid records. It is feared that the specimens might have been carried in by some tourist who, later tiring of the "pets," turned them loose in the Valley where they were able to maintain themselves long enough to be observed by several people, and occasionally recaptured and added to the research collection.

r r

These small lizards feed on a variety of small insects, especially ants, and for that reason they are easily kept in captivity. They will soon become very tame and will

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*r From Slevin: The Amphibians of Western North America. Courtesy of the  
California Academy of Sciences*

r Upper: SAN DIEGO ALLIGATOR LIZARD WESTERN SAN DIEGO ALLIGATOR LIZARDSAN  
DIEGO ALLIGATOR LIZARD

Lower: CALIFORNIA WHIP-TAILED LIZARD r

r r r r even take small insects such as fliesr or beetles from the fingers. Althoughr they often live in very aridr  
regions, they will take water readilyr when in captivity.r r

r Unlike some of the other hornedr lizards, this species deposits eggsr instead of producing the young alive,r  
although it is believed that the eggsr hatch very shortly after being laid.r

r r

r The horned lizards or hornedr toads are probably best known forr their peculiar habit of “squirtingr blood  
from their eyes,” and the Californiar horned lizard seems to ber one of the best performers in thisr respect.  
Many people have lookedr in vain for the place where a hornr had supposedly punctured the skinr and drawn  
blood on the hand of ar person holding a specimen. Littler did they realize that the tiny dropsr of blood had  
been forcibly ejectedr from the delicate eye membranes ofr the horned lizard, perhaps becauser it was very  
much irritated or unusuallyr angry.r

r r

## r ALLIGATOR LIZARDSr

### r Gerrhonotus (See key for species)r

r r

r The two species of alligator lizardsr found in Yosemite Nationalr Park are very similar in general appearance and are therefore not consideredr separately in this bulletin.r The alligator lizards are the largestr lizards in the Yosemite region. Theyr sometimes reach a length of twelver inches. Although some whip-tail lizardsr may also measure up to twelver inches, they are much more slenderr and with a shorter body and longerr tail than the alligator lizards.r

r r

r The common name alligator lizardr is quite applicable for these lizardsr surely resemble a small alligator,r not only in their general appearance,r but in their actions as well.r When fully grown the head is larger and wider than the body and givesr them a look of ferocity. The scalesr are relatively heavy and thick for ar lizard of this size, and the lengthwiser series are very distinct. Becauserr of their short and rather weaklyr developed legs and feet, theyr move somewhat awkwardly andr with a wriggle or crawl that hasr caused them to receive the commonr name of snake lizard.r

r r

r They live up to their ferocious appearancer by being rather irritable,r and they will charge and strike atr almost any object that is moved intor a position before them. They have ar series of sharp pointed teeth, butr they are so short that they will seldomr draw blood unless the lizardsr are aroused to the extreme by handlingr or abuse.r

r r

r These lizards seem to be most activer in the late afternoon or evening,r at which time they come from their shady retreats or shelters underr brush or low growing trees andr shrubs to forage largely on insects.r They do not venture far into the openr but keep within "a dash or two" ofr cover or protection. They usually remainr on the ground, but in denser thickets or fallen underbrush theyr have been observed climbingr through the twigs apparently inr search of insect or other food.r

r r

r The alligator lizards have a longr slender tail which is easily "parted"r r r r when attacked by their enemies;r however, the power of regenerationr soon produces a tail nearly as longr as the first one, but the new partr seems to be poorly supplied withr nerve fibers and not capable of ther spasmodic jerks for attracting an enemyr like the original caudal appendage.r

r r

r A few differences between ther two species are perhaps worth mentioning.r The two species seem to occupyr different altitudinal ranges inr the Park with the San Diego alligatorr lizard being found in the Yosemite Valley and below, while the Sierrar alligator lizard ranges from ther Valley up to elevations as high asr Washburn or Merced Lakes, andr even to 10,000 feet on the west ridger of Red Peak. If live specimens arer available for observation, the twor species are easily distinguishedr by eye color, for in the San Diegor alligator lizard the iris of the eye isr yellow and without dark pigment,r while the eye of the Sierra alligatorr

lizard is dark and appears nearly black. A further difference is the fact that the San Diego alligator lizard deposits eggs, while the Sierra alligator lizard produces the young alive. This seems to be the natural specialization of those forms ranging into the higher and colder elevations where damp and cold habitats would greatly hinder or prevent the hatching of eggs.

r r

r The alligator lizards belong to the interesting family known as the Anguillidae. They are poorly represented in North America. Some of their closest relatives are the strange glass-snake or joint-snake of the eastern portion of North America, and the small limbless, burrowing lizard of the Pacific Coast region.

r r

## **r CALIFORNIA WHIP-TAILED LIZARD r *Cnemidophorus tessellatus tessellatus***

r r

r The whip-tailed lizard is found only in the extreme western portion of Yosemite National Park and barely reaches the lower end of Yosemite Valley. These lizards are ordinarily considered most at home in the arid and more desert types of country; however, a few individuals occupy the foothill regions and lower valleys. Typical habitats are not present in Yosemite National Park, but a few specimens have been taken from the more open, sandy and warmer sections along the western boundary.

r r

r The whip-tailed lizard is the swiftest of all the lizards in this region. Because of its specialization in slender body form, long slender tail, and modified leg and foot—such modifications all assisting in the attainment of speed—it is well known and readily recognized by all those who are the least interested in natural history. Its habit of lifting its tail off the ground and actually using it as a rudder or counter-balance when running rapidly is an especially interesting adaptation. When these lizards are seeking food they move cautiously but somewhat “jerkily,” and at that time they drag their long slender tails, so that they leave an interesting but characteristic “trail pattern” when moving over fine dry sandy soil.

r r r r

r The head and snout is long and slender. They have a habit of “poking” the sharp pointed snout into holes or crevices and at the same time darting out their delicate tongue. The body measures only three to four inches, but the tail reaches a length of from seven to ten inches, thus giving them an overall length of from ten to fourteen inches.

r r

r The whip-tail lizard feeds largely on insects such as grasshoppers, ground beetles, spiders, ants, larvae and so forth, and they seldom if ever leave the ground to crawl into brush or trees or even up and over the larger boulders. They most certainly are typical ground dwellers. They are abundant and widely distributed over most of the plains, prairie and sandy desert country of North America, and they exhibit such great variations in marking and scale characteristics that they are one of the most perplexing divisions of the lizard group in this country.

r r

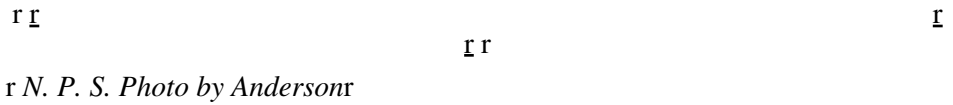
r They are easily distinguished from all other lizards in Yosemite National Park by the fact that they have eight lengthwise rows of fairly large, rhomboid-shaped belly scales, while all other of our lizards have numerous rows of relatively small belly scales.

r r

**r YOSEMITE SKINK**  
**r Eumeces gilberti gilberti**

r r

r Because of its change in color pattern from young to adult, and because of the iridescent play of color often observed on the smooth and shiny scales, this lizard is one of the most interesting in Yosemite National Park. Its habits are such, however, that very few people ever have the opportunity to see these lizards except in cages or preserved collections. These lizards, commonly called "skinks," seldom venture far from shelter. They seem to remain under cover most of the day but come out into the open to forage for food in the late afternoon or evening. Their food is composed largely of

r  r

r N. P. S. Photo by Anderson

**r YOSEMITE SKINK**

r r r r insects which they locate on the ground among piles of dead leaves and down brush, or amongst the rubbish accumulated in the cracks between large boulders.

r For a shelter they usually seek out thin flat rocks on fairly open hillsides, and several specimens may sometimes be located under a single slab of shale. They also take advantage of fallen logs, and may be found under the rotting logs, or even between the loosened bark and the log itself.

r r

r It is believed that these lizards deposit only a small number of eggs, and there is some indication that the females may curl up around their eggs and thereby assist in their incubation.

r r

r The skinks seem to be well adapted for quiet movement through fallen leaves or underbrush. The head is long and slender and merges into the body without any noticeable change. The body continues evenly and



Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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r r r

## **SNAKES**

r r

r The snakes constitute one of the most perplexing divisions of our entire group of backboned animals. Their abundance or scarcity and their remarkable modifications such as loss of legs and specialized heart and lungs, jaws and teeth, tongue and ears—or rather lack of ears—all contribute to the problems that have ever challenged the serious student of herpetology.

r r

r While a few snakes of some species are to be found in almost any locality, their abundance or scarcity soon becomes evident to even the experienced snake collector. He soon finds that snakes are abundant in a given locality, not just one species but often many species, while nearby areas are relatively barren. The most logical conclusion is that certain areas have the necessary requirements of food and shelter more favorably developed than others and therefore the snakes congregate there. The denning habit of some hibernating snakes also brings together large numbers each spring and fall when these species are either leaving or returning to the dens.

r r

r Perhaps it is the apparent scarcity of snakes that intrigues the average person, for there are many who know little of snake habits. Several of our snakes are active only at night, that is, are nocturnal and do their hunting in the dark. They spend the daylight hours hidden under flat rocks, under logs, or in crevices in the rocks. Even the species that prowl in the daytime seek the shelter and protection of flat rocks or fallen logs.

r r

r The snake collector does not “beat the brush” seeking to drive out its reptilian inhabitants, but rather he goes about his work by slowly turning over or looking under all of the flat rocks which might provide a hiding place for the snakes. He is often rewarded by finding several snakes under a single flat rock—a flat rock that could be resting within a few feet of a highway or well traveled trail; yet many people might have passed without ever realizing that several snakes could be so close at hand.

r r

r Many centuries ago when snakes gave up their legs to crawl on the ground or into places unavailable to an animal with limbs, they were forced to make numerous adjustments not only in their skeletal structure, but in their internal organs as well. Slenderness and length became necessary in order to progress in the manner now used by snakes, and all are aware that the fastest snakes are the longest and most slender, the stubby and heavy snakes are the slowest. In order to attain this slenderness of body the snakes had to make



## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

adjustments in many of their internal organs. Many snakes sacrificed one lung entirely and now have but a single lung, and even that is drawn out into an extremely long and slender organ. The heart of a snake is also very long and slender and unlike the heart of other vertebrates. The liver and gall bladder also show a special adaptation to the space available.

r r

The snakes were forced to swallow their prey entire since they were without legs or loots to hold it down to tear it apart. This resulted in the development of a peculiarly loosely connected jaw which makes it possible for the snake to swallow entire objects of considerable size. This in turn required the aid of powerful digestive juices that soon came into being. This made it possible for the snake to break down and absorb this quickly secured meal in a more protected spot, and in a leisurely manner.

r r

Because a few species of snakes developed poison glands as an aid or means of quickly subduing their prey and securing their food, and since this poison to a greater or lesser degree affects man, these are classed as dangerous snakes. Unfortunately this has caused a general fear of all snakes. We respect and perhaps fear the wasps and bees because they have stingers and a mild type of poison, but we do not condemn all the insects such as moths and butterflies just because of the bees and wasps. This same line of reasoning should be applicable to the snakes as well, and since we tolerate bees for the honey they produce and the aid they give in fertilizing certain flowers, we should also tolerate the snakes for their aid in controlling the ever present rodents.

r r

Most herpetologists now agree that probably no rattlesnake ever heard itself rattle, for snakes are without external ears. Noise and sound seem to affect snakes very little, but they are very sensitive to vibrations—a most natural specialization since they crawl on the ground. They seem continually to dart out their tongue for it serves to transmit certain materials to a very delicate and highly specialized sense organ. This may aid them in tasting or smelling their way along. The tongue is not an organ of hearing, strictly speaking, nor is it a “stinger” as many people have been led to believe.

r r

A number of the snakes deposit eggs under rocks or logs and then move on, leaving the eggs to hatch and the young to take care of themselves as best they can. Some of the snakes produce their young alive. The common garter snakes often have litters numbering up to thirty-five or forty. All snakes shed their skin periodically, not just once a year, but usually several times a year, and in the case of the rattlesnakes, they get a new rattle every time they shed their skin. It is therefore evident that the number of rattles is not a clue to the age of the rattlesnake, but simply an indication of the number of times it has shed its skin. The more mature rattlesnakes often break off some of the end rattles as they crawl through the rocks and brush, so after the first two or three years the number of rattles means absolutely nothing insofar as age is concerned.

r r

Thirteen snakes have been thus far recorded for Yosemite National Park and two of these are very rare and known from only a few specimens. The garter snakes are probably the most common, racers and gopher snakes are moderately abundant, while the beautifully colored and banded king snakes, seen by many visitors, are regarded as the most attractive.

r r r r r

## **r PACIFIC RUBBER SNAKE** **r Charing bottae bottaer**

r r

r The rubber snake or rubber boa, r which seldom exceeds twenty to twenty-four inches in length, most certainly exhibits few apparent characteristics, r either of size or temperament, r that would indicate to the casual observer that it is related to the large boas of South America. It has often been called the "two-headed" r snake because of its very stubby tail, and it is difficult at first glance to tell "which end is which." Some observers have been led to believe that the rubber boa takes advantage of this stubby tail, for in the presence of danger or enemies, while it keeps its head low and motionless, r it may raise its tail and slowly move it back and forth thereby simulating head movement. r

r r

r A pair of short spurs or spines which project slightly on either side of the vent appear to represent rudimentary legs or portions of the vestigial pelvic arch. This is one of the few snakes that retain evidence that they once possessed legs. r

r r

r The rubber boa seems to be well adapted to burrowing in damp and moist soils. Even the bones of the skull are modified, strongly and solidly joined, as are other burrowing forms. The scales are small and very smooth, and the skin seems to be very loose fitting, thereby giving the rubber snake an unusual appearance which makes them readily recognized. Those snakes are uniformly a dull yellowish to greenish brown above and a yellowish r white below, and get their common name from their "rubber-like" r color and texture. They are sluggish and slow moving and seldom if ever make an attempt to protect themselves. r They may be handled easily for they seem never to bite or even try to bite, and they make little effort to pull away. They will on some occasions, r however, coil and twist into a rather tight ball, perhaps as a defensive measure. Because of this action they have sometimes been called the "ball snake." r

r r

r Although the rubber snake has one peculiarity often associated with the poisonous snakes, that is, the pupil of the eye is arranged vertically, r it is absolutely harmless and should never be killed just because it is a snake. We know practically nothing of its life history and breeding habits, r so anyone that would make careful observations of this species would be contributing something to science. r

r r

r The Pacific rubber snake was once considered rather rare in Yosemite National Park, but recent observations seem to indicate that it is at least fairly wide spread even if not abundant. Perhaps its very secretive habits has led to the belief that it is rare. Specimens in the Museum collection have come from Yosemite Valley, Yosemite Research Reserve, r Benson Lake, Tuolumne Canyon, r Wawona, and live specimens were observed during the summer of 1944 r near Yosemite Point and between Merced and Washburn Lakes. r

r r r r r r r

r PACIFIC RUBBER SNAKE r Charing bottae bottaer

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r *From Van Denburgh: The Reptiles of Western North America. Courtesy of the  
California Academy of Sciences*

r Upper: PACIFIC RUBBER SNAKE

Lower: CORAL-BELLIED RED-NECKED SNAKE r

r r r r r r

**r CORAL-BELLIED RING-NECKEDr SNAKEr**  
**r *Diadophis amabilis pulchellus***

r r

r The coral-bellied ring-neckedr snake can be identified with littler difficulty, for it is the only snaker found in Yosemite National Park thatr has the single light colored ringr around the neck. The ventral surfacer is orange to reddish, while ther dorsal surface is uniformly dull colored.r

r r

r The ring-necked snake is one ofr the smallest snakes found in this region,r and many adult specimens arer no larger than a lead pencil. Theyr seldom reach a length of more thanr fifteen to twenty inches. They arer harmless, will seldom attempt tor bite, and are usually easily handled.r The scales are smooth and relatively small. The yellowish or oranger neck ring stands out distinctly against the dorsal body color whichr is a uniform olive to bluish or gray.r The color and markings of the bellyr are in sharp contrast to the dorsalsr coloration, for the underside is anr orange red, and the tail is even morer brilliantly colored. Because of ther

## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

red coloration of the underside, these snakes are sometimes called "red-bellied" snakes.

r r

Ring-necked snakes are secretive in habit and are seldom observed in the open. They are often found neatly coiled under flat rocks, old boards, or logs. When suddenly uncovered they may perform most interestingly, for occasionally they will turn belly side up, showing the brilliant under-markings, and then feign death, or perhaps more often they will coil the tail into a tight spring-like spiral that exposes the bright red coloring of the under-surface. It has been assumed by some that this may serve either a protective or warning function.

r r

Recent observations seem to indicate that the ring-necked snakes feed on small tree toads, occasionally on some of the smaller snakes, and on the small or immature lizards of the skink group. It is believed that these snakes lay eggs, but not a great deal is known of the breeding habits of this particular species of snake.

r r

The ring-necked snakes are by no means abundant in Yosemite National Park; however, our Museum records show that they are widely distributed. Specimens have been taken at Bridalveil Fall, Arch Rock Ranger Station, Swamp Lake Research Reserve, Poison Meadow, above Mirror Lake, and on the trail below Vernal Fall. Perhaps careful collecting will prove their scarcity or abundance, and will reveal much that is not now known of their life history and breeding habits.

r r

### **r PACIFIC RATTLESNAKE r *Crotalus viridus oregonus***

r r

Rattlesnakes are present in Yosemite National Park, but whether or not we should say they are abundant, common, or scarce, depends on whether we want to exaggerate or minimize their presence. We do not have a large series in our Museum collection; and in view of the fact that the rattlesnake is easily recognized by all, is often killed at once and is later either brought in or reported, it would seem that we dare

r r

r

r r

r *From Van Denburgh: The Reptiles of Western North America. Courtesy of the California Academy of Sciences*

r Upper: PACIFIC RATTLESNAKE

Lower: PACIFIC GOPHER SNAKE r

r r r r go no farther than to say that they are common in particularly suitable habitats. The annual average number of reports of observations by hikers, visitors, road and trail workers is unexpectedly small; however, the experienced snake collector may have surprisingly good success if he locates an especially productive area. r r

r It is perhaps unnecessary to give much of a description of the rattlesnake, for it is usually recognized at a glance because of the triangular shape of the head, the thick, short body, and the presence of the tail rattle. The Pacific rattlesnake, the only species of rattlesnake found in Yosemite National Park, probably does not exceed a length of from three to four feet, but some specimens are unusually robust in body size. They seem to frequent the rocky talus slopes of canyons and valleys, but may also be encountered in more open country or dry grassy meadows. r

r r

r Rattlesnakes appear to be widely distributed in the Park and some specimens have been taken at elevations that would seem above the normal range of such snakes. Specimens in our collection have been taken in Tenaya Canyon — 6500 feet; Yosemite Valley — 4000 feet; Wawona — 4100 feet; Big Meadows — 4400 feet; Hetch Hetchy Valley — 4200 feet; East base of Half Dome — 7800 feet; base of El

r PACIFIC RATTLESNAKE r *Crotalus viridis oregonus*

## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

Capitan—4010 feet; Gentry Ranger Station—5500 feet; and at Miguel Meadows—5200 feet.

r r

r The rattlesnake seems to feed on a number of rodents including the various species of ground squirrels and chipmunks, and it appears that their venom is perhaps particularly effective on these small warm-blooded vertebrates. The rattlesnakes do not lay eggs, but produce their young alive; however, broods are usually small and number not more than about a dozen.

r r

r There are so many fallacies and folk tales associated with the rattlesnakes that one is hesitant even to enumerate them, but perhaps a few will suffice to cover the salient topics and will thereby encourage those who are interested to do some reading on the subject. A number of these can be briefly contradicted by the following negative facts: — rattlesnakes (1) do not chase people, (2) do not cover a greater distance than their length when striking, (3) cannot hear themselves rattle, (4) do not use their poison primarily to frighten people, (5) do not have a rattle for each year of their life, (6) are not always deadly poisonous, (7) can not be made harmless for any length of time by pulling out their fangs, and (8) do not always rattle before they strike. On the other hand the following positive facts are verifiable:—rattlesnakes (1) will die from their own bite, (2) will congregate in large numbers in the winter time in snake dens, (3) will often strike without inserting their fangs, (4) will soon grow new fangs to replace those broken off naturally or pulled out by man, (5) will shed their skin several times a year, (6) will add another rattler each time they shed, (7) will “go blind” not just once a year but each time they shed their skin, and (8) will, as adults, normally inject more poison than the young.

r r

r Everyone is of course interested in the proper treatment for rattlesnake bite. It should be emphasized, however, that “an ounce of prevention is worth a pound of cure.” Hikers will seldom encounter rattlesnakes on their well-traveled trails, but when they leave the trails for exploring on their own they should take certain precautions such as wearing proper shoes, boots or leggings. They should also avoid stepping or placing their hands near cracks or joints in the rocks which might serve as retreats for the rattlesnakes.

r r

r Hikers or campers who make a practice of leaving the well-traveled routes should provide themselves with the latest type first-aid kits and should have some training or experience in the proper use of these safety-first aids. Practically all of the modern first-aid kits contain very definite instructions as to their proper use, and these instructions should be carefully studied by those who travel away from the regular trails in rattlesnake-infested country.

r r

### **r PACIFIC GOPHER SNAKE** **r Pituophis catenifer catenifer**

r r

r The Pacific gopher snake, oftentimes called “bull snake,” is not widely distributed in Yosemite National Park but seems confined to the lower elevations. It is not primarily a snake of the forested and rocky areas

r PACIFIC GOPHER SNAKE r Pituophis catenifer catenifer

## Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

but rather of the openr grasslands, sandy foothills, and valleys.r r It takes full advantage of ther burrows of gophers, mice and groundr squirrels, with many of the originalr inhabitants of the burrows beingr taken for food.r

r r

r The gopher snake is probably givenr more consideration and affordedr more respect than any other of ourr common snakes. Great emphasizr has long been placed on its economicr value because of the larger number of gophers and other rodentsr that it destroys, and it is toleraterd and sometimes even encouraged by the farmer and ranchman.r

r r

r These snakes are often rather inactive,r especially the adults, and appear somewhat slow and sluggish.r When first surprised they will oftenr lie motionless, but if approached andr molested they will coil and strike repeatedly,r and will at the same timerr puff themselves up by taking in airr which they expel rapidly and thereby make a strange fluttering andr hissing noise. In addition many gopherr snakes have been observed to vibrate the tail rapidly, and if theyr happen to be in a pile of dead or dryr leaves, the result is usually a rustler or “rattle” sounding very much liker a rattlesnake. This entire performancer is usually all bluff, for if ar person continues to advance and eitherr places his foot on the snake orr holds it down with a stick, it willr often become rather docile in just ar few minutes and can even be pickedr up and handled with ease. Theser snakes are well supplied with shortr but strong, sharp recurved teeth andr they make a nasty wound if allowedr to bite. Although they are not poisonoustr r r r they should be handledr carefully and never given an opportunityr to bite, for such wounds mayr very easily become infected.r

r r

r The adult gopher snakes arer probably the largest snakes foundr in this region, for they are rather bulky in addition to the fact that theyr sometimes reach a length of threer to four feet. The tail is long and tapersr to a point. This is very differentr from the rattlesnake which has ar short blunt tail. The gopher snakesr all have a peculiarly enlarged scaler (rostral) on the tip of the snout thatr is extended upward and backward,r apparently an adaptation for burrowing.r This will distinguish themr from all other snakes in Yosemite National Park. The general bodyr color of gopher snakes is a darkr ocher yellow but they are markedr on the back with a series of darkr brown saddle marks or blotches andr with small dark spots along ther sides. The pattern of marks on ther back is often mistakenly assumed to be “diamond” shaped and at firstr glance are sometimes confused withr the markings of the rattlesnake.r

r r

r The gopher snakes deposit ar small number of eggs which arer placed either under rocks, in shallowr burrows which they themselvesr make, or in burrows of gophers orr ground squirrels.r

r r

r The Pacific gopher snake has beenr taken in Yosemite National Park inr Yosemite Valley, at Arch Rockr Ranger Station, Miguel Meadows,r and near the hose of El Capitan.r

r r

**r WHIPSNAKES AND RACERSr**  
**r Coluber (See key for species)r**

r r

r The western blue racer and ther California striped whipsnake arer quite unlike in general appearance,r but since they belong to the samer genus they are not treated separately.r They are typical of our racersr and whipsnakes, being very longr and slender and capable of movingr rapidly. They are adapted not onlyr for speed on the ground, but theyr seem to climb readily in shrubs andr trees. Their food supply is extremelyr varied for they take insects, toads,r frogs, lizards, small mammals,r young birds in the nests, and evenr bird eggs. Contrary to popular belief,r they do not kill by constrictionr or “squeezing” their prey.r

r r

r In Yosemite National Park ther adult western blue racer may ber readily distinguished from the adultr California striped whipsnake because the former is uniformly coloredr a bluish brown, and withoutr any indication of lateral or dorsalsr striping, while the latter is dark brownr and with two very distinct lateralsr light lines that extend the full lengthr of the body. The young of the westernr blue racer display a color patternr very unlike the adult. They arer blotched, spotted and barred, andr are often confused with young gopherr snakes or night snakes by ther casual observer. The striped whipsnaker may be distinguished fromr the other commonly striped snakesr (garter snakes) because the latter nearly always possesses a mid-dorsalsr light line in addition to the lateralsr r r r

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I

r *From Van Denburgh: The Reptiles of Western North America. Courtesy of the California Academy of Sciencesr*

r Upper: WESTERN BLUE RACER



Lower: CALIFORNIA STRIPED WHIPSNAKE r

r r r r light lines, and furthermore, the racers and whipsnakes have smooth scales while the garter snakes have a ridge or keel down the center of lateral and dorsal scales. r r

r The western blue racer is often called the yellow-bellied racer because the underside of the body is plain yellow. They reach a length of slightly over four feet. They deposit fairly large numbers of eggs that hatch in two to three months. r

r r

r Because of their habit of moving with the head often lifted some distance off the ground, they have no doubt been responsible for such snake fallacies as the hoop snake story and the idea that these snakes chase people. Perhaps the snakes that "chased" people were just overly inquisitive and let their curiosity cause them to move forward, perhaps toward or more often after the observer, with their heads well raised off the ground. Their curiosity satisfied, they will usually "turn tail and run." r

r r

r The California striped whipsnake has a very long tail that tapers to a point, and the scalation so resembles the old-fashioned braided whip that the common name has been applied. r This whipsnake seldom exceeds four and a half feet in length. r Their food is varied but they seem to catch an unusually large number of skinks. On a few occasions they have been observed killing and eating rattlesnakes. r

r r

r Both the racers and whipsnakes prefer the more open brushy hillsides and dry grassy meadows. In Yosemite National Park the western blue racer, which seems to be the most abundant, has been taken in Yosemite Valley, El Capitan Meadow, Pate Valley, and near Swamp Lake. The California striped whipsnake has been taken in Miguel Meadows, on Henness Ridge, in Poison Meadows, and near Cascade Creek. r

r r

## **r THE GARTER SNAKES** **r *Thamnophis* (See key for species)**

r r

r Everyone is familiar with the garter snakes for they are not only widely distributed, but individuals exist in greater numbers than any other group of snakes in North America. r Their striped characteristics are recognized by all, and since they frequent ponds, streams, and lakes, the hiker, fisherman, and the picnickers are always aware of their existence. r

r r

r The garter snakes are generally accepted as harmless and not a great deal of heed is given them. r Some forms will bite viciously, however, and their sharp recurved teeth will produce some bad scratches. r They should be handled carefully and never allowed to bite for their teeth may carry decayed food or other infectious materials. Some of the garter snakes have the bad habit of giving off a very ill-smelling and nauseating secretion from specialized anal glands whenever they are picked up, and when they whip their

r THE GARTER SNAKES r *Thamnophis* (See key for species) r

Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

bodies and tails around andr smear this material over themselvesr it most certainly discourages one'sr fondling them. In the wild this mayr afford them some measure of protectionr r from enemies.r

r r r r r

r r

r r

r

r *From Van Denburgh: The Reptiles of Western North America. Courtesy of the California Academy of Sciences*

r Upper: CALIFORNIA RED-SIZED GARTER SNAKE

Lower: SIERRA NEVADA GARTER SNAKE r

r r r r r r

r One of the interesting characteristicsr of the garter snakes is the factr that they do not lay eggs, but producer their young alive, and furthermore,r they sometimes produce littersr of considerable size with aduiltr averages of some species runningr thirty to forty per litter. It is no wonderr then that the garter snakes arer so abundant. These snakes are perhapsr as much responsible as anyr of the snakes for the fallacy thatr snakes swallow their young. Ther story is usually "proven" when ther observer claims to have later killedr the snake and discovered the youngr inside. What he did not realize wasr that he had merely revealed ther presence of a number of unbornr young that were not in the stomach,r but in the oviducts of the female.r

r r

r The three species of garter snakesr found in Yosemite National Parkr show sufficient distinctive characteristicsr and occupy different rangesr and zones so that they may usuallyr be identified without too much difficulty;r however, this does not holdr true for the country as a whole, andr the garter snakes constitute a ratherr difficult group to study.r

r THE GARTER SNAKESr r *Thamnophis* (See key for species)r

Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

r r

r The California red-sided garter snake may be recognized by their presence of red spots along either side, in addition to the distinct lateral and mid-dorsal light lines or stripes. These snakes are not larger and seldom exceed two feet in length. They are not abundant in the Park and are apparently limited to the lower elevations. They may reach the lower end of the Valley, but most of our records are from the vicinity of Swamp Lake and Miguel Meadows.

r r

r The mountain garter snake occupies a higher range, and is most abundant at Tuolumne Meadows, Benson Lake, Yosemite Research Reserve, Lukens Lake, Cold Canyon, Harden Lake, and Turners Meadow. This snake possesses three very distinct light lines, two lateral and one mid-dorsal, but there are no red side spots as in the red-sided garter snake. The mountain garter snake seldom exceeds two feet in length.

r r

r The Sierra Nevada garter snake differs from the two other garter snakes in that its stripes are less distinct, and often the dorsal stripe is broken into a series of spots, or may actually be missing. The sides are barred with alternating dark to black spots. Most of the garter snakes are at home near ponds, lakes, and streams, however, this garter snake actually takes to the water and may be found in and along swiftly moving streams. It is approximately the same length as the two striped garter snakes, but appears to be a bit more robust in general body proportions. The Sierra Nevada garter snake has been taken along the Merced River in Yosemite Valley, near Merced Lake, Pate Valley, Swamp Lake, and Miguel Meadows.

r r

r The garter snakes all secure their food close to their pond, stream or lake habitat, and they take a larger number of toads, frogs, salamanders, and occasionally fish eggs and small fish.

r r r r r

r l

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l r

r From Van Denburgh: *The Reptiles of Western North America*. Courtesy of the California Academy of Sciences

r Upper: SPOTTED NIGHT SNAKE

Lower: SIERRA CORAL KING SNAKE r

r r r r r r

**r SPOTTED NIGHT SNAKE**  
**r *Hypsiglena ochrorhyncha ochrorhynchar***

r r

r The spotted night snake is another of the small snakes present in Yosemite National Park. Adults seldom reach a length greater than fifteen to twenty inches. They are not much larger around than a lead pencil. The general color is a dullish-white covered with innumerable tiny specks of brown to black, but there are two mid-dorsal rows of alternating black spots, often actually touching, and with two or more rows of lateral side spots, the lowermost quite small. The nape of the neck is crossed with a wide black band that extends forward through the eye. The belly is whitish and spotless. The pupil in the eye of the spotted night snake is interesting for it is arranged vertically like that of some poisonous snakes.

r r

r The size of this snake renders it relatively harmless to man, although some of the rear teeth are enlarged, and there is some indication that these snakes have a poison that is effective on small lizards. On one occasion a night snake was observed to strike a small **Sceloporus** lizard, grasping it around the body a short distance back of the front legs. The snake quickly coiled around the lizard and appeared to exert some

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constriction. They were separated in a few minutes, but with some difficulty. The lizard remained motionless and seemed completely paralyzed, although it continued to breathe. It was rolled over and placed on its feet but it made no effort to move. The snake made no attempt to eat the lizard, and the next morning, some twelve hours later, the lizard was dead and in exactly the same position and location in the jar as when last observed the night before.

r r

The spotted night snake seems to be extremely rare for specimens are usually found only when uncovered in road building or ditching operations, or when turning over flat rocks. One exception, however, was a specimen observed by the aid of a flash light about 10:00 o'clock at night. It quickly vanished under a flat rock, but was pulled out with the aid of a small wire. When held in the hand it would attempt to strike and to pull away, and it was especially strong and muscular for so small a snake. Even after three or four days in a small jar, during which time it was handled on several occasions, it still exhibited its vicious belligerent attitude.

r r

The common name "night snake" is indicative of its habits, for it seems to be active only at night. It is, therefore, doubtful if many people will ever see specimens of this snake except in museum collections. Not a great deal is known of its food preferences or breeding habits.

r r

In Yosemite National Park it has been taken from under a flat rock near the base of El Capitan at an elevation of 4000 feet, and along the Big Oak Flat road by members of a road crew working at an elevation of 5000 feet.

r r r r r

### **r SIERRA CORAL ICING SNAKE** **r Lampropeltis multicincta multicincta**

r r

Since some people object to calling a snake beautiful, we shall be considerate, but on the other hand we must say that the Sierra coral king snake, often called mountain king snake, is one of the most attractively and vividly colored snakes in Yosemite National Park.

r r

The series of red, white, and black bands that appear to encircle this snake, especially in specimens that have only recently shed their skin, never fail to bring forth exclamations of surprise and wonder even from the most avowed "snake haters." It is the only snake in Yosemite National Park with distinctive red, white and black color bands; therefore it is easily recognized by everyone. It should be pointed out, however, that an occasional specimen is found with the red almost entirely absent. This may make it difficult to distinguish at first glance from the California king snake. The scales of this snake are very smooth, not keeled as in the garter snakes, and this perhaps adds to the brilliancy of the colors, especially in specimens that have only recently shed their skin.

r r

r The Sierra coral king snake seldom exceeds a length of from twenty-five to thirty inches. It seems to inhabit the rocky talus slopes along either side of Yosemite Valley and specimens in our collection have come from Mirror Lake, Tenaya Canyon, Cascade Creek and from various localities in the Valley itself.

r r

r These snakes are very quiet and docile, especially in captivity, and they may be picked up and handled with ease, for only rarely will they attempt to bite. Their gentleness seems to belie the fact that in the wild they are often predacious and feed not only on lizards, but on other snakes as well, and not even hesitating to occasionally destroy a rattlesnake. Some observers believe the king snakes are immune to the poison of the rattlesnake.

r r

r Unfortunately the Sierra coral king snake is often confused with the poisonous coral snake (**Micrurus**) which is never found in this region. This is due not only to the common name, but also because of the banded color pattern as well. Because of this misunderstanding many people kill the Sierra coral king snake whenever one is found. It should be pointed out, however, that they are not only harmless, but in addition are of considerable economic value because of the large number of rodents they destroy. In captivity they have been observed feeding on skinks and small **Sceloporus** lizards.

r r

## **r CALIFORNIA KING SNAKE r Lampropeltis getulus californica**

r r

r The California king snake, so conspicuous because of its pattern of black and white rings, is one of the most interesting of our larger snakes. It is commonly quite gentle and docile and does not resent being handled. It makes one of the most easily kept of all reptile "pets" because it feeds so readily in captivity. It will usually take mice, gophers or small ground squirrels as soon as their presence is observed by the snake.

r r

r This king snake is a very good bluff, however, and will often show fight when first cornered. It will strike out in a threatening manner and in addition will cause the tail to vibrate very rapidly. When this occurs in a pile of dry leaves or twigs the result is a faint buzz or rattler which is enough like the sound made by a rattle-snake to cause one to move forward with caution.

r r r r

r r

r r

r

r *N. P. S. Photo by Anderson*

r CALIFORNIA KING SNAKE

r r r

r The food habits of this king snake cause it to have more than ordinary economic importance. It not only destroys obnoxious rodents such as mice, gophers and ground squirrels —occasionally it may even destroy rattlesnakes—but it shows no hesitancy in destroying some of the other beneficial snakes. Its cannibalistic habits are well known to all snake collectors, for many a specimen has been “lost in the bag” during field collecting expeditions.

r r

r This particular species of king snake has a most interesting and variable color-phase in certain areas in California, the rings sometimes being replaced by a broad median longitudinal stripe, but thus far all specimens taken in the Yosemite region hold true to the black and white ring pattern.

r r

r The California king snake sometimes reaches a length of over forty inches. A specimen caught in the Museum wildflower garden in the summer of 1945 measured 41 1/2 inches in total length. This specimen seemed to be particularly large and robust for most specimens observed only average from 30 to 36 inches in length, and many are rather slender.

r r

r The scarcity of specimens in the Museum collection would tend to indicate that this species is rather rarer within the boundaries of the Park. Information gathered and observations made during the summer of 1945 seem to prove such is not the case, for at least six or eight specimens were reported that season; however, all were observed near or on the floor of Yosemite Valley, so that the distribution of this species may be somewhat limited.

r r

**r SHARP-TAILED SNAKEr**

**r Contia tenuisr**

r r

r The sharp-tailed snake is the smallest snake found in Yosemite National Park. The few specimens r observed indicate that it is about as large as a pencil and seldom exceeds a length of twelve or fourteen inches. It is considered the rarest of all our Yosemite snakes, for we have only two specimens in our study collection, and records of only two others being taken in the Park. r One specimen in our collection was picked up along the roadside near the Big Trees Lodge in the Mariposa Grove, and the other was found under an old pile of magazines in a dark closet of one of the unoccupied buildings at Wawona. Another specimen was found near the Merced Grove by workers engaged in Ribes eradication, but unfortunately this specimen was later lost. The fourth specimen was discovered by workers in the Ribes eradication camp at r r

r r

r r

r

r N. P. S. Photo by Andersonr

**r SHARP-TAILED SNAKEr**

r r r r Wawona. It was discovered under a Ribes bush that was being uprooted. r The snake was picked up and handed by several of the boys but it escaped into a hole from which they were unable to retrieve it. r r

r The sharp-tailed snake is rather stout for its length, and the tail quickly tapers to a sharp point. A specimen kept alive and under observation for nearly two months is described as follows: The color above is a pinkish orange grading toward a pinkish brick red. The dorsal scales are all uniformly colored, with only a faint trace of flecking with darker shades. A lateral dark line is present on either side involving the second, third and lower half of the fourth scale rows. The ground color of these scales is nearly white, but they are shaded dark due to their many fine black to slate flecks or blotches. r

r r

r The underside is a creamy white but with a transverse black band across each belly plate. A dark stripe runs from each nostril back through the eye and extends a short distance beyond the last labial scales. r



