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WITH A SYNOPSIS OF THE GENUS

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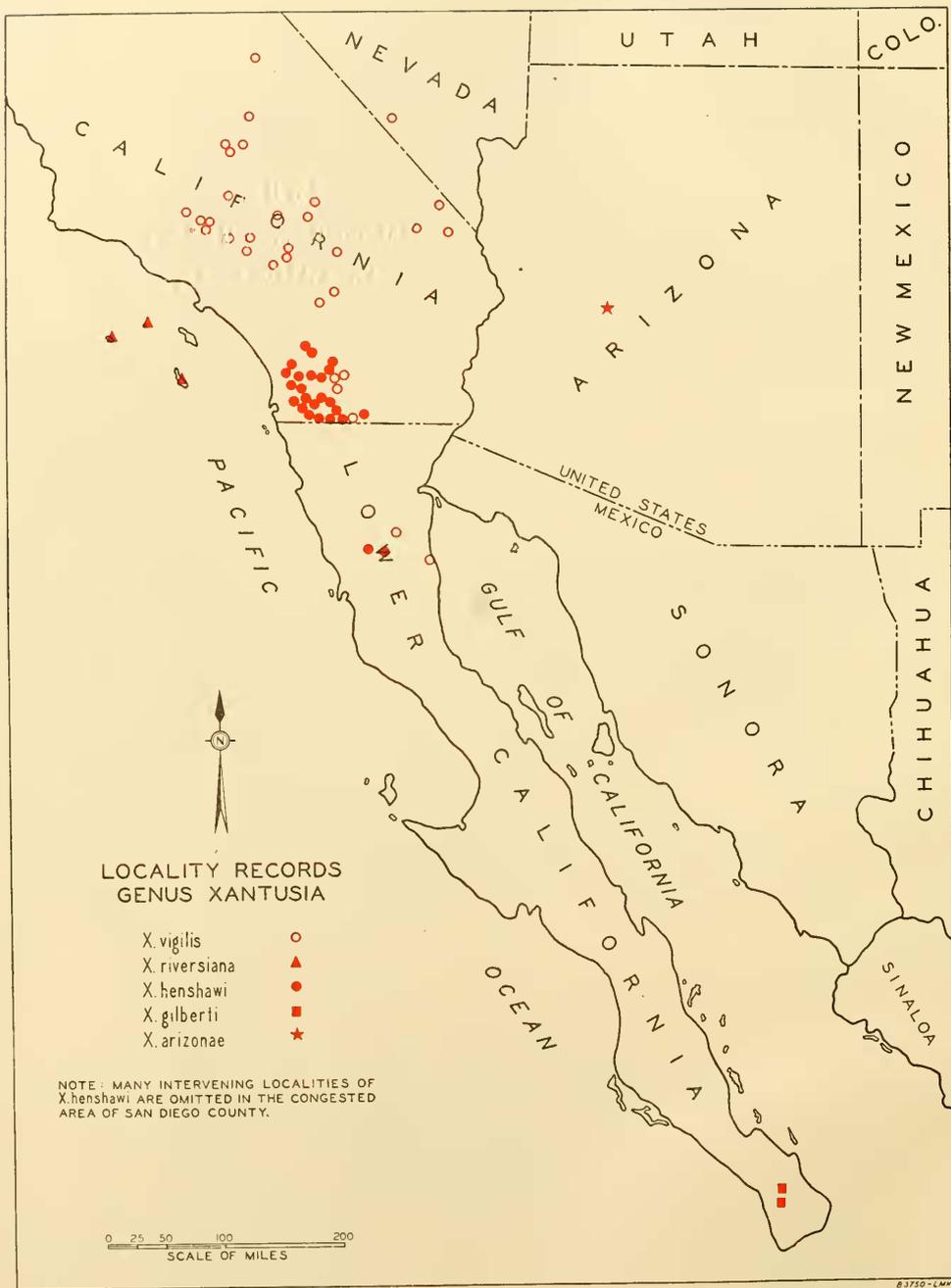
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SAN DIEGO, CALIFORNIA

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A NEW SPECIES OF XANTUSIA FROM ARIZONA, WITH A SYNOPSIS OF THE GENUS

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On August 21st, 1931, my son Philip and I were driving toward Phoenix, Arizona, from Prescott on the return trip from the Hopi Snake Dance at Mishongnovi. On the up-grade south of Yarnell, we were both struck with the similarity of the granite-boulder and chaparral covered hillside to our own San Diego County foothills. Noting several likely looking flakes on the rocks, we decided to look for night lizards of the genus *Xantusia*, using the technique and prying bars especially developed in the pursuit of *X. henshawi* in Southern California. We had hardly reached the third or fourth flake when our anticipations were rewarded, for there was a *Xantusia*, quite evidently different from any with which we were familiar. Here was a thrill such as the collector always anticipates, but (in this settled country, at least) all too seldom achieves.

The novelty of this form, the first *Xantusia* to be reported from Arizona, has now been verified by detailed comparisons with the four known species of the genus, and I therefore describe it as

***Xantusia arizonae*, sp. nov.**

ARIZONA NIGHT LIZARD

Plate 1, figs. 1, 2.

Type.—No. 5433, adult female, in the collection of LMK. Collected one mile south of Yarnell, Yavapai County, Arizona, elevation 4940 ft., Aug. 21, 1931, by P. M. and L. M. Klauber. Paratypes, 5, Nos. 5434-8, collected at the same time and place. Also 5451-2 born (dead) of the type in captivity, and 5450 and 5453, unborn embryos removed from 5436 and 5434 respectively. Total specimens, including embryos, 10.

