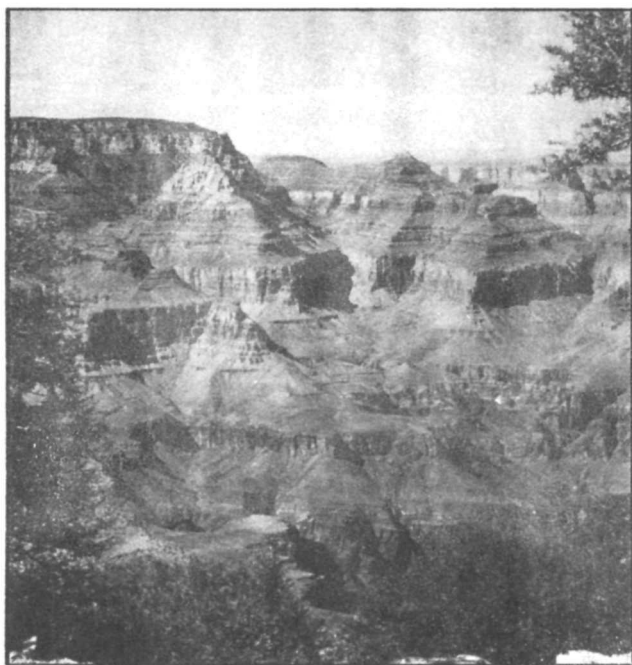


GRAND CANYON NATURE NOTES



VOL. 7, NO. 12.

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GRAND CANYON NATURE NOTES

Volume 7, Number 12,
March 1933

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Grand Canyon Natural
History Association

This publication is issued monthly for the purpose of recording observations and of making known the results of research and scientific investigation in the Grand Canyon region in the fields of natural history, history and related subjects. It is published by the Natural History Association for the Grand Canyon National Park. Membership in this Association is \$1.00 per year and includes a subscription to Nature Notes. Additional copies of Nature Notes may be obtained at 10¢ each by addressing The Grand Canyon Natural History Association, Grand Canyon, Arizona.

M. R. Tillotson,
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Illustrations by Gertrude Metzger

NOTES ON GRAND CANYON AMPHIBIANS.

By Charles M. Bogert, Ranger Naturalist

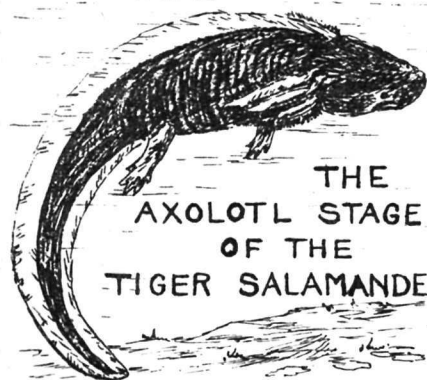
THE STATE OF ARIZONA, with remarkable diversity in topography and a correspondingly intricate life-zoning, contains numerous species of reptiles, birds and mammals as a result. But with the amphibia it is a different story. Salamanders, frogs and toads, because they are necessarily aquatic in the early stages, are confined to more restricted habitats. Arizona, a comparatively arid state, contains very little swamp land and while there are rivers of importance, they are not of the old, meandering type that brings about the most suitable ecologic conditions for amphibians.

So, the state of Arizona is probably one of the poorest in amphibians. With twelve species it may be contrasted with Oregon which has eighteen and with California which has thirty-five species.

Within the limits of Grand Canyon National Park only four species have been recorded to date, although there is strong possibility that two or three others will be discovered here. Environment alone seems not to be the only factor governing the distribution of amphibians, as the introduction of new species into some areas has demonstrated. It is interesting to conjecture regarding the presence of amphibians at desert oases, the Rocky Mountain Toad, Bufo woodhousi, for instance. Have these been carried there by other animals such as birds, or are they remnants possibly surviving from a time when the entire area was within a moist climate?

The only tailed amphibian in Arizona, the Tiger Salamander, Ambystoma tigrinum, called axolotl* in the larval stage, is known from the tanks on the South Rim and from Greenland Lake on the North Rim. The larvae are rather common in these pools of water but to date I believe only two adults have been found.

*The name is said to be of Aztec or perhaps of pseudo-Aztec origin, corrupted from the Spanish agua cote, "water lizard". See T. D. A. Cockerell, Zoology of Colorado.



THE
AXOLOTL STAGE
OF THE
TIGER SALAMANDER

Two other amphibians known in the Park are more numerous. The Sonoran Tree Toad, Hylla arenicolor, is common about permanent shady pools in the canyon bottoms. This species was observed to be especially common around the pools below the falls in Havasu Canyon.

But the Spotted Toad, Bufo punctatus, is the commonest of the three. During rains they come forth in

great numbers and while they are more prevalent in the canyon bottoms at such places as Indian Gardens, Burro Springs, etc., they range up near and perhaps to the South Rim. Between rains refuge is sought in crevices in the rocks or at places where there is a slight seepage. One hot day in July a barrel of water near the stable at the mouth of Bright Angel Creek was overturned and nineteen toads were found beneath it.

During the latter part of July Bufo punctatus was observed mating and egg-laying at Indian Gardens and near Phantom Ranch. This is rather later than most southwestern toads lay eggs and may prove to be of some interest. At Indian Gardens the eggs, in long strings, were found in a shallow pool separated from the main stream.

What is apparently the first occurrence of the Spadefoot Toad, Scaphiopus hammondi, to be reported from within the limits of Grand Canyon National Park, was published in Grand Canyon Nature Notes for October, 1932. Mr. Wallace F. Wood found the larvae and newly metamorphosed young of this toad in Greenland Lake on the North Rim, July 1, 1932.

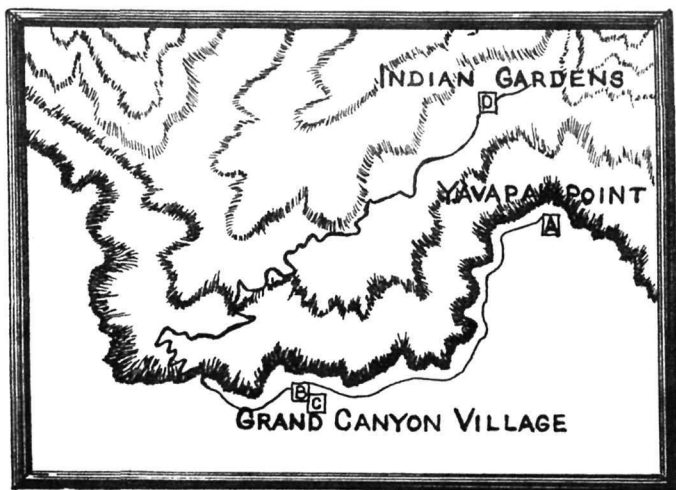
The Spadefoot Toad is apparently widespread in occurrence and common throughout the Southwest, but it is one of the most secretive of the amphibia. During the breeding season in the early part of July they are sometimes found in numbers around pools, but the remainder of the year it seems to be impossible to find them.

BIRD BANDING IN NORTHERN ARIZONA, PART II GRAND CANYON STATION.

By Edwin D. McKee, Park Naturalist

LAST YEAR it was a robin with a peculiar white patch on its back, this year a robin with a broken wing. These are birds so marked that they have become known at Grand Canyon village. Everybody can recognize them. Everybody is interested in watching their movements from place to place and their activities from day to day. There is involved a personal element that does not exist in the study or observation of birds in general.

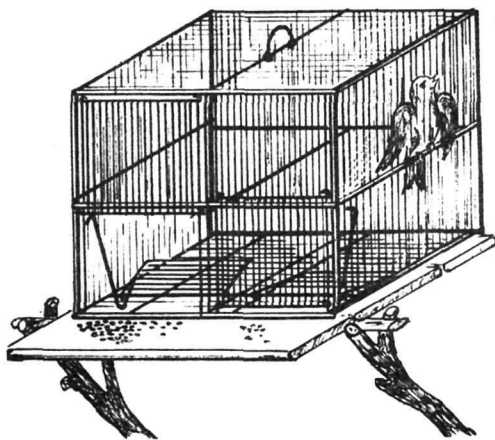
Soon we will be able to know much of the life history of nearly all our resident birds and something about the spring and fall visitors besides. We have started banding birds at Grand Canyon following the example set by the Museum of Northern Arizona at Flagstaff. Already, since October 16th, some 540 little numbered metal bands, supplied by the United States



Grand Canyon Nature Notes

Biological Survey, have been placed on either the right or left legs of as many birds.

A series of four substations has been started in the Park to carry on the work of trapping and banding birds. Two are located among the pines at Grand Canyon village, one on top of the hill and the other part way down. A third substation is on the rim of Grand Canyon at Yavapai Point, a mile and a half east of the village, and the fourth is at Indian Gardens, over three thousand feet down in the Canyon. Plans are now being made to start still another station as soon as possible - this one to be on the North Rim.



Most of the birds that have been banded so far have been caught in small, two-compartment, drop-door traps of the type illustrated, however, one large Government Sparrow Trap with a funnel shaped entrance has lately been put into use. At each of the substations individual problems concerning the trapping have come up and part of the interest has been in solving these. Sometimes it is the

matter of a good location for particular kinds of birds, sometimes it is the type of bait. The writer can scarcely attempt to go into the many and varied problems at this time.