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r r

r The sharp-tailed snake is of especial interest because the tail terminates very abruptly and the scales are modified into a rather sharp spine, hence the common name. This snake is no doubt partly responsible for the myth about the snake with a "stinger" in the end of its tail. There is some evidence that this sharp-pointed tail may be used in a defensive manner. Other observations seem to indicate that it may have a special use in burrowing, for no doubt these snakes are nocturnal and burrow-inhabiting forms.

r r

r Practically nothing is known of the breeding or food habits of this small snake, nor of its distribution within the Park.

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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## **r A SIMPLIFIED KEY\* r TO THE REPTILES AND AMPHIBIANS OF r YOSEMITE NATIONAL PARKr**

r r

r \* In an effort to make this key workable for a majority of the Park visitors, it has been made as simple as possible. Diagnostic characters used are those most easily observed and understood. They do not follow natural relationships or conform to the technical keys ordinarily used by zoologists. This key will therefore apply only to the amphibians and reptiles found in Yosemite National Park, and can not be used to identify species found outside this area.

r r r

r 1a. Vertebrates with body covering smooth. Usually moist. No scales, feathers, hairs, claws or nails. r Amphibians r 2r

r r

r 1b. Vertebrates with body covering of dry scales. No feathers or hairs. r Reptiles r 10r

r r

r 2a. Amphibians with an elongate body and a tail which is present, throughout life. r Salamanders r 3r

r r

r 2b. Amphibians with adult body short. No tail in adults. r Toads and Frogs r 5r

r r

r 3a. Salamanders with skin slightly rough—reddish brown above—not spotted. r SIERRA NEWT—Triturus sierrae Twitty r p. 5r

r r

r 3b. r Salamanders with skin very smooth—more or less spotted r 4r

r r

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r 4a. Body brownish black with a few yellow or orange spotsr

r r **SIERRA NEVADA SALAMANDER—*Ensatina sierrae* Storerr** r p. 6r

r r

r 4b. Body chocolate or slate color with numerous grayish spots r

r r **MOUNT LYELL SALAMANDER—*Hydromantes platycephalus* Campr** r p. 7r

r r

r 5a. Adults with parotoid glands presentr r **Toadsr** r 6r

r r

r 5b.r r **Adults with parotoid glands absentr** r 7r

r r

r 6a. Toads with large parotoid glands. Space between glands wider than one gland r

r r **CALIFORNIA TOAD—*Bufo boreas halophilus* Baird and Girardr** r p. 10r

r r

r 6b. Toads with small parotoid glands. Space between glands smaller than one glandr

r r **YOSEMITE TOAD—*Bufo canorus* Campr** r p. 10r

r r

r 7a. Toes with expanded adhesive discs at their tips r

r r **PACIFIC TREE TOAD—*Hyla regilla* Baird and Girardr** r p. 12r

r r

r 7b. Toes without expanded adhesive discs at their tipsr r **Frogsr** r 8r

r r

r 8a. Frogs with red coloring on inner side of hind legs r

r r **CALIFORNIA RED-LEGGED FROG—*Rana aurora draytonii* Baird and Girardr** r p. 13r

r r

r 8b.r r **Frogs with yellow coloring on inner side at hind legsr** r 9r

r r

r 9a. Heel of hind leg reaching beyond nostril when leg is bent forwardr

r r **CALIFORNIA YELLOW-LEGGED FROG—*Rana boylei boylei* Bairdr** r p. 14r

r r

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r 9b. Heel of hind leg not reaching beyond nostril when leg is bent forwardr

r r **SIERRA YELLOW-LEGGED FROG—*Rana boylli sierra* Camp.**r r p. 14r

r r

r 10a.r r **Reptiles with four legs**r r 11r

r r

r 10b.r r **Reptiles without legs**r r 20r

r r

r 11a. Body covered above and below with a bony shell, commonly called carapace andr plastronr

r r **WESTERN POND TURTLE—*Clemmys marmorata* Baird and Girard**r r p. 17r

r r

r 11b. Body covered with large or small scalesr r **Lizards**r r 12r

r r

r 12a.r

r r **Lizards with a series of femoral pores (a row of glandular pores on underside of ther thigh)**r r 13r

r r

r 12b.r r **Lizards without femoral pores**r r 18r

r r

r 13a. Head adorned with a number of short sharp horns r

r r **CALIFORNIA HORNED LIZARD—*Phrynosoma blainvillii frontale* Van Denburgh**r r p. 21r

r r

r 13b.r r **Head without horns**r r 14r

r r

r 14a. Belly scales large. In eight longitudinal rowsr

r r **CALIFORNIA WHIP-TAILED LIZARD—*Cnemidophorus tessellatus tessellatus* Sayr**r r p. 24r

r r

r 14b. Belly scales small and numerousr r **Sceloporus**r r 15r

r r

r 15a. Scales on back of thigh not keeled r r

r **MOUNTAIN LIZARD—*Sceloporus graciosus graciosus* Baird and Girard**r r p. 19r

r A SIMPLIFIED KEY\*rr TO THE REPTILES AND AMPHIBIANS OFrr YOSEMITE NATIONAL PARKr

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r r r r

r 15b. Scalr on back of thigh strongly keeled r 16r

r r

r 16a. Blue belly patches confluent (fused) with blue throat patches. Not separated by a lighterr bandr  
r **TENAYA BLUE-BELLIED LIZARD—Sceloporus occidentalis taylori** Campr r p. 19r

r r

r 16b. Blue belly patches not confluent but separated from blue throat patch r 17r

r r

r 17a. Adult males with lateral blue throat patches distinct or slightly fused. (Never fused inr yng.)r  
r **WESTERN FENCE LIZARD—Sceloporus occidentalis occidentalis** Baird and Girardr r p. 19r

r r

r 17b. Adult males with single central blue throat patch. Never divided r  
r **PACIFIC BLUE-BELLIED LIZARD—Sceloporus occidentalis biseriatus** Hallowellr r p. 19r

r r

r 18a. Dorsal scales smooth. No raised ridge running lengthwise of scale r  
r **YOSEMITE SKINK—Eumeces gilberti gilberti** Van Denburghr r p. 25r

r r

r 18b. Dorsal scales keeledr r **Gerrhonotusr** r 19r

r r

r 19a. Dorsal scale rows usually 14. Iris of eye yellow (live specimens) r  
r **SAN DIEGO ALLIGATOR LIZARD—Gerrhonotus multi-carinatus webbia** Bairdr r p. 23r

r r

r 19b. Dorsal scale rows usually 16. Iris of eye dark (live specimens) r  
r **SIERRA ALLIGATOR LIZARD—Gerrhonotus coeruleus palmeri** Stejneger r p. 23r

r r

r 20a. Snakes with pupil of eye vertical r 21r

r r

r 20b. Snakes with pupil of eye round r 23r

r r

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r 21a. Dorsal body scales strongly keeled. Tail with rattle r

r r **PACIFIC RATTLESNAKE—Crotalus viridus oregonus** r Holbrook p. 31r

r r

r 21b. r Dorsal body scales smooth r 22r

r r

r 22a. Tail short and stubby. Skin loosely fitting r

r r **PACIFIC RUBBER SNAKE—Charina bottae bottae** Blainviller r p. 29r

r r

r 22b. Tail not short or stubby. Skin normal r

r r **SPOTTED NIGHT SNAKE—Hypsiglena ochrorhyncha ochrorhyncha** Coper r p. 41r

r r

r 23a. r Dorsal body scales keeled r 24r

r r

r 23b. r Dorsal body scales smooth. Not keeled r 27r

r r

r 24a. Body scales in 29 or more rows r

r r **PACIFIC GOPHER SNAKE—Pituophis catenifer catenifer** Blainviller r p. 34r

r r

r 24b. Body scales in 19 to 21 rows r Garter Snakes r 25r

r r

r 25a. Garter snakes without conspicuous lateral or dorsal light lines r

r r **SIERRA NEVADA GARTER SNAKE—Thamnophis ordinoides couchii** Kennicott r p. 37r

r r

r 25b. r Garter snakes with conspicuous lateral and dorsal light lines r 26r

r r

r 26a. With reddish spots or bars on sides r

r r **CALIFORNIA RED-SIDED GARTER SNAKE—Thamnophis sirtalis tetrataenia** Yarrow r p. 37r

r r

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r 26b. Without reddish spots or bars on sides r

r r **MOUNTAIN GARTER SNAKE—*Thamnophis ordinoides elegans* Baird and Girard** r p. 37r

r r

r 27a. Tail short. Ending in a sharp point or spine r

r r **SHARP-TAILED SNAKE—*Contia tenuis* Baird and Girard** r p. 44r

r r

r 27b. r r Tail not short. Normally long and slender r 28r

r r

r 28a. r r Anal plate divided r 29r

r r

r 28b. r r Anal plate single. Not divided r 31r

r r

r 29a. A single light neck ring or nuchal collar present r

r r **CORAL-BELLIED RINGNECK—*Diadophis amabilis pulchellus* Baird and Girard** r p. 31r

r r

r 29b. r r Neck ring not present r 30r

r r

r 30a. Body with conspicuous lateral light lines r

r r **CALIFORNIA STRIPED WHIPSNAKE—*Coluber lateralis* Hallowell** r p. 35r

r r

r 30b. Body with lateral light lines. Belly yellow r

r r **WESTERN BLUE RACER—*Coluber constrictor mormon* Baird and Girard** r p. 35r

r r

r 31a. Body marked with rings or cross bands of black and white only r

r r **CALIFORNIA KING SNAKE—*Lampropeltis getulus californica* Blainviller** r p. 42r

r r

r 31b. Body marked with rings or cross bands of black, white and red r

r r **SIERRA CORAL KING SNAKE—*Lampropeltis multicincta multicincta* Yarrow** r p. 42r

r r r r

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Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker

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# ***Reptiles and Amphibians of Yosemite National Park (1946) by Myrl V. Walker***

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## About the Author

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r *Myrl V. Walker, 1931* r

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r Myrl V. Walker was born March 20, 1903. r He married Wilda O. Walker in the 1920s. r He also began collecting fossils in the 1920s r as a student of Dr. George F. Sternberg, r an early Kansas fossil collector, r and later studied under Dr. L. D. Wooster, a paleontologist. r Walker began teaching Junior High at Protection, Kansas, while attending Fort Hays State College during summer and later full time. r He received his bachelor's degree in 1927. r After graduating, Walker taught high school at Plainville, then at the biology

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department at Kansas State Teachers College in 1929 (now Fort Hays State University).r In 1930 he was high school principal, coach, and science instructor.r He received his master's degree in vertebrate paleontology from the University of Kansas in 1931.r

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r Walker became a seasonal ranger naturalist in 1933.r In 1944 he was appointed asr Associate Park Naturalist in Yosemite National Park.r He transferred in 1933 to Petrified Forest National Monument, then to Zion National Park, Crater Lake National Park, and Glacier National Park, and back to Yosemite in 1944.r In 1951 he was head of interpretation at Zion and Bryce National Parks.r Besides this booklet, Walker wrote a studyr His specialty was paleontology.r While employed for the National Park Service he wrote of Triassic insects in Petrified Forest National Monument (1940),r where he also discovered vertebrate tracks.r He also wrote anr interpretative program study for Dinosaur National Monument (1943),r and *Archeology of Zion Park* (1955).r During 1955-1973 he was director of the Division of Paleontology at Fort Hays Kansas State College Museum.r

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r Walker married Wilda Opdyke in 1930.r They had one child, Margaret Jean Walker.r Wilda Walker died in 1980.r Myrl V. Walker died May 1985.r They are buried at Ft. Hays Memorial Gardens, Hays, Kansas.r In 1988 a series of paleontology papers were published asr "Articles in Honor of Myrl V. Walker,"r *Fort Hays Studies*, 3d ser. v. 10 (Science series).r

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r

- 1931 M. V. Walker photographs inr Michael J. Everhart,r "Use of archival photographs to rediscover the locality of the Holyrood elasmosaur (Ellsworth County, Kansas),"r *Transactions of the Kansas Academy of Science* 110(1/2):135-143 (2007)r

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r Myrl V. Walker (1903-1985),r *Reptiles and Amphibians of Yosemite National Park* (Yosemite: Yosemite Natural History Association, 1946)r "Special Number"r of *Yosemite Nature Notes* 25(1) (January 1946).r 48 pages. Illustrated. 24 cm.r Saddle stitched with yellow paper wrappers.r

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