Diagnosis.—A species of *Xantusia* resembling *vigilis* in lepidosis and, partly, in color and pattern, but differing from that species in bodily form, in which characteristic it tends toward *henshawi*, having relatively longer limbs and more depressed head and body than *vigilis*.

Description of the Type.—The limbs are moderately short, with head and body depressed. The tail is subconical. The upper surface of the head is flat,

somewhat concave between the eyes, and curving downward to the snout. There are three gular and a pair of dorsolateral folds. The ear opening is large and prominent. The eye is large and with a vertical pupil. There are no eyelids. The nostril is at the lower edge of the suture between the internasal and postnasal. The rostral is broad, low and rounded, and is followed by median dorsal head scales in the following order: A pair of small internasals, a large hexagonal frontonasal, a pair of prefrontals, a large hexagonal frontal, a pair of frontoparietals, a large hexagonal interparietal (narrower anteriorly), a pair of subquadrate occipitals and, finally, two small triangular interoccipitals. All five of the paired groups are in contact on the median line. A pair of parietals completes the series of principal head plates. On the sides each frontonasal contacts a postnasal and preloreal; the prefrontals touch the loreals and first superciliary, while the frontal is bordered by the second superciliary on each side. The frontoparietals outwardly contact the four posterior superciliaries. A row of somewhat enlarged supratemporals engages the outer edges of the parietals and occipitals. The interparietal and the two occipitals are approximately equal in area; the frontal, frontoparietals and parietals comprise a second group of subequal areas.

On the sides of the head, following the postnasals, there is a pair of loreals (the anterior smaller), and then two small preoculars. Behind the eye the postoculars are not enlarged. The ear opening is weakly denticulated anteriorly.

There are eight enlarged supralabials on the right and seven on the left. The first four are larger and subequal; the fourth to sixth engage the orbit.

Below, there are six infralabials on each side. The mental is triangular, with an extra infralabial split off on the left. There are three enlarged sublabials (postmentals) on each side, the first pair in contact, the second separated by a single small scale, and the third by five scale rows. The scales between the sublabials decrease in size posteriorly until a minimum is reached at the first gular fold, which joins the ear openings. The other two folds are at the neck; there are five enlarged central scales on the posterior fold.

The back, sides and upper limb surfaces are covered with small circular scales arranged in rather even rows, there being an average of 46 such scales per row transversely at mid-body. The undersurface is covered with enlarged square scales, except that the outer rows are semicircular. There are 33 such rows longitudinally (including the enlarged preanals) and twelve counting transversely. The anterior surfaces of the limbs likewise have enlarged scales.

The tail is subconical and is sheathed with rings of quadrate scales, there being approximately 68 such rings. The tail may be original and complete but this is not certain. Femoral pores seem absent in the type; they number 9 to 12 in three paratypes.

The measurements of the type are as follows (all figures indicate millimeters): Length over all 119; length of body (rostral to anus) 54; length of tail 65. Shielded part of head 11; rostral to first gular fold 11, to second gular fold 15, to third gular fold 18; width of head 8.4, depth of head 4.7. Rostral to

anterior edge of ear 10.5. Diameter of eye 1.9. Length of fore limb 16.5, of hind limb 24; from base to fifth to tip of fourth toe 9. Forelimb spread 40, hind limb spread 56.¹

The head above is drab with a conspicuous dark diamond centering on the interparietal. The outer edges of the central head plates are definitely lighter. There are a few irregular dark spots on the nose. There is a conspicuous dark streak on each side of the head, from the nasal aperture across the orbit, and engaging the second row of blotches on either side of the mid-dorsal row. Below these lines, on the sides of the head, are other black dots, some of which engage the lower labials and chin shields.

The ground color of the body in life is citrine-drab (Ridgway, 1912, pl. 40) irregularly mottled with sub-elliptical black spots which are somewhat larger and denser on the sides than on the back. These spots average about 2.0 by 0.8 mm. To a slight extent the dorsal blotches have a regularity suggesting longitudinal rows, of which there are seven between dorsolateral folds.

The tail and legs are similarly spotted; the ground color of the tail is somewhat lighter and the spots less numerous toward the tip. The ventral surface is immaculate, except on the edges, and somewhat transparent.

Upon preservation in alcohol the colors become lighter, but not conspicuously so.

The iris is golden, the pupil black and vertical.

Variations in Paratypes.—The following conclusions are drawn from the type and five adult paratypes, the juveniles being too imperfect to permit accurate scale counts.

The longitudinal scale rows number twelve in all cases. The transverse rows vary from 32 to 34 (including the preanals), averaging 32.8. The average of the rows of small scales across the back at mid-body varies from 45 to 47, the grand average being 46.3. The tail rows vary from 68 to 88, but it is difficult to tell whether the tails are complete and original. The supralabials vary from seven to nine, being usually eight; the infralabials are normally seven, less often six. The superciliaries vary from four to eight. The scales between the sublabials are 1+4 or 1+5. The preoculars are two or three. There are no important abnormalities in the plates on the top of the head in any of the adult paratypes. The small interoccipitals are entire in one specimen. The enlarged scales on the postgular fold vary from four to eight. The femoral pores (evident in the males only?) vary from nine to twelve, averaging 10.7. The number of rings on the fourth toe averages 25.

The adults are quite uniform in size, form and markings. Regenerated tails are somewhat lighter. The most perfect juvenile (born dead) