

# REPTILES OF NORTHWESTERN NEVADA AND ADJACENT TERRITORY.

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## INTRODUCTION.

The Lahontan Basin occupies the bed of the quaternary Lake Lahontan and its drainage system which lies principally within northwestern Nevada, although ramifications of it extend into eastern California and southern Oregon. This extensive drainage area includes a number of river systems of which the Truckee, the Humboldt, the Walker, and the Honey Lake, are the largest. A unique feature of the topography is the rather large number of "sinks" or lakes without outlets; the Truckee system has two, Pyramid Lake and Winnemucca Lake, and is also remarkable in that it finds its source in the alpine Lake Tahoe. The Humboldt system loses its waters in Humboldt Lake, the Carson system in North and South Carson Lakes, the Walker system empties into the Walker Lake, and the Susan River and Long Valley Creek systems terminate in the fluctuating Honey Lake.

The Lahontan Basin is marked by a succession of mountain ranges and level plains. The predominating plant growth over the greater part of this region is the "sage brush," *Artemisia tridentata*, which in some places excludes nearly all of the other forms. Along streams the cottonwood, *Populus fremontii*, and willows form the most conspicuous vegetation, while on the mountains, the juniper, *Juniperus utahensis*, grows abundantly. The flora of the desert immediately south of Pyramid and Winnemucca Lakes is of a different character, *Sarcobatus* and other shrubs largely replacing the "sage brush." This difference in the flora is correlated with a greater diversity in the reptilian fauna, and we find such southern forms as *Callisaurus* and *Sceloporus magister*.

The present report is based largely upon a collection obtained by Prof. J. O. Snyder, of Stanford University, and the writer, while pursuing ichthyological investigations for the United States Bureau of Fisheries. The expedition remained in the field from May 23 until July 17, 1911. During that time collections and observations were made at Truckee, Nevada County; Tahoe City, Placer County; Tallac, Eldorado County; Susanville and Doyle, Lassen County, California,



and in Nevada at Reno, Derby, Wadsworth, vicinity of Pyramid Lake Indian Agency, Washoe County; Carson City, Ormsby County; Winnemucca, Humboldt County; Palisade, Eureka County; and Deeth, Elko County. There are also included notes on certain specimens in the Stanford University collection not heretofore published, and for completeness all available published records have been added. All measurements are given in millimeters.

The greater part of this work was done in the zoological laboratory of Stanford University, and I am indebted to Prof. J. O. Snyder, of that institution, for many helpful suggestions. I am also under obligations to Dr. L. Stejneger, Dr. John Van Denburgh, Dr. J. Grinnell, and Prof. M. Herrick Spaulding, for the loan of specimens.

#### GEOGRAPHICAL VARIATION IN CERTAIN WEST AMERICAN REPTILES.

During the course of work upon this collection, a number of tangible differences between both the northern and southern and mountain and plain forms of certain species have been found. In the case of *Callisaurus ventralis* and *Uta stansburiana*, large series of specimens have been available and a decision has been reached regarding their status; specimens of other forms have not been so numerous and I have chosen merely to indicate the differences in the material examined. The following table shows the divergence in the species of both series:

##### *Species showing differences correlated with latitude.*

SOUTHERN FORM.	NORTHERN FORM.
<i>Callisaurus ventralis</i> .	<i>C. ventralis myurus</i> .
(Southeastern California and southern Arizona.)	(Pyramid Lake, Nevada.)
Length greater (ratio body to tail 0.728).	Length less (ratio 0.807).
Femoral pores more (average 16.6).	Femoral pores less (average 14.2).
Color lighter.	Color darker.
<i>Uta stansburiana elegans</i> .	<i>Uta stansburiana</i> .
(Desert of southeastern California, Arizona, New Mexico, and Mexico.)	(Northern Nevada, Oregon, Idaho, and Utah.)
Size larger { Tail length averages—male, 98.3 mm., female, 76.2 mm.	Size smaller { Tail length averages—male, 74+ mm.; female, 67+ mm.
Ratio hind leg to length from snout to anus, averages—male 0.741, female, 0.699.	Ratios—male, 0.714; female, 0.649.
Femoral pores more (average 14+).	Femoral pores less (average 13+).
Dorsal scales fewer, larger and keeled (average, 86.5).	Dorsal scales more, smaller and smooth (average 103.4).
<i>Sceloporus magister</i> .	<i>Sceloporus magister</i> .
(Fort Lowell and Tempe, Arizona.)	(Pyramid Lake, Nevada.)
Size larger { Snout to anus, average, male, 113.2 mm.	Size smaller { Snout to anus, average, male, 94 mm.
Tail length, average, male, 150.2 mm.	Tail length, average, male, 124.4 mm.
Femoral pores more (average 13+).	Femoral pores less (average 11+).



<i>Phrynosoma douglassii hernandesi.</i>		<i>Ph. douglassii hernandesi.</i>	
(Arizona and New Mexico.)		(Deeth, Nevada.)	
Size larger	Total length, average, male	Size smaller	Total length, average, female
	108.8 mm. <sup>1</sup>		103.4 mm.
	Hind leg, length, average, male 40.6 mm.		Hind leg, length, average, female, 37.9 mm.

*Species showing differences correlated with altitude.*

PLAIN INHABITING FORM.		MOUNTAIN INHABITING FORM.	
<i>Sceloporus graciosus.</i>		<i>Sceloporus graciosus.</i>	
(Deeth, Nevada.)		(Lake Tahoe, California.)	
Size larger	Tail length, average, male,	Size smaller	Tail length, average, male,
	71.9 mm.		63.3 mm.
Femoral pores more (average 15+).		Femoral pores less (average 12+).	
Color lighter.		Color darker.	
<i>Thamnophis ordinoides elegans.</i>		<i>Thamnophis ordinoides elegans.</i>	
(Palisade, Nevada.)		(Lake Tahoe, California.)	
Size larger	Total length, average, male,	Size smaller	Total length, average, male,
	520 mm.		409.8 mm.
	Tail length, average, male,		Tail length, average, male,
	132.5 mm.		103.8 mm.
Dorsal scale formula larger (21-19-17 appearing most frequently).		Dorsal scale formula smaller (19-21-19-17 appearing most frequently).	
Color lighter.		Color darker.	

I have not placed in this table the form *Uta stansburiana hesperis*, which differs from *U. s. elegans* in having small scales and from *U. stansburiana* in the possession of distinctly keeled scales. It inhabits the upper Sonoran zone of the comparatively cool coastal belt of Southern California, and its range is continuous with that of the more truly lower Sonoran zone form, *elegans*. It is interesting to note that here, as in the northern species, *stansburiana*, small dorsals scales are correlated with a cool habitat.

It is evident from the data here presented that *Callisaurus ventralis*, *Uta stansburiana*, *Sceloporus magister*, and *Phrynosoma douglassii hernandesi* are smaller in the northern part of their range than in the southern and that reduction in size in the first three species is correlated with a reduction in the number of femoral pores. Unfortunately, femoral pore counts were not made on the specimens of *Phrynosoma* from southern localities, but Ruthven (1907) gives 15 to 16 as the usual number, about the same as the average for the Deeth specimens. Likewise a comparison of the *Sceloporus graciosus* from Lake Tahoe, California (altitude 6,225 feet), with those from Deeth, Nevada (altitude 5,342 feet), shows that the former is smaller and possesses a lesser number of femoral pores. Specimens of *Thamnophis ordinoides elegans* from Lake Tahoe, California, are smaller in size and have a reduced number of dorsal scales, while specimens taken at

<sup>1</sup>Adult males are usually smaller than adult females.



Palisade, Nevada, at a lower altitude (4845 feet) are larger and have an increased number of dorsal scales. Ruthven (1908), in his admirable paper, *Variations and Genetic Relationships of the Garter-Snakes*, has shown quite conclusively the northward dwarfing of the species in the genus *Thamnophis*, both in regard to scale characters and size of body. It would appear that this latitudinal variation is not restricted to any one genus or family of American reptiles, but occurs alike in both the saurians and the serpents. Whether the altitudinal variations are as widespread or as marked must be decided by future studies.

It is not within the scope of this work to consider the factors which have caused the variations indicated. That is a problem for the experimentalist. Undoubtedly important results await the student who will test the inheritance of squamation and size under artificial environments in which the temperature, humidity, and food supply can be controlled.

**CROTAPHYTUS COLLARIS BAILEYI** (Stejneger).

*Locality*.—Six specimens of this form were taken near the Pyramid Lake Indian Agency, and four at Derby, Nevada. There is also a male in the Stanford University collection from the Palmetto Mountains, Esmeralda County, Nevada. It has been previously recorded in the Lahontan Basin at Big Creek Ranch, Pine Forest Mountains, and from the Truckee River, Nevada.

*Status and variation*.—The above-mentioned specimens have two rows of interocular scales and small supraoculars, characteristic of this subspecies, an average of 11 rows of the latter across the greatest width of the supraocular region. Concerning the interocular scales, it might be well to state that there are in the Stanford University collection two specimens, a male from Bisbee, Cochise County, Arizona, and a female from Cedar Ranch, Colorado Canyon, Arizona, each of which has a single-fused interocular. Meek (1905, p. 8) mentions a specimen from Winslow, Arizona, showing a like variation, and it would seem that such variants were of quite frequent occurrence in this region. All the Nevada and California individuals which I have seen, however, have a double series of interoculars.

The average number of femoral pores in 10 individuals is 17, the extremes 15 and 19.

The six males in the series have the anterior part of the double black collar continuous ventrally and a black patch on either side of the belly extending from the middle of the trunk across the inguinal region to a point one-third the distance down the posterior surface of the thigh. A single specimen from Esmeralda County, Nevada, and three others from Lytle Creek, San Bernardino County, California, in the Stanford University collection, are of this same type of coloration. The specimens from Arizona and New Mexico, which were compared



with these, lacked the continuous black collar and black patches on the belly.

The females are lighter ventrally than the males. In preserved specimens, the markings on the throat and sides of head are very faint, the belly is white suffused with blue-gray and the anterior black collar is wanting below.

*Habits*.—This lizard was found only on hillsides among deposits of tufa and outcroppings of volcanic rock at an elevation of 4,500 feet.

CROTAPHYTUS WISLIZENII Baird and Girard.

*Locality*.—The collection contains 13 specimens from the Pyramid Lake Indian agency, 3 from The Willows, Pryamid Lake, 1 from Derby, 4 from Carson City, Nevada, and 2 from Doyle, Lassen County, California. Other points in the basin where it is known to occur are Truckee River and Wadsworth, Washoe County; Amos, Quinn River Crossing, Pine Forest Mountains, and Thousand Creek Flat, Humboldt County, Nevada.

*Status and variation*.—I can see no difference between this series and specimens of *Crotaphytus wislizenii* from southern Idaho and San Diego County, Cal. The width of the head, in the material examined, seldom exceeds the distance from the nostril to the ear opening, and the distance from the nostril to the inner orbital angle is nearly always as great or greater than the vertical diameter of the ear opening. These features will readily distinguish the specimens in question from the nearly related *Crotaphytus silus* Stejneger. The measurements of 11 specimens are appended:

	Six males.	Five females.
Greatest width of head:		
Minimum.....	15	16
Average.....	18.1	18.9
Maximum.....	20.5	22
Nostril to ear:		
Minimum.....	16	16
Average.....	18.2	18.6
Maximum.....	21.5	22.5
Nostril to inner orbital angle:		
Minimum.....	4.5	4.5
Average.....	5.2	5.6
Maximum.....	6	7
Vertical diameter of ear:		
Minimum.....	3	4
Average.....	4.2	4.9
Maximum.....	5	5.5
Length, snout to anus:		
Minimum.....	75	77
Average.....	87	93.6
Maximum.....	104	115
Length of tail:		
Minimum.....	153.5	153
Average.....	175.2	183.5
Maximum.....	{ 13 200 }	217
Femoral pores:		
Minimum.....	19	
Average.....	21+	
Maximum.....	25	

<sup>1</sup> Indicating number of individuals from which measurements were taken.



*Habits*.—*Crotaphytus wislizenii* was found on the desert among low growths of *Artemisia tridentata* and other shrubs. Its food consisted to some extent of other lizards, for a whole *Cnemidophorus tigris*, the tail of another, and a *Uta stansburiana* were found in the stomachs examined.

Two females taken at the Pyramid Lake Indian Agency between May 26 and June 1 contained two and four eggs, respectively. One secured at Derby on June 29 carried two well-developed eggs, and another taken at Carson City on July 10 contained large eggs and had assumed the brilliant red-orange breeding colors.

CALLISAURUS VENTRALIS MYURUS, new subspecies.

*Diagnosis*.—Resembles *Callisaurus ventralis* (Hallowell), to which it is closely allied, but has a higher ratio between body and tail length, fewer femoral pores, and averages darker in dorsal coloration.

*Type-specimen*.—No. 51786 U.S.N.M. From Pyramid Lake Indian Agency, Washoe County, Nevada, June 2, 1911. Collectors, J. O. Snyder and C. H. Richardson.

*Description of type*.—Head about as long as wide, covered with small flat or slightly rounded plates of which the interparietal is the largest; nostrils surrounded by a series of small plates, smallest on the posterior margin; plates of prefrontal region larger than those to either side of it; supraocular regions 8 scales wide, separated by a single row of scales smaller than those of adjoining prefrontal region; anterior superciliary largest, followed by 4 scales on one side of the head and 5 on the other; eyelids fringed with small scales, those on the lower lid larger and more acutely pointed than those on the upper; supralabials imbricate and prominent; infralabials smaller than supralabials, flat and not imbricate; a row of scales below infralabials separated by two shorter rows posteriorly; gular granules larger than anterior dorsals, imbricate and largest on posterior gular fold. Dorsum covered with slightly rounded granules, gradually increasing in size from head to base of tail and decreasing laterally from the median dorsal region; number of dorsal granules in a head length posterior from interparietal plate, 47; anterior from a point on dorsum opposite anus, 39; scales on tail imbricate, keeled dorsally for the greater part of the distal four-fifths of its length; several rows of weakly spinose scales occupy the distal four-fifths of its lateral margins. Femoral pores 14 and 15.

Color in alcohol: Snout olive, gradually blending into dark blue-gray on dorsum. Dorsum spotted with white; on its median region are two parallel rows of dull black spots which gradually increase in size and intensity from the head to the base of the tail, where they



fuse to form cross bars. Tail lighter, with a greater admixture of white. Fore legs lightly suffused with blue-gray; hind legs barred and mottled with darker markings, with three definite bars on each tibia. Posterior surface of each femur with one blue-gray bar extending across it longitudinally. Throat white, mottled with gray; gular patch with a slight purple tinge. Belly and ventral surface of legs, white; on each side of belly a long blue patch, crossed obliquely by two triangular-shaped black bars, the posterior one largest. Tail, underneath, white with three black spots near the base and five black bands occupying a more distal position and forming complete annuli.

	mm.
Length of head.....	13
Width of head.....	14
Fore leg.....	39.5
Hind leg.....	71
Base of fifth to end of fourth toe.....	33
Length, snout to anus.....	76.5
Length of tail.....	92
Ratio, length of body to tail . 831	

The *Callisaurus* from the vicinity of Pyramid Lake, Nevada, presents some well marked deviations from the typical *Callisaurus ventralis* (Hallowell) which entitle it to a name. These differences involve the ratio between the length of body (from snout to anus) and tail, the number of femoral pores and the dorsal coloration. The average ratio of body to tail in 45 individuals picked at random from a large series compared with the same ratio in 30 specimens of typical *C. ventralis* (22 from Yuma, Arizona, 6 from Fish Springs, and 2 from Oak Grove, San Diego County, California), shows that this character is very distinct. In *Callisaurus v. myurus*, the ratios range from 0.727 to 0.864 with an average of 0.807, while in *Callisaurus ventralis* the range is from 0.678 to 0.826, the average 0.728. Females of both forms are smaller than the males, but the ratios are the same. The following table shows the variation of femoral pores in a number of series. It will be seen that the range of variation and the average number of femoral pores in the Nevada series are lower than in any other except the one from Fairbank and Fort Lowell, Arizona, in which the range of variation is smaller. The femoral pore counts for the series from Tucson, Arizona, are taken from Ruthven (1907, pp. 518-523). In this series as in the series from Fairbank and Fort Lowell, Arizona, the average number of pores on each thigh is greater than in the others.



Variation in the femoral pores of *Callisaurus ventralis* and *C. v. myurus*.

Locality.	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Average.
<i>Callisaurus v. myurus</i> , new species, Pyramid Lake Indian Agency, Washoe County, Nevada, 53 specimens.....	5	21	35	34	8	3	.....	.....	.....	.....	.....	.....	.....	.....	14.2
<i>Callisaurus ventralis</i> (Hallowell), vicinity of Fish Springs, San Diego County, California, 27 specimens.....	2	5	3	10	14	8	7	3	2	.....	.....	.....	.....	.....	16
<i>Callisaurus ventralis</i> (Hallowell), Yuma, Arizona, 25 specimens.....	.....	4	3	8	9	7	5	1	.....	.....	.....	.....	.....	.....	15.8
<i>Callisaurus ventralis</i> (Hallowell), Tucson, Arizona, 54 specimens (Ruthven).....	.....	1	4	6	20	22	30	11	5	5	1	.....	3	.....	17.6
<i>Callisaurus ventralis</i> (Hallowell), Fairbank, Cochise County, and Fort Lowell, Pima County, Arizona, 14 specimens.....	.....	.....	.....	.....	9	7	7	.....	2	.....	.....	.....	.....	.....	17.1

The dorsal color is deep blue-gray in contrast to the ashy-gray or even lighter shade of *C. ventralis*. In large specimens the color approaches that of the darker individuals of *C. ventralis*. Unfortunately the dorsal color was not recorded in fresh specimens, but comparison of the alcoholic material from Nevada with specimens of a similar nature from San Diego County, California, Yuma, Fairbank, and Fort Lowell, Arizona, shows that it is a darker form. Dr. C. Hart Merriam (Stejneger, 1893, p. 172) mentions a *Callisaurus* from Death Valley, California, which, he says, is "much shorter and broader (than *C. ventralis*), with a shorter tail, and is bluish-gray in color." He thinks this is the same form which inhabits the region about Pyramid Lake, Nevada, and from his description this appears to be true. Three specimens in the Stanford University collection from Owen's Valley, a locality a little to the north of Death Valley, have the characteristic dorsal color of *myurus*. Unfortunately, they are mutilated beyond hope of obtaining accurate measurements. The femoral pores in two of them are 14-14 and 14-16.

A study of the ventral color pattern of the males of *myurus* was undertaken to find, if possible, any variation toward the three bar pattern of *Callisaurus draconoides* Blainville. In 33 males but one variant was discovered, this individual having two black bars and a small black spot on one side of the belly, while the other side possessed two complete bars, the normal number.

The adult female of *myurus* is colored essentially like the male, but the blue patch on the belly is absent, the black bars are faintly outlined and the gray gular patch is lacking. A salmon-red spot may or may not be present on the throat.

The color of the young male is as follows: In general like adult female except for heavier markings on the throat and absence of a



salmon-red spot on the gular region. The blue ventral patch characteristic of the adult male is entirely lacking and the black triangular-shaped bars are merely suggested. The latter are, however, more pronounced than in the adult female. The dorsal black markings are heavier than in the adult male or female. The color of the young female is like that of the adult female, except for the presence of darker markings on the dorsal surface and the absence of the salmon-red gular spot.

*Locality.*—*Callisaurus v. myurus* was collected at the Pyramid Lake Indian Agency, along the southwestern shore of Pyramid Lake as far as The Willows, and at Derby and Wadsworth, on the Truckee River. It has been recorded before in the Lahontan Basin from the vicinity of Pyramid Lake.

Cope (1883, p. 18) states that he saw a species of *Holbrookia* "north of Pyramid Lake, but it was so swift that I did not succeed in catching a specimen." He collected in this region "during the hot weather of July, 1882," and probably mistook the abundant *Callisaurus* for it. At least it seems fair to take this view, since no specimens of the closely allied genus *Holbrookia* were obtained by Cope at the time, and his observation has not been corroborated.

*Habits.*—In our experience this lizard was the most conspicuous and the most abundant saurian in the localities mentioned. It occurred in greatest numbers on the sandy desert among low-growing shrubs. It was never seen in the denser growths of *Artemisia tridentata* or on rocky hillsides. Like *Callisaurus ventralis*, it is very fleet of foot, often running a hundred feet or more when frightened. It seldom runs straight ahead of the intruder, but describes an arc to the right or left. When in rapid motion, the tail was observed raised considerably above the level of the body, but never "curled up over the back," as has been described for *C. ventralis* (Stejneger, 1893, p. 171). Several times the tail was seen curled over the back, but always when the lizard was moving very slowly. During a light thunder shower many of these lizards buried themselves in the loose desert sand, where they remained until almost trodden on before showing themselves.

An individual wounded by Professor Snyder uttered a high-pitched cry when handled, which, he says, was very suggestive of the note of certain Hawaiian geckos.

Examination of 7 stomachs indicated that the food of *myurus* consisted of both animal and vegetable matter, the latter absent from only 2 stomachs. The vegetable content usually consisted of bits of green leaves, although small purple flowers were found in 1 stomach. The identified insects were wasps and grasshoppers. Some spiders were also found, and larvae of many kinds were present.



Three females dissected on May 31 at the Pyramid Lake Indian Agency contained 4, 5, and 6 large eggs each.

*UTA STANSBURIANA* Baird and Girard.

*Locality*.—There are 19 individuals of this species from the Pyramid Lake Indian Agency and 4 from Derby, Nevada. Other localities in the basin where it has been observed before are: Virginia City, Storey County; Pine Forest Mountains and Virgin Valley, Humboldt County; Quinn River Crossing and Amos, Humboldt County; and Cortez and River Ranges, near Carlin, Nevada.

*Status and variation*.—A study of the specimens of this lizard from the Lahontan Basin has led me into a rather detailed investigation of *Uta stansburiana*, resulting in the discovery of one new subspecies and the resurrection of an old name for another. This species has a wide distribution, and it is not surprising that a number of distinct geographical races exist.

*Uta stansburiana* was described by Baird and Girard (1852, p. 69) from specimens collected in the Valley of the Great Salt Lake, Utah. The original description, very brief and general, has been of little value in the present work, and as specimens from the type locality have not been available for comparison it has been necessary for me to use specimens from adjacent territory. Material from the following places has been examined:

Number of specimens.	Locality.	Source.
1	Fillmore, Utah.....	United States National Museum.
6	Snake River, Lincoln County, Idaho.....	Stanford University collection.
2	Quinn River Crossing, Humboldt County, Nevada.....	University of California, Museum of Vertebrate Zoology.
10	Pine Forest Mountains, near Big Creek Ranch, Humboldt County, Nevada.	Do.
2	Pine Forest Mountains, mouth of Alder Creek, Humboldt County, Nevada.	Do.
12	Virgin Valley, Humboldt County, Nevada.....	Do.
4	Derby, Washoe County, Nevada.....	Stanford University collection.
19	Pyramid Lake Indian Agency, Washoe County, Nevada.....	Do.
3	Vicinity Abert Lake, Lake County, Oregon.....	Do.
1	Near Summer Lake, Lake County, Oregon.....	Do.
1	Round Valley, Inyo County, California.....	Do.
2	Near Lone Pine, Inyo County, California.....	Do.

*Uta stansburiana* Baird and Girard is characterized by small, rounded, and weekly carinated dorsal scales. The number of scales in a line from the interparietal plate to a point on the rump above the posterior surfaces of the thighs varies between 89 and 116. The average for 55 specimens is 103.4. The table on page 418 shows the



maximum, minimum, and average measurements and scale counts in a number of individuals. Tail length is not included, since most of the specimens have broken or regenerated tails. Six males have a tail length ranging from 70 mm. to 77 mm., average  $74 +$  mm. In five females the minimum length is 66 mm., the maximum 69 mm., and the average  $67 +$  mm. The femoral pores likewise are fewer in number (average  $13 +$ ) than in the other forms considered below.

Recently Doctor Ruthven (1913) has described a new form of this genus, *Uta stansburiana nevadensis*, from the Cortez Range, west of Carlin, Nevada. The distinctive characters which he mentions are color, the small size of the dorsal scales, and reduced number of femoral pores. The peculiar spotted type of coloration described by him—that is, the dorsum, with the ground color broken by small spots of blue and faintly indicated black spots—is abundantly represented in my series from Snake River, Idaho, Quinn River Crossing, Pine Forest Mountains, Virgin Valley, Derby, Pyramid Lake Indian Agency, Nevada, and Abert Lake, and Summer Lake, Oregon. In this same series there are many individuals which do not possess this type of coloration. On the other hand, there are many specimens of *Uta stansburiana elegans* in the Colorado River series which are the exact counterparts of the spotted type found in Nevada, Oregon, and Idaho, except that the ground color is slightly lighter. In regard to the other characters, size of dorsal scales, and number of femoral pores, it is apparent that *nevadensis* is identical with *stansburiana*, as I have here defined it. *Nevadensis* has small, weakly-keeled dorsal scales (25 to 30 in a head length), and the femoral pores average 13.6. Although I have not seen specimens from the type locality of *Uta stansburiana*, I have had at my command a good series from adjacent territory which was reasonably uniform in color and squamation. Therefore, until a good series of specimens from the exact type-locality is available and can be shown to differ from the *Uta* of eastern Nevada, it seems advisable to retain the name *stansburiana* for the form here defined.

#### UTA STANSBURIANA ELEGANS (Yarrow).

*Locality*.—Specimens of the small scaled *Uta* from the desert regions of southern California, Arizona, New Mexico, Texas, and parts of Mexico, represent a new form, to which is here given the old name *elegans*. *Uta elegans*, described by Yarrow (1882a) from specimens sent from La Paz, Lower California, Mexico, has for some time been considered synonymous with *Uta stansburiana* in that it was based upon color characters which proved to be inconstant. However, there are structural differences which readily distinguish this southern form from the typical *stansburiana*.



For the definition of *Uta stansburiana elegans* a large array of specimens, representing many localities, has been used. They are as follows:

No. of specimens.	Locality.	Source.
CALIFORNIA.		
22	Near Needles, Colorado River.....	University of California Museum of Vertebrate Zoology.
5	5 miles below Needles, Colorado River.....	Do.
5	8 miles east of Picacho, Colorado River.....	Do.
7	20 miles above Picacho, Colorado River.....	Do.
6	Chemehuevis Valley, Colorado River.....	Do.
6	Pilot Knob, Colorado River.....	Do.
8	Riverside Mountain, Colorado River.....	Do.
3	Blythe, Colorado River.....	Do.
20	Opposite Cibola, Colorado River.....	Do.
3	Near Salton Lake, Imperial County.....	Do.
4	Fort Yuma.....	Stanford University collection.
2	Salt Creek, Imperial County.....	University of California Museum of Vertebrate Zoology.
1	Cane Spring, Imperial County.....	Do.
1	Vallecito, San Diego County.....	Do.
1	Mountain Spring, San Diego County.....	Do.
2	Carrizo Creek, San Diego County.....	Do.
4	La Puerta, San Diego County.....	Do.
1	Indio, Riverside County.....	Stanford University collection.
7	Mohave, Kern County.....	Do.
1	Bakersfield, Kern County.....	Do.
2	Victorville, San Bernardino County.....	Do.
1	Los Banos, Merced County.....	Do.
1	Bear Valley, San Benito County.....	Do.
3	White River, Tulare County.....	Do.
1	Fresno, Fresno County.....	Do.
ARIZONA.		
2	Near the Needles, Colorado River.....	University of California Museum of Vertebrate Zoology.
8	Above Bill Williams River, Colorado River.....	Do.
7	Ehrenberg, Colorado River.....	Do.
25	10 miles below Cibola, Colorado River.....	Do.
6	5 miles north of Laguna, Colorado River.....	Do.
6	Yuma.....	Stanford University collection.
13	Tempe.....	Do.
5	Fort Lowell, Pima County.....	Do.
NEW MEXICO.		
4	Near Grant, Valencia County.....	Stanford University collection.
2	Rio Puerco, Valencia County.....	Do.
34	Albuquerque.....	Do.
TEXAS.		
1	El Paso.....	United States National Museum.
MEXICO.		
1	La Paz, Lower California (type-locality).....	United States National Museum.
3	San Jose del Cabo, Lower California.....	Stanford University collection.
1	Chihuahua.....	United States National Museum.



*Description*.—Like *Uta stansburiana* Baird and Girard, but with larger and more heavily carinated and acutely pointed dorsal scales. The number of scales in a line from the interparietal plate on the head to a point on the back above the posterior surfaces of the thighs varies in 111 specimens from 78 to 103; average, 86.5. (See table, p. 418.) The general size is larger than that of *Uta stansburiana*, especially in the ratio of the hind leg to the length from snout to anus (see table, p. 418) and in the tail length. The tail length in 6 males from the Colorado River, Arizona and California, ranges from 92.5 mm. to 104.5 mm.; average, 98.3 mm. In 8 females from the same region the minimum length is 71.5 mm., the maximum 81.5 mm., the average 76.2 mm.; longer than in any typical *Uta stansburiana* examined. The femoral pores average 14+ on each thigh, a larger average number than is possessed by *Uta stansburiana*.

Occasional specimens from localities along the Colorado River, California and Arizona, have small, rather weakly-keeled dorsal scales, which in this respect resemble true *Uta stansburiana*. In the coast region of southern California and probably also in the western part of the San Joaquin Valley, California, *elegans* freely intergrades with another form, which will here be described.

UTA STANSBURIANA HESPERIS, new subspecies.

*Diagnosis*.—Resembles *Uta stansburiana elegans* (Yarrow) in size of body and in the character of the squamation, but the dorsal scales are smaller.

*Type*.—Male, No. 892, University of California Museum of Vertebrate Zoology. From Arroyo Seco Canyon, near Pasadena, Los Angeles County, California, August 3, 1903. Collector, J. Grinnell.

*Description of type*.—Head from snout to posterior border of interparietal plate slightly longer than wide; nostrils separated by five small plates; there are four large supraoculars completely surrounded by smaller scales, those on the outer margin largest; the interparietal is the largest of the plates on the head and exceeds the four supraoculars in dimensions; a long, keeled subocular on each side, followed posteriorly by two smaller ones; ear denticulations of 3 pointed scales, the uppermost largest, separated from an anterior group of enlarged granules by two rows of smaller ones. Dorsum covered with small imbricate scales, largest along the median region and decreasing rather abruptly laterally; for about one head length back of the interparietal plate the dorsals are small, rounded, and unkeeled, then they become larger, keeled, and weakly spinose, gradually increasing in size till they blend quite insensibly into the large, strongly keeled,



mucronate caudal scales. There are about 114 scales in a line from the posterior edge of the interparietal plate to a point above the posterior surfaces of the thighs. Dorsal and anterior surfaces of fore legs covered with keeled, imbricate scales, larger than those on the rump. Scales on the dorsal and anterior surfaces of hind legs keeled, imbricate, and larger than those on the fore legs; their posterior surfaces are covered with granules. Scales on throat flat; 36 in a straight line from the symphyseal to the gular fold, inclusive. Gular fold fringed with 17 bluntly pointed scales which are larger than the gulars. Belly scales smooth, 69 in a line from the gular fold to the anus. The ventral surfaces of the legs are covered with smooth scales. Ventral surface of tail clothed with smooth, bluntly pointed scales, which are smaller than those on the dorsal surface of the tail. Femoral pores 15 and 16. Color (in alcohol): Head gray brown. Dorsum darker, with parallel rows of dark-brown blotches. Dorsal surface of forelegs dark gray, spotted with lighter gray; hind legs of a lighter color. A black post-axilla spot on each side. Throat blue, spotted with white. Belly white.

*Measurements of type, male.*

	mm.
Length of head (to posterior edge of interparietal plate).....	11
Greatest width of head.....	9.5
Length, snout to anus.....	51
Length of tail (regenerated).....	58
Fore leg.....	21.5
Hind leg.....	38.5
Longest toe from base of fifth to tip of fourth, including claw.....	17

*Status.*—The form *hesperis* blends completely into *elegans* along the Coast Range, in Riverside and San Diego Counties, and in the north-western part of Lower California, Mexico. In San Diego County almost typical *elegans* has been found at Pine Mountain near Escondido and at La Puerta. The one specimen from Gorman Station, on the edge of the Mohave desert, has 93 dorsal scales, and it seems probable that *hesperis* intergrades with *elegans* in that region also. The table on page 418 shows the range of variation in this subspecies.

Specimens belonging to this form have been examined from the localities listed below:



No. of speci- men.	Locality.	Source.
SANTA BARBARA COUNTY, CALIFORNIA.		
2	Friars Harbor, Santa Cruz Island.....	University of California Mu- seum of Vertebrate Zool- ogy.
VENTURA COUNTY, CALIFORNIA.		
3	Ana Capa Island.....	University of California Mu- seum of Vertebrate Zool- ogy.
1	Mount Pinos.....	Do.
LOS ANGELES COUNTY, CALIFORNIA.		
10	Vicinity of Pasadena (type-locality).....	University of California Mu- seum of Vertebrate Zool- ogy.
2	Near San Fernando.....	Do.
1	Tejunga Valley.....	Do.
1	Gorman Station, Antelope Valley.....	Do.
1	San Pedro.....	Stanford University collec- tion.
20	Santa Catalina Island.....	California Academy of Sci- ence.
3	San Clemente Island.....	University of California Mu- seum of Vertebrate Zool- ogy.
SAN BERNARDINO COUNTY, CALIFORNIA.		
11	Ontario.....	Stanford University collec- tion.
4	Cajon Wash, San Bernardino.....	University of California Mu- seum of Vertebrate Zool- ogy.
2	Santa Ana Canyon, San Bernardino Mountains.....	Do.
1	Fish Creek, San Bernardino Mountains.....	Do.
4	Reche Canyon, near Colton.....	Do.
RIVERSIDE COUNTY, CALIFORNIA.		
7	Snow Creek, San Jacinto Mountains.....	University of California Mu- seum of Vertebrate Zool- ogy.
15	Vicinity of Schains Ranch, San Jacinto Mountains.....	Do.
5	Near Cabazon.....	Do.
1	Palm Canyon, San Jacinto Mountains.....	Do.
1	Strawberry Valley, San Jacinto Mountains.....	Do.
1	Kenworthy, San Jacinto Mountains.....	Do.
29	San Jacinto.....	Stanford University collec- tion.
12	Hemet Valley.....	Do.
12	Coahuila Valley.....	Do.
2	Vicinity of Riverside.....	1, University of California Museum of Vertebrate Zool- ogy; 1, Stanford Univer- sity collection.
SAN DIEGO COUNTY, CALIFORNIA.		
4	Pine Mountain, near Escondido.....	University of California Mu- seum of Vertebrate Zool- ogy.
3	Warners Pass.....	Do.
5	Cuyamaca Lake.....	Stanford University collec- tion.
1	Julian Mountains.....	Do.
16	Vicinity of Campo.....	Do.



	<i>Uta stansburiana</i> , from Fillmore, Utah; Humboldt County, vicinity of Pyramid Lake, Nevada; Lincoln County, Idaho; Lake County, Oregon.		<i>Uta stansburiana</i> , <i>elegans</i> , from La Paz, San Jose del Cabo, Lower California; Colo- rado River, Cali- fornia and Ari- zona; Alberque- que, New Mexico.		<i>Uta stansburiana</i> , <i>hesperis</i> , from vicinity of Pasa- dena, Ontario, and San Jacinto, California.	
	Males.	Females.	Males.	Females.	Males.	Females.
Head, length:						
Minimum.....	8	9	9.9	9	9	9.5
Average.....	<sup>1</sup> 20	<sup>1</sup> 14	<sup>1</sup> 19	<sup>1</sup> 16	<sup>1</sup> 17	<sup>1</sup> 12
Maximum.....	10	9.4	10.7	9.6	10.8	10.1
Head, width:						
Minimum.....	6.8	8	8	8.1	8.2	8.5
Average.....	<sup>1</sup> 20	<sup>1</sup> 15	<sup>1</sup> 19	<sup>1</sup> 16	<sup>1</sup> 16	<sup>1</sup> 12
Maximum.....	9.1	8.5	9.3	8.5	9.4	9.1
Length from snout to anus:						
Minimum.....	10.5	9.8	10.7	9.8	11.5	9.2
Minimum.....	31.5	40.4	39.5	38.5	39.5	42.3
Average.....	<sup>1</sup> 20	<sup>1</sup> 15	<sup>1</sup> 25	<sup>1</sup> 21	<sup>1</sup> 17	<sup>1</sup> 12
Maximum.....	46.7	45.7	45.2	43.5	47.1	48
Length of fore leg:						
Minimum.....	52.5	54	53.1	48.5	53	51
Minimum.....	14.5	15.9	18	15.2	17.1	17.2
Average.....	<sup>1</sup> 20	<sup>1</sup> 14	<sup>1</sup> 17	<sup>1</sup> 15	<sup>1</sup> 17	<sup>1</sup> 12
Maximum.....	19.3	17.2	18.9	18.4	20.2	19.1
Length of hind leg:						
Minimum.....	21.5	19	22.4	19.5	23.6	21
Minimum.....	23.2	27.9	29	27.8	30	30
Average.....	<sup>1</sup> 21	<sup>1</sup> 15	<sup>1</sup> 23	<sup>1</sup> 21	<sup>1</sup> 17	<sup>1</sup> 12
Maximum.....	33.3	29.7	33.5	30.4	35.3	33.2
Average ratio, hind leg to length to anus....	<sup>1</sup> 23	<sup>1</sup> 15	<sup>1</sup> 23	<sup>1</sup> 21	<sup>1</sup> 17	<sup>1</sup> 12
Longest toe:						
Minimum.....	.714	.649	.741	.699	.750	.692
Minimum.....	11	12.5	14	13.2	14	13.9
Average.....	<sup>1</sup> 20	<sup>1</sup> 15	<sup>1</sup> 18	<sup>1</sup> 16	<sup>1</sup> 17	<sup>1</sup> 12
Maximum.....	14.8	13.6	15.6	14.1	15.7	15
Average femoral pores.....	16	14.5	17.1	15	17.3	16
Average gular scales.....	<sup>1</sup> 51	<sup>1</sup> 31	<sup>1</sup> 56	<sup>1</sup> 30	<sup>1</sup> 29	<sup>1</sup> 29
Average belly scales.....	13+	33	32	31+	31+	31+
Dorsal scales:						
Minimum.....	<sup>1</sup> 32	<sup>1</sup> 53	<sup>1</sup> 61+	<sup>1</sup> 31	<sup>1</sup> 60+	<sup>1</sup> 31
Average.....	63	61+	61+	60+	60+	60+
Maximum.....	89	78	87	87	87	87
Average.....	<sup>1</sup> 55	<sup>1</sup> 111	<sup>1</sup> 86.5	<sup>1</sup> 102.3	<sup>1</sup> 96	<sup>1</sup> 102.3
Maximum.....	103.	103	103	117	117	117

<sup>1</sup> Indicating the number of specimens from which the average was taken.

#### SCELOPORUS MAGISTER (Hallowell).

*Locality*.—This large scaly lizard was observed at Derby, the Pyramid Lake Indian Agency, and at several points along Pyramid Lake as far as The Willows. Specimens were collected at the points mentioned. Previously it has been reported in the Lahontan Basin at Wadsworth, Nevada.

The series of 21 specimens from the above-mentioned localities agrees in scale characters with *Sceloporus magister* as defined by Stejneger (1893, pp. 178-182). However, none of these specimens exhibit such large dimensions as some Arizona individuals and the femoral pores are fewer in number. Four Arizona specimens examined are decidedly darker than any obtained by us in the Lahontan Basin. They show a very pronounced broad dorsal stripe of black



intermingled with lighter, and are darker laterally and ventrally. The following table will give the range of variation in adults. Measurements of four Arizona specimens are given for comparison:

	Vicinity of Pyramid Lake, Nevada.		Fort Lowell and Tempe, Arizona, 4 males.
	Ten males.	One female.	
Head, length:			
Minimum.....	16.1	-----	20
Average.....	18.1	16	20.8
Maximum.....	20.3	-----	22.5
Head, width:			
Minimum.....	18	-----	23.5
Average.....	20.8	17	24.5
Maximum.....	24.9	-----	26.8
Length from snout to anus:			
Minimum.....	75	-----	104.5
Average.....	94	82.2	113.2
Maximum.....	107	-----	119.5
Length of tail:			
Minimum.....	104.9	-----	139
Average.....	124.4	109	150.2
Maximum.....	141.5	-----	157
Length of fore leg, including claw:			
Minimum.....	34.5	-----	45
Average.....	39.6	34.9	46.9
Maximum.....	44.5	-----	51.4
Length of hind leg, including claw:			
Minimum.....	51.9	-----	68
Average.....	59.1	52.9	71.6
Maximum.....	65	-----	76
Length of longest toe, including claw:			
Minimum.....	23.2	-----	28
Average.....	26.4	24	30.6
Maximum.....	28	-----	32.5
Femoral pores:			
Minimum.....	11	12	12
Average.....	11+	-----	13+
Maximum.....	13	13	15
Dorsal scales from interparietal to point above posterior surface of thighs:			
Minimum.....	32	-----	31
Average.....	33+	33	32
Maximum.....	35	-----	34

*Habits.*—At Derby *Sceloporus magister* was found in two distinct habitats, in and about bushes near the river where it was found most abundantly, and on rocky hillsides. At Wadsworth it was taken in bushes not far from the river. In the vicinity of Pyramid Lake it was observed in bushes along the river, on tufa cliffs near the lake, or on volcanic rocks in the near by hills, also along the lake shore, but never very far out on the desert.

As it runs from bush to bush *Sceloporus magister* lifts its tail above the level of its body in much the same manner as *Callisaurus*, a trait which facilitates rapid movement over the sand. It is occasionally seen basking on rocks in company with the smaller *Sceloporus biseriatus*. This lizard is an adept climber and ascends to the tops of tall bushes with great ease.

SCELOPORUS GRACIOSUS Baird and Girard.

*Locality.*—The collection contains specimens of this small *Sceloporus* from Tallac, California, and from Carson City, Palisade, and Deeth, Nevada. The only other records from the Lahontan Basin with



which I am acquainted are Winnemucca, Amos, Quinn River Crossing, vicinity of Pine Forest Mountains, and Virgin Valley, Humboldt County, Nevada.

*Status and variation.*—The series from Tallac, California, presents some minor differences from specimens collected in Nevada. Thus the largest specimens in the California series are smaller than the largest from Deeth, Nevada. This discrepancy is best shown in the tail length, 68.1 being the maximum in specimens from Tallac, California, 78.8 the maximum in Deeth, Nevada, specimens. The averages in tail length are likewise distinct. The femoral pores vary from 10 to 15, average 12+ in Tallac specimens; from 13 to 17, average 15+ in Deeth specimens. The accompanying table will show the extent of variation and averages in the specimens collected:

	Near Tallac, Lake Tahoe, California.		Deeth, Elko County, and near Palisade, Nevada.		Near Carson City Nevada, 3 males.
	Nine males.	Three females.	Seven males.	Three females.	
Head, length:					
Minimum.....	9.5	10	9.5	9.6	10.5
Average.....	10.4	10.6	10.6	10.2	10.9
Maximum.....	11	11	12	11	11.4
Head, width:					
Minimum.....	9	8.5	8.5	8.3	10
Average.....	9.5	9	10.1	9.1	10.5
Maximum.....	10	9.5	12	10.2	11
Length, snout to anus:					
Minimum.....	44.1	50	42.1	44.1	51
Average.....	48.4	51.8	51.2	50.6	53.5
Maximum.....	51.3	55	58.5	58.4	56
Tail, length:					
Minimum.....	59	.....	66	68.5	.....
Average.....	<sup>1</sup> 7 63.3	<sup>1</sup> 1 58.1	<sup>1</sup> 4 71.9	<sup>1</sup> 2 70	<sup>1</sup> 2 70
Maximum.....	68.1	.....	78.8	71.5	.....
Length of foreleg:					
Minimum.....	19	19.5	17	17.7	19.5
Average.....	<sup>1</sup> 7 19.6	20.2	<sup>1</sup> 6 20	20.7	20.8
Maximum.....	20.5	21	23.5	23.5	22
Length of hind leg:					
Minimum.....	29	30	27	27	31.9
Average.....	31.1	30.9	32.8	31.3	34.1
Maximum.....	33.5	31.9	38	34.3	35.5
Longest toe, including claw:					
Minimum.....	14.4	15	14.5	14.9	15.5
Average.....	15	15.5	15.8	15.8	15.7
Maximum.....	16.1	16	17	16.5	17.8
Femoral pores:					
Minimum.....	10	.....	13	.....	12
Average.....	12+	.....	15+	.....	13
Maximum.....	15	.....	17	.....	15
Dorsal scales:					
Minimum.....	46	.....	48	.....	47
Average.....	51	.....	53+	.....	51
Maximum.....	55	.....	58	.....	54

<sup>1</sup> Indicating the number of specimens from which the average was taken.

Tallac specimens can be readily separated from the Deeth, Nevada, series by their darker color. The two dorsal and the two lateral rows of brown spots, often confluent, are darker, and the blue patches on the bellies of the males have a stronger admixture of black. There



is a very pronounced brown preanal spot on the males. The three Carson City specimens are intermediate between the Tallac and Deeth series. The single specimen from Palisade, Nevada, does not differ from Deeth specimens.

*Habits.*—*Sceloporus graciosus* was observed at Tallac California, on low, sparsely forested moraines among *Artemisia tridentata*, *Arctostaphylos*, sp. and *Ceanothus*, sp. At Carson City, Palisade, and Deeth, Nevada, it was collected in growths of *Artemisia tridentata*. The stomachs of seven individuals collected at Tallac were examined, with the following results: three contained insects only, while four held insects and bits of plant leaves. The identified insects were small beetles, one ichneumon fly, and ants, beetles being the most abundant. Small larvae were found in two stomachs.

Two females collected at Tallac on June 16 held two and three large eggs, respectively. One shot on June 19 contained four eggs.

#### SCELOPORUS BISERIATUS Hallowell.

*Locality.*—Specimens were collected at Tallac, California, and at Reno, Carson City, Derby, Pyramid Lake Indian Agency, The Willows on Pyramid Lake, and Palisade, Nevada. It was seen at Tahoe City, Truckee, and Susanville, California. There is also one specimen from the Palmetto Mountains, southwest of Barrel Springs, Esmeralda County, Nevada, in the Stanford University collection. The species has been previously found at Pyramid Lake and at Quinn River Crossing, Virgin Valley, and in the vicinity of the Pine Forest Mountains, Humboldt County, Nevada.

*Status.*—I can detect no marked differences between the series from the above localities and typical specimens from southern California. The number of dorsal scales in a line from the interparietal plate to a point above the posterior surfaces of the thighs varies in 34 specimens from 38 to 48, average 42.7. The femoral pores range in 31 specimens from 13 to 23 on each thigh, average 16.9

The series is quite uniform in dorsal coloration. Young specimens have two rows of wavy dark-brown blotches, which generally fade and become indistinctly outlined in the adults. The space between the blue patches on the ventral surface of adults is usually clouded over with black pigment, except for a gray line separating them. The black pigment often extends over the ventral surface of the femurs. The single blue throat spot is more or less surrounded by black. The under surface of the tail is suffused with dark pigment which gives it a gray appearance. Females are less heavily pigmented ventrally than males. The young of both sexes resemble the adult females in ventral coloration.

*Habits.*—Throughout the Lahontan Basin covered by this expedition *Sceloporus biseriatus* proved to be a rock-dwelling form. It was



found on large granite boulders at Tallac, California, and on volcanic rocks in various parts of Nevada. Along the southwest shore of Pyramid Lake it was often accompanied by *S. magister*. Here and at Derby many dark-colored individuals basked on rocks in the sun. Some were almost pure black and conspicuous for a considerable distance. This color vanishes so rapidly after death that dark-colored individuals will assume the normal gray-brown tint in less than three hours.

Two females taken on May 24 at Reno, Nevada, held 7 and 10 large eggs, respectively. One taken at Tallac June 17 also contained eggs.

A young male shot at Reno May 24 had green aphids, three or four large ants, and other unidentified insect fragments in its stomach.

PHRYNOSOMA PLATYRHINOS Girard.

*Locality.*—This "Horned toad" was observed in considerable abundance along the lower Truckee River in Washoe County, Nevada, where Cope (1883) has previously recorded it. Specimens were secured from the following localities: Derby, Wadsworth, Pyramid Lake Indian Agency, southwestern shore of Pyramid Lake, between the Truckee River and The Willows. In addition, there are two specimens in the Stanford University collection from Esmeralda County, Nevada, collected by John D. Reed. Other localities within the basin where it has been observed are: Virginia City, Camp "12," and Quinn River Crossing, Amos, Thousand Creek Basin, and a number of points near the Pine Forest Mountains, Humboldt County, Nevada.

*Status and variation.*—The 28 specimens are typical of *Ph. platyrhinos*. There are 5 or 6 temporal horns, normally 1 occipital horn which may have 1 or 2 smaller supernumerary horns about its base. These may project directly backward, they may curve perceptibly upward, or rarely downward toward the back. There are 2 post-oculars, 3 large occipital plates, from 7 to 10 supralabials, the usual number being 8 or 9, and from 4 to 7 scales on the frontal angle between the canthal rows, average in 16 specimens, 5.5. The lower group of spines on the neck may be continuous with the row of weakly spinose gulars, or they may be abruptly separated from these, the most frequent condition in this series. The tympani may be exposed, partially exposed, or totally concealed by the integument, all these conditions prevailing in young and adults alike. A noticeable difference between the adult males and females is the broad, thickened base of the tail in the former.

The color (in alcohol) is as follows: Light gray dorsally, often suffused with brick red. Head generally with prominent black spots in young individuals, but faded and indistinct in adults. A pair of



dark blotches on the neck varying in intensity. From three to five irregular pairs of dark blotches or lines, usually black, on the back. Tail transversely banded with broad gray or reddish stripes with darker posterior borders. The whole dorsal pattern in some specimens is confused. Under surface white, immaculate, or irregularly spotted with black or slate.

*Habits.*—*Phrynosoma platyrhinos* was invariably found on the desert among low bushes, under which it ran when pursued. It seemed to rely upon this method of escape rather than that of hiding in the burrows of small mammals, a habit of many desert lizards. When hard pressed it crawled close to the stalk of a bush, around which it dodged with considerable alacrity. When it ran any great distance it often raised its tail above the level of the sand in a manner suggestive of the more agile *Callisaurus*.

Two individuals whose stomachs were opened had eaten a mass of insects, chiefly ants and beetles, besides a number of larvae which could not be identified.

A female captured during the last week in May contained 13 large eggs. Two others taken on June 2 held 9 and 13 eggs, respectively.

PHRYNOSOMA DOUGLASSII HERNANDESI (Girard).

*Locality.*—Five females of this species were collected at Deeth, Elko County, Nevada, on July 5, furnishing a new record for the Lahontan Basin. Yarrow (1882 b) lists as *Phrynosoma douglassii douglassii* two specimens from Saint Thomas, Arizona. Saint Thomas is in Lincoln County, Nevada, and the specimens, though now lost, probably represented this form.

*Status and variation.*—All these specimens have large, reddish head spines and occipitals projecting backward parallel with the temporals, except in one specimen in which the occipitals are raised at a slight angle. The parietal region of the head in the Nevada specimens is but little lower than the frontal region, while many specimens from Arizona and New Mexico show a decided depression of the former. Associated with this peculiarity, is a well marked antero-posterior curvature of the supraorbital ridge, which in most of the specimens examined from Arizona and New Mexico is quite straight. However, these characters are subject to considerable variation in all the specimens with which the Nevada series was compared. The five specimens have exposed tympani; the femoral pores range from 13 to 18, average 15.8.

The color in the preserved specimens is as follows: Head brown or reddish brown. Two large black nuchal patches and at least two more blotches on either side of the back each bounded posteriorly with an interrupted white line. Under surface dull white variously marked with slate.



I find that the Nevada specimens in question represent a race almost intermediate between true *Phrynosoma douglassii douglassii* and the southern form *hernandesi*. Still in their larger size and longer head spines they more closely approach the southern form. For this reason it seems best to follow Cope (1898) in the use of a trinomial. A small specimen in the United States National Museum collection, locality "Salt Lake to Carson's Pan, Utah," is exactly comparable to the two smaller specimens from Deeth, Nevada. The following table will give the size relations between *Phrynosoma douglassii douglassii*, *Phrynosoma douglassii hernandesi* from northern Nevada, and *Ph. douglassii hernandesi* from Arizona and New Mexico:

	<i>Ph. douglassii hernandesi</i> , Deeth, Elko County, Nevada, 5 females.	<i>Ph. douglassii douglassii</i> near Abert Lake, Lake County, Oregon.		<i>Ph. douglassii hernandesi</i> , Arizona and New Mexico.	
		Two Males.	Three females.	Five males.	One female (juv.).
Total length:					
Minimum.....	75	70	78.5	72.5	.....
Average.....	103.4	74	90.1	108.8	66.5
Maximum.....	123	78	97	130	.....
Tail length:					
Minimum.....	24	23.5	22	27	.....
Average.....	32.1	25.7	25.6	38.3	21
Maximum.....	39	28	28	46	.....
Width of head:					
Minimum.....	16	13	15.5	15.2	.....
Average.....	20.9	14	17.6	22.9	16.1
Maximum.....	25	15	18.7	28.5	.....
Snout to ear:					
Minimum.....	13	11	13	12.5	.....
Average.....	16.4	11.5	13.8	17	13
Maximum.....	19	12	14.5	20	.....
Length of occipital horns:					
Minimum.....	1.9	1.1	1.3	2	.....
Average.....	2.4	1.1	1.5	2.9	1.5
Maximum.....	3	1.2	1.8	4	.....
Length of foreleg:					
Minimum.....	22.8	19.1	22.5	21	.....
Average.....	27.7	20.1	24.8	31.3	22.5
Maximum.....	32	21.1	27	36.5	.....
Length of hindleg:					
Minimum.....	30	26	30	30	.....
Average.....	37.9	27.5	32	40.6	30.5
Maximum.....	45	29	35	47.5	.....
Longest toe:					
Minimum.....	12.6	.....	10.5	10	.....
Average.....	14.7	10	11.2	13.9	10
Maximum.....	16	.....	12	16.8	.....
Ratios to total length:					
Tail—					
Minimum.....	.285	.335	.281	.315	.....
Average.....	.311	.346	.284	.353	.315
Maximum.....	.326	.358	.289	.378	.....
Width of head—					
Minimum.....	.190	.185	.191	.197	.....
Average.....	.203	.188	.195	.211	.242
Maximum.....	.213	.192	.197	.227	.....
Snout to ear—					
Minimum.....	.151	.153	.148	.147	.....
Average.....	.160	.155	.154	.157	.195
Maximum.....	.173	.157	.165	.172	.....

GERRHONOTUS PALMERI (Stejneger).

*Locality.*—The Stanford University collection contains three specimens of *Gerrhonotus palmeri* from the vicinity of Fallen Leaf Lake,



California, collected by C. V. Burke. One was seen by us in a canyon near Tahoe City on June 27. This is apparently the first record of this species in the Lahontan Basin since it has previously been found only on the western slope of the Sierra Nevada Mountains (Van Denburgh, 1898).

*Status and variation.*—The specimens are very typical. The temporal scales are keeled, except in the smallest individual, in which the keels are obsolete. There are 16 rows of strongly keeled dorsal scales, a single interocular, a large azygous prefrontal, larger than either of the paired prefrontals and the dark ventral lines are absent in one, present between the ventral scales in another, and indefinite in the smaller specimen.

CNEMIDOPHORUS TIGRIS Baird and Girard.

*Locality.*—*Cnemidophorus tigris* was an abundant species at Derby, Wadsworth, Pyramid Lake Indian Agency, and along Pyramid Lake to The Willows. It was also taken at Carson City and was seen at Winnemucca, in Humboldt County, and Palisade, Eureka County, Nevada. It has been taken before in the Lahontan Basin near Wadsworth, Washoe County; Carlin Elko County and Pine Forest Mountains (vicinity of Big Creek Ranch), Humboldt County, Nevada.

*Status and variation.*—The 43 specimens obtained are identical with specimens in the Stanford University collection from southern Idaho (vicinity of Blue Lake, Lincoln County, and Conant, Cassia County).

The color variations in this species have been described by Stejneger (1893, p. 199), and more recently by Meek (1905, p. 13). Specimens from the Lahontan Basin appear to vary in the same manner as those from southern Nevada and California. The abundance of black pigment on the throat and breast as noted by Stejneger is not dependent upon size or sex. The dorsum likewise has a variable color pattern.

*Habits.*—This species was found most abundantly at Pyramid Lake among the low-growing desert bushes. At Carson City a number of specimens were taken in a growth of *Artemisia tridentata*. In the eastern part of the basin, it was encountered but twice, at Winnemucca and Palisade where it was seen in growths of *Artemisia tridentata*.

When frightened, *C. tigris* seeks the shelter of a bush and will often hide in the holes of *Citellus mollis* and other mammals. Occasionally it was observed to climb into bushes.

The stomachs of six individuals taken on May 31 were filled with large white larvae and pieces of gravel. A single spider was also found in one specimen. The insect prey of this species, according to the observations of Professor Snyder, is picked up by means of the long slender tongue.



## CHIONACTIS ISOZONUS (Cope).

*Locality*.—A single specimen of this beautiful little snake was presented to the Stanford University collection by E. J. Newcomer. It was found beneath a rock on a rise above the southwest shore of Pyramid Lake, Nevada, about the 1st of June, 1911. This is, to my knowledge, the first definite record for Nevada, although Yarrow (1875, p. 537) cites two specimens without precise locality, which were procured in the State in 1871. The capture of *Chionactis isozonus* at Pyramid Lake, Nevada, therefore establishes a new northern station considerably beyond any previous one.

*Description*.—Cephalic plates normal; anterior and posterior nasals united; 1 loreal; 1 preocular, 2 postoculars; temporals 1 followed by 2; supralabials 7, third and fourth in contact with the eye; infralabials 7, the fourth the largest; post geneials less than one-third the length of the anterior geneials. Dorsal scales smooth, in 15 rows. Anal plate divided. Ventrals, 164. Caudals, 49. Total length, 215 mm.; tail length, 44 mm.

The following color notes pertain to the specimen several days after it had been placed in formalin: Head, dorsally, dark brown with a pink suffusion, darkest on the parietal and posterior part of the frontoparietal and supraocular plates. Dorsal part of body with 27 transverse bands of a leaden blue color, 3 or 4 scales wide, which do not appear on the ventral surface, but gradually fade out on the sides. Tail with 9 bands of the same color which form almost complete annuli, paler ventrally. Spaces between the dorsal bands dull rose pink, 3 scales wide. Ventral surface light olive green, a peculiar shade difficult to describe.

## CHARINA BOTTAE (Blainville).

*Locality*.—This interesting little boa was not seen by us in this region but there is a specimen in the Stanford University collection from the vicinity of Fallen Leaf Lake, Eldorado County, California, collected by C. V. Burke. *Charina bottae* has been recorded from the Lahontan Basin at Eagle Lake, Lassen County, California, and at the "Great Bend of the Truckee River (Wadsworth) and the Humboldt River, Nevada."

*Description*.—Internasals 2; prefrontals 5; 1 large frontal; 1 large parietal plate, smaller than frontal, with 6 smaller plates touching its posterior and posterolateral edge; preoculars 1-1; postoculars 4-4; supraoculars 1-1; suboculars 0-1; labials in contact with eye 1-1; loreals 1-1; scale rows 45 (maximum number); ventrals 205; subcaudals, 38. Color (from preserved specimens), olive-brown, dorsally; pale lemon yellow ventrally.



PITUOPHIS CATENIFER DESERTICOLA Stejneger.

*Locality.*—The desert gopher snake or bull snake was found at two points in the Lahontan Basin. The two specimens are from Pyramid Lake and Carson City, Nevada. There are also two young individuals in the Stanford University collection from Esmeralda County, Nevada. It has been found previously in this region at Winnemucca and in the Pine Forest Mountains, Humboldt County, Nevada.

*Status and variation.*—These specimens do not differ in squamation from individuals of *Pituophis catenifer* taken in California west of the Sierra Nevada divide. The maximum number of dorsal scale rows is 31 in two individuals and 33 in the others. The number of unkeeled lateral scale rows, counted on each side at a point one tail length back of the posterior edge of the parietal plate, is as follows: 7–8 (Carson City specimen), 8–9 (Pyramid Lake specimen), 9–10 (Esmeralda County specimens).

In color, however, these specimens differ considerably from true *catenifer*. The ground color, especially along the sides, has less of the brown suffusion characteristic of *catenifer*, and the resulting pattern is much more striking. In this respect both the young and the adults agree.

*Habits.*—The gopher snake from Pyramid Lake was captured on top of a rat's nest (*Neotoma*, sp.) where it lay coiled. Its stomach contained a ground squirrel, *Citellus mollis*, which had recently been eaten. The Carson City specimen was captured under a small sage-bush not far from a river bank. It contained large eggs (July 9).

BASCANION CONSTRICTOR VETUSTUM Baird and Girard.

*Locality.*—Two male specimens of this snake from Holbrook, Douglas County, Nevada, are in the Stanford University collection. The species has been recorded from the Lahontan Basin at Honey Lake, California, and near Wadsworth, Nevada.

Variation.	Male.	
Supralabials.....	7-8	7-7
Infralabials.....	8-8	8-8
Preoculars.....	2-4	2-3
Postoculars.....	2-2	2-3
Temporals.....	1-1	2-2
Ventrals.....	1-1	2-2
Subcaudals.....	172	174
Total length.....mm..	1 93	91
Tail length.....mm..	763	501
	207	132.5

<sup>1</sup> Eight of the subcaudals undivided.

BASCANION FLAGELLUM FRENATUM Stejneger.

*Locality.*—A single specimen of the “red racer” was secured on June 4, at Winnemucca Lake, Washoe County, Nevada. This is



apparently the first time the species has been observed in the Lahontan Basin. All previous records for the State are from southern Nevada.

*Description*.—This specimen has dark bars on the neck and spotted throat typical of *frenatum*. The supralabials are 8–8, the infralabials 10–10, preoculars 2–2, postoculars 2–2, temporals 2–3, the maximum dorsal scale rows 17, ventrals 188 (tail injured).

*Habits*.—This snake was shot at the edge of a slough as it was attempting to swallow a *Callisaurus v. myurus* which was still struggling in its jaws.

#### BASCANION TAENIATUM (Hallowell).

*Locality*.—*Bascanion taeniatum* was found at Carson City and Pyramid Lake, Nevada. It is quite generally distributed throughout the Lahontan Basin as is shown by the following published records: Carson City, Quinn River Crossing, and Pine Forest Mountains, Humboldt County, Nevada.

*Description and variation*.—The three specimens show but slight variation in scale characters. The supralabials are 8–8, infralabials 10–10, with one exception of 9–10, preoculars and postoculars both 2–2, temporals 2 followed by 2 on each side, the maximum number of dorsal scale rows 15, ventrals, 198, 207, 210, subcaudals 122 and 134 in two specimens. Total length, 1,127 mm. and 1,326 mm. (2 specimens); tail length 334 mm. and 416 mm. (2 specimens).

The color pattern is very constant, agreeing with the descriptions given by Cope (1898) and Van Denburgh (1897).

*Habits*.—At Carson City the “striped racer” was collected in rather heavy growths of *Artemisia tridentata*; at Pyramid Lake on the more open desert among low-growing bushes.

#### THAMNOPHIS SIRTALIS PARIETALIS (Say).

*Locality*.—This garter snake was secured in the vicinity of Tallac, on Lake Tahoe, and at Susanville, Lassen County, California. It has been previously captured within the basin at Lake Tahoe, Wadsworth, and the Truckee River, Nevada.

*Status and variation*.—The six specimens obtained vary in squamation, as the following table shows:

	Sex.	
	Males.	Females.
Preoculars, 1-1.....	2	4
Postoculars:		
3-3.....	2	2
3-4.....		1
4-4.....		1
Temporals, 1+2, 1+2.....	2	4



	Sex.	
	Males.	Females.
Supralabials:		
7-7.....	1	4
7-8.....	1	
Infralabials:		
10-10.....	2	3
10-11.....		1
Dorsal scales, 19-17.....	2	4
Ventrals:		
Minimum.....	168	159
Average.....	<sup>1</sup> 2	<sup>1</sup> 4
Maximum.....	169	163.5
	170	170
Subcaudals:		
Minimum.....		75
Average.....	<sup>1</sup> 1	<sup>1</sup> 2
Maximum.....	91	75.5
		76
Total length:		
Minimum.....		575
Average.....	<sup>1</sup> 1	<sup>1</sup> 2
Maximum.....	536	612.5
		650
Tail length:		
Minimum.....		136
Average.....	<sup>1</sup> 1	<sup>1</sup> 2
Maximum.....	141	147.5
		159
Average ratio tail to total length.....	<sup>1</sup> 1	<sup>1</sup> 2
	.263	.240

<sup>1</sup> Indicating the number of specimens from which the average was taken.

The color pattern of these specimens is quite typical. The dorsal spots are fused and the red interspaces are restricted to areas on the skin about the length of one scale. The red pigment often encroaches upon the edges of adjacent scales. These specimens closely resemble many in the Stanford University collection from northern California and western Oregon.

*Habits*.—With one exception, *parietalis* was found near the margin of streams. The one other individual was found on a road several hundred feet from water. From our observations this species was not nearly so abundant as *Thamnophis ordinoidis elegans*.

THAMNOPHIS ORDINOIDIS ELEGANS (Baird and Girard).

*Locality*.—Specimens of this form were collected at the following localities in California: Tahoe City, Lake Tahoe (3); vicinity of Tallac, Lake Tahoe (22); near Fallen Leaf Lake, Lake Tahoe (4); (C. V. Burke collector) Glen Alpine, near Lake Tahoe (1). Also the following in Nevada: Wadsworth (1); Pyramid Lake Indian Agency (1); Winnemucca Lake, Washoe County (1); near Carson City (2); vicinity of Palisade, Eureka County (11); Deeth, Elko County (1).

This species has been observed before in the basin by previous writers at Camps “10” and “12,” Lake Tahoe, Nevada, and in Humboldt County, Nevada, at Quinn River Crossing, Pine Forest Mountains, Virgin Valley, and Thousand Creek Flat.

*Status and variation*.—This fine series of specimens which reveals considerable variation in squamation and color is unquestionably



referable to *Thamnophis ordinoidis elegans* (Baird and Girard) as defined by Ruthven (1908). The specimens have been grouped into three series and their more pronounced variations are here tabulated.

Locality.	Sex.	Pre-oculars.			Post-oculars.			Temporals.				Supra-labials.			Infralabials.			
		1-1	1-2	2-2	2-3	3-3	3-4	$\frac{1+2}{1+2}$	$\frac{1+2}{1+3}$	$\frac{1+3}{1+3}$	$\frac{1+3}{1+4}$	8-8	8-9	9-9	9-10	10-10	10-11	11-11
<i>Tahoe Series.</i> —Tahoe City, vicinity of Tallac, near Fallen Leaf Lake and Glen Alpine, California.....	Males....	18	3	...	2	18	1	15	1	4	1	17	4	...	2	17	2	.....
	Females	8	...	1	1	7	1	6	2	1	.....	7	1	1	1	6	2	.....
<i>Carson Series.</i> —Carson, Wadsworth, Pyramid Lake Indian Agency, and Winnemucca Lake, Nevada.....	Males....	1	...	1	...	2	...	1	1	...	...	2	...	...	...	2	...	...
	Females	2	...	1	...	3	...	2	1	...	...	3	...	...	...	2	...	1
<i>Palisade Series.</i> —Pine Creek, near Palisade, Eureka County, and Deeth, Elko County, Nevada.....	Males....	2	...	...	...	2	...	1	...	1	...	2	...	...	...	2	...	...
	Females	10	...	...	2	8	...	6	3	1	...	10	...	...	...	8	2	...
Total, 47 specimens.....	Males....	21	3	1	2	22	1	17	2	5	1	21	4	...	2	21	2	.....
	Females	20	...	2	3	18	1	14	6	2	.....	20	1	1	1	16	4	1

Locality.	Sex.	Dorsal scales.						Ventrals.			Subcaudals.		Total length.			Tail length.			
		19-17	19-21-19-17	21-19-17-15	21-19-17	21-23-21-19-17	23-21-19-17	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.
<i>Tahoe Series.</i> — Tahoe City, vicinity of Tal- lac, near Fal- len Leaf Lake and Glen Al- pine, Cali- fornia.....	Males...	3	12	...	5	....	1	161	$\left\{ \begin{smallmatrix} 121 \\ 169.3 \end{smallmatrix} \right\}$	177	76	$\left\{ \begin{smallmatrix} 114 \\ 84.2 \end{smallmatrix} \right\}$	95	224	$\left\{ \begin{smallmatrix} 114 \\ 409.8 \end{smallmatrix} \right\}$	652	52	$\left\{ \begin{smallmatrix} 114 \\ 103.8 \end{smallmatrix} \right\}$	168
	Females	1	5	...	2	1	....	165	$\left\{ \begin{smallmatrix} 19 \\ 168.1 \end{smallmatrix} \right\}$	177	78	$\left\{ \begin{smallmatrix} 13 \\ 81.3 \end{smallmatrix} \right\}$	86	233	$\left\{ \begin{smallmatrix} 13 \\ 408 \end{smallmatrix} \right\}$	672	40	$\left\{ \begin{smallmatrix} 13 \\ 90.1 \end{smallmatrix} \right\}$	140
<i>Carson Series.</i> — Carson, Wads- worth, Pyra- mid Lake In- dian Agency, and Winne- mucca Lake, Nevada.....	Males....	..	2	...	...	...	...	$\left\{ \begin{smallmatrix} 12 \\ 175 \end{smallmatrix} \right\}$	...	95	$\left\{ \begin{smallmatrix} 12 \\ 95.5 \end{smallmatrix} \right\}$	96	639	$\left\{ \begin{smallmatrix} 12 \\ 661.5 \end{smallmatrix} \right\}$	684	148	$\left\{ \begin{smallmatrix} 12 \\ 167.5 \end{smallmatrix} \right\}$	187	
	Females	..	3	...	...	...	...	176	$\left\{ \begin{smallmatrix} 13 \\ 173.6 \end{smallmatrix} \right\}$	178	72	$\left\{ \begin{smallmatrix} 12 \\ 74 \end{smallmatrix} \right\}$	76	664	$\left\{ \begin{smallmatrix} 12 \\ 694.5 \end{smallmatrix} \right\}$	725	149	$\left\{ \begin{smallmatrix} 12 \\ 156 \end{smallmatrix} \right\}$	163
<i>Palisade Series.</i> — Pine Creek, near Palis- ade, Eureka County, and Deeth, Elko County, Ne- vada.....	Males....	..	...	...	2	...	...	173	$\left\{ \begin{smallmatrix} 12 \\ 175.5 \end{smallmatrix} \right\}$	178	83	$\left\{ \begin{smallmatrix} 12 \\ 85 \end{smallmatrix} \right\}$	87	429	$\left\{ \begin{smallmatrix} 12 \\ 520 \end{smallmatrix} \right\}$	611	108	$\left\{ \begin{smallmatrix} 12 \\ 132.5 \end{smallmatrix} \right\}$	157
	Females	..	2	1	7	...	...	166	$\left\{ \begin{smallmatrix} 10 \\ 172.3 \end{smallmatrix} \right\}$	176	73	$\left\{ \begin{smallmatrix} 17 \\ 78.7 \end{smallmatrix} \right\}$	88	283	$\left\{ \begin{smallmatrix} 17 \\ 492.1 \end{smallmatrix} \right\}$	791	65	$\left\{ \begin{smallmatrix} 17 \\ 117.1 \end{smallmatrix} \right\}$	184
Total, 47 specimens.	Males...	3	14	...	7	....	1	161	173.2	178	76	88.2	96	224	530.4	684	52	134.6	187
	Females	1	10	1	9	1	....	165	171.3	178	72	78	88	233	531.5	791	40	121	184

<sup>1</sup> Indicating the number of specimens from which the average was taken.

Normally there is one preocular scale on each side of the head, but three individuals in the Tahoe series have the asymmetrical number



of 1-2, while one in the Tahoe series and two in the Carson series have the increased number of two on each side. The postoculars usually number three on each side with asymmetrical variations of 2-3 and 3-4, the former the more prevalent. The variations tend toward a reduced number of postoculars. There are usually one anterior and two posterior temporals on each side, but the variants show a definite tendency to increase the posterior number to three and even four. The supralabials are 8-8 with variations of 8-9 and more rarely 9-9. Ruthven (1908 p. 144) found that the variations approach a smaller number than eight and indeed noted only one individual out of 218 with the asymmetrical number of 8-9. There are usually ten infralabials, although ten specimens have a larger or smaller number. The reduced number of 9-10 occurs three times, the asymmetrically increased number of 10-11, six times and the increased number of 11-11, once. Ruthven (1908, p. 144) recorded the reduced number of 9 as more frequent than the increased number of 11. In the number of dorsal scale rows, the series are divided. Individuals in the Tahoe and Carson series have the formula, 19-21-19-17 more frequently, while 21-19-17 is most prevalent in the Palisade series. Variants with the extremes 19-17 and 23-21-19-17 occur in the Tahoe series while the range in the Palisade series is 21-19-17-15 to 21-19-17. The snakes in the Tahoe series have a smaller average number of ventral plates, 169.3 in the males against 175 and 175.5 in the males of the Carson and Palisade series. The averages of total length and tail length are considerably lower in the Tahoe series than in the Carson and Palisade series. The ratios of tail length to total length for the three series are: males, average, 25.3 per cent; females, average, 22.7 per cent.

When the average number of variations per individual specimen in the preocular, postocular, temporal, supralabial, and infralabial scales is calculated for each series, it is evident that the Tahoe series shows the greatest amount of variation, averaging 1.03 deviations from the normal per individual. The Carson series is second with an average of one variation, the Palisade series third with an average of 0.75 variations per individual. The amount of material is too small to render possible far-reaching conclusions, but it is interesting to note that the greatest variation occurs in the mountain inhabiting individuals, the least in desert inhabiting ones.

A manifest diversity of coloration is evident when the three series are compared. Twenty-four specimens in the Tahoe series have three distinct stripes, the median dorsal one, dull white or yellow in color, occupying the median and varying amounts of the proximal half of the row to either side of it, the lateral ones, gray in color, involving the second and all or a part of the third row on each side of the body.



Between the stripes, on the dorsal surface, the color is solid black broken by light spots which show between the scales when the skin is stretched. The dorsal surface of the head is olive brown, lightest on the snout, and often blending into the black dorsal color posteriorly. The throat is dull white or light yellow, the belly variously mottled with slate, often very faintly so. Some of the supralabials are always edged with black. Seventeen specimens with this dark color pattern have a dorsal scale formula of 19-21-19-17, four 19-17, and three 21-19-17. Only one specimen shows a variation in the preocular scales with the asymmetrical number of 1-2. Two specimens have 3-4 postoculars, two have 8-9, and one 9-9 supralabials. Many of these specimens closely agree with the description of Baird and Girard's type from Eldorado County, California.

Six samples of this species in the Tahoe series (two from Tahoe City, three from Fallen Leaf Lake, and one from Glen Alpine) are of a different type of coloration. The median dorsal stripe is absent except for an indication just back of the head, but in one specimen even this indication has disappeared. In three specimens the lateral lines are present and normal, in two they are absent, in one they are but faintly indicated. The dorsal color ranges from olive brown, through dark olive brown to a color which approximates black. One specimen has a row of black spots along the lateral lines. The head above is usually dark olive brown, but in one individual it is lighter olive, while in another it is almost black. The throat is light yellow except in one individual in which the color is gray white. The belly in five individuals is blue gray marked with slate, or slate colored, light green in the sixth. The dorsal scale formula in four specimens is 21-19-17, in one 21-23-21-19-17, and in another 23-21-19-17. The preoculars vary in three individuals, being 1-2 in two and 2-2 in the third. There are variations of 8-9 supralabials and 10-11 infralabials in three specimens. One specimen has the squamation of *Thanmophis vagrans biscutata* (Cope) as defined by Van Denburgh (1897, p. 212); (preoculars 2-2, dorsal scale rows 21-23-21-19-17). Another specimen has 1-2 preoculars and 23-21-19-17 dorsal scale rows. The examination of a large series of specimens in the Stanford University collection from various parts of California and the Northwest firmly convinces me that *biscutata* does not deserve recognition.

The Carson series resembles the six lighter colored specimens in the Tahoe series, but is collectively still lighter. The median dorsal stripe is absent in all but one specimen except for a mere suggestion just back of the head. The lateral stripes are present in two and absent in three specimens. The dorsal surface is lighter and except in one individual there is a more or less definite row of dark spots on each side near the lateral line. The head is olive or olive brown,



throat light yellow, yellow or dull white, belly green with slate markings, light yellow, gray, gray brown, or brown with a green tinge.

The Palisade series shows little diversity in color. The median dorsal stripe is present in all specimens and is gray-white in color. The lateral stripes are darker gray than the dorsal stripe. The dorsal color is olive or olive brown with one or two rows of black spots on either side of the median stripe which vary considerable in size, the upper series often encroaching upon the median stripe. The head is olive or olive brown, the throat light yellow or gray-white, the belly gray or blue gray sometimes with a green tinge and often mottled heavily with slate. Except in the uniform presence of the median dorsal stripe, this series does not differ from the Carson series.

*Habits.*—At Tallac, California, garter snakes of this species were seen frequently along small streams where they were catching minnows (*Agosia* and *Richardsonius*, sp.) which were running up from the lake to spawn. Although a frog (*Rana pipiens*) was taken from the stomach of one snake, practically all of those dissected contained minnows. A dozen or more had collected at the foot of a dam on the Humboldt River, 9 miles below Palisade, Nevada, where they were fairly gorging themselves upon the fish which were running in great numbers at that time. A specimen secured at Pine Creek near Palisade was attempting to swallow a Cottoid (*Cottus beldingi*) head first, but was experiencing some difficulty on account of the large spine-armed head of its victim. From field observations and stomach dissections, it is clear that the smaller minnows form the chief food of *elegans* in the Lahontan Basin during the greater part of June and July. Never did we observe this garter snake far from water.

Four females containing large eggs were obtained at the following places: one from Pyramid Lake Indian Agency, Nevada, May 25–27; one from Tahoe City, California, June 27; and two from the vicinity of Palisade, Nevada, July 3 and 4. Five young specimens in the collection from the vicinity of Tallac (June 10–24) had very prominent scars marking the attachment of the yolk sac which suggested that they were of recent birth. None of the other adult females, however, contained large eggs.

#### CROTALUS OREGONUS Holbrook.

*Locality.*—Only one specimen of this species was secured, although it was reported to be abundant in several of the localities visited. The one individual came from the hills east of Pyramid Lake Indian Agency, Nevada, on May 28. It has been recorded previously from the vicinity of Pyramid Lake and the Truckee River, Nevada. Speci-



mens collected by Dr. W. P. Taylor and myself at Quinn River Crossing and the vicinity of Pine Forest Mountains, and others taken by Miss Alexander and Miss Kellogg in Virgin Valley, Humboldt County (see Taylor, 1912, pp. 355-356), probably represent the same form which inhabits the Pyramid Lake region.

*Description and status.*—One anterior and one posterior nasal, internasals irregular in six rows; preoculars 2-2; scales in contact with eye between preoculars and supraoculars 5-6; supraoculars 1-1; a large scale in front of the supraocular on each side; scale rows between supraocular plates 8; supralabials 15-17; infralabials 16-17; dorsal scale rows just back of the head 27; maximum number on trunk 25, first row on each side unkeeled, second with obsolete keels; ventrals 180; subcaudals 25, the distal two divided; total length (exclusive of rattle), 968; tail length (without rattle), 71.

*Color* (alcoholic specimen).—Above light brown with numerous brownish black ocelli surrounding a darker ground color. On the posterior part of the body these ocelli become constricted to form transverse bands, those near the tip of the tail becoming irregular. Ventral surface dull white with a gray suffusion, generally heaviest on the outer anterior edge of each ventral scale and more pronounced toward the posterior part of the body.

I follow Van Denburgh in referring the *Crotalus* of this region to *oregonus* Holbrook. (See Van Denburgh, 1912.)

*Habits.*—This individual was found among volcanic boulders on a hillside. Its stomach contained an adult ground squirrel, *Citellus mollis*.

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