To date eleven species of birds (see list page 123) have been inveigled into our traps by one method or another. I say "inveigled" with reservations, however, since certain individuals such as Chickadee c-119759 at Yavapai and several of the Pigmy Nuthatches at the village can scarcely be kept out.

March, 1933

Many of the birds "repeat" one or more times so that gradually information concerning the various individuals is being accumulated. It is too early yet to draw any conclusions from these data, however, their value is apparent. Frequently birds banded at one of the village substations reappear at the other. Also one Red-backed Junco banded at Yavapai was retaken two months later at the village, while one Shufeldt Junco of the town arrived at the Yavapai suburb some three days after having been banded.

All of the bluebirds, the cedar waxwings, and the robin have been caught in traps set over water which is a great attraction in this semi-arid region. The juncos were caught with cracked corn and the rest of the birds with pinyon nuts. Probably the most noteworthy captures to date have been the Pigmy Nuthatches - 73 in number. According to the Biological Survey report only four of this species were banded all last year and a total of only 47 since the beginning of 1924.

Bluebirds, Chestnut-backed	82
Chickadee, Mountain	34
Jay, Long-crested	1
Jay, Woodhouse	1
Junco, Red-backed	132
Junco, Shufeldt	192
Nuthatch, Pigmy	73
Nuthatch, Rocky Mountain	13
Robin, Western	1
Titmouse, Grey	9
Waxwing, Cedar	2

Total 540



GAMBEL OAKS AT GRAND CANYON

By Donald Edward McHenry, Junior Naturalist

THE MOST CHARACTERISTIC plant association found in the transition climatic life zone* in Grand Canyon is that represented by the tall, sturdy Western Yellow or Ponderosa Pines. To walk in the forest beneath the towering orange-yellow trunks of these trees is an experience recalling the stately pillars of ancient cathedrals, so open and free from undergrowth is the forest floor.



PHOTO BY R. B. BATTERWHITE

GAMBEL OAKS NEAR GRAPEVINE CANYON

As if to add to the charm of this sylvan sanctuary, isolated groups of Gambel Oaks, Quercus gambelii, are found judiciously scattered here and there among these pines. These oaks seem always to be found in company with the yellow pines at Grand Canyon. They grow in colonies of a few to an average of about thirty individuals, and range in height from a foot or so to about fifteen feet.

We can hardly refer to Gambel Oaks as individuals because of their peculiar communal life. Rarely does one find one of these trees growing alone. The colonial habit which they have developed is the result of an interesting if not unusual type of root system. Instead of producing the tap root commonly found in members of its family, the Gambel Oak develops an elaborate horizontal underground root system in some ways similar in growth habit to the rhizome of a fern. This horizontal root system grows in several directions from the "parent" tree of the colony and from these "runners" new aerial shoots arise at intervals. In this manner all the individuals of a colony continue to live attached to a common horizontal root system. Beneath each tree a limited secondary root system develops. One would conclude that, provided with sufficient tools and man power, an entire colony of Gambel Oaks could be dug up and transplanted en toto.

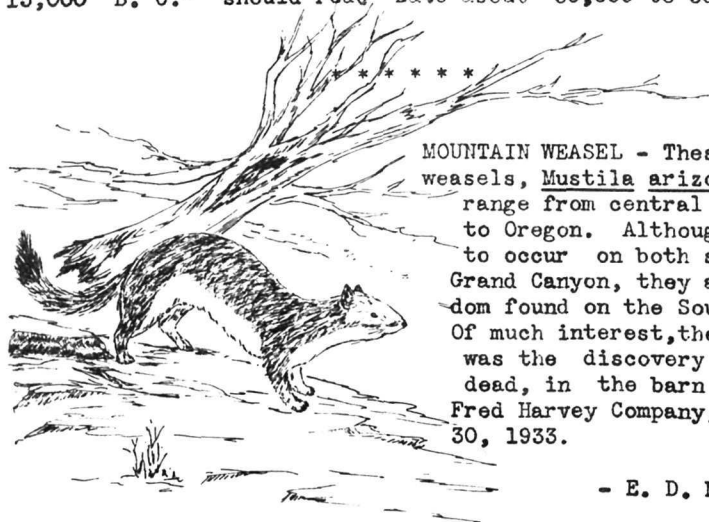
So characteristic is this method of colonial propagation that some persons have erroneously assumed that these trees produce no acorns, but reproduce themselves entirely through their unique root systems. A little reflection soon reveals the fallacy of such a conclusion. On the one hand individual colonies are too widely separated to be accounted for in this manner. Then, too, acorns can easily be gathered from the Gambel Oaks during the fruiting season.

These oaks, together with the associated Western Yellow Pines, are found growing in somewhat restricted areas in the Grand Canyon National Park on the South Rim and in a narrow belt just along the edge of the North Rim. They give to these parts of the forest the pleasing park-like appearance so typical of our transition zone areas.

* Climate similar to that of North Dakota and Montana.

MISCELLANY

ERRATA - In Grand Canyon Nature Notes, Vol. VII, No. 10, January, 1933, p. 99, the subtitle "Date about 50,000 to 15,000 B. C." should read "Date about 50,000 to 500 B. C."



MOUNTAIN WEASEL - These large weasels, Mustela arizonensis, range from central Arizona to Oregon. Although known to occur on both sides of Grand Canyon, they are seldom found on the South Rim. Of much interest, therefore, was the discovery of one, dead, in the barn of the Fred Harvey Company, January 30, 1933.

- E. D. McKee -

* * * * *

A FISH RARE IN COLLECTIONS - Last year a little known fish determined as Tiaroga cobitis by the late Dr. Evermann was mentioned in "Nature Notes".¹ This year seventy-five additional specimens of this minnow were collected at the same locality - mouth of Garden Creek. Dr. H. Walton Clark, of the California Academy of Sciences, who kindly examined the new material made the following statement concerning it:

"According to Jordan & Evermann, Bull. 47, U. S. Nat. Mus. which is our latest authority at hand referring to this

1. Grand Canyon Nature Notes Vol. VI, No. 5, March 1932, p. 47.

species, at the time that work was published this was known only from the types and your collection furnishes valuable additional knowledge of the species. All you sent are deeper fish than Jordan and Evermann's description; Girard did not give the proportional depth of his type. Jordan and Evermann give it as six times as long as deep. The specimens, of course, may have shrunken somewhat. In the description of the genus (represented by only this species) Jordan and Evermann say 'Teeth very small, apparently 1,4-4,1' and in the description of the species it is definitely given as 1,4-4,1, with a footnote 'Not 1, 3-3,1, as stated by Girard'. An examination of the phringleal bones of a few of these indicates, however, that Girard was more nearly correct in this particular."

* * * * *

A NEW "LOW" FOR RECENT YEARS - On February 7, 1933, the official temperature reading for the South Rim of Grand Canyon showed a minimum of -10 degrees, a new record for recent years. Only two days later, however, this was bettered by a reading of -14 degrees. The minimum temperature on the North Rim on the same date was -25 degrees Fahrenheit.

Chart Showing Minimum Temperatures During Past Five Years

	<u>South Rim of Grand Canyon.</u>				
	1928-9	1929-30	1930-1	1931-2	1932-3
Nov.	13	16	9	4	24
Dec.	1	17	8	-5	1
Jan.	-1	-5	8	0	1
Feb.	-7	12	18	6	-14
Mar.	8	16	15	5	

* * * * *

A COYOTE TALE.

By Ralph Redburn, Ranger Naturalist

ONE of the most numerous animals inhabiting the North Rim of Grand Canyon in Grand Canyon National Park, is the little Mearns Coyote. Very often during this past summer Canyon visitors were able to see one or more of these animals. Probably the main reason for this, however, was not because the coyote was so common, but because certain individuals of this species had their summer range along the highways in the park.

The coyote of the North Rim region is usually seen in "park" areas which are open plateau meadows in the forest traversed, in many cases, by automobile roads. Ordinarily one would not expect to see this animal in such places since many cars pass through the meadows every day. In these areas, however, the coyote finds grasshoppers upon which to feed. Often last summer as many as four coyotes were seen in the same meadow at the same time. Many times they were standing close to the highway, paying no particular attention to the passing cars, but busily gathering grasshoppers for the day's meal.

On the other hand, not infrequently while traveling along the highways which lead through the forest to the rim of the Canyon, one could see coyotes sitting at the edge of the road. After passing such places many times it became obvious why these animals had so located themselves. They had learned that they need not run after food any more. All that was necessary to obtain a meal was to wait by the highway for a car to run over a squirrel, chipmunk, mouse, or some other creature. Numerous examples of this were seen during the summer, especially of one particular coyote which lived along the highway at the foot of Bright Angel Hill.

Old Rusty, as this coyote was called, apparently lived almost entirely on the animals which were killed by passing automobiles. He would wait beside the road for hours at a

time and if a car came past and ran over any of the small mammals which were along the road, Old Rusty would run out and, picking up his find, would carry it to his favorite rock to devour in peace. Many visitors to the North Rim saw Old Rusty sitting on his rocky observatory, either eating or watching for some animal to be killed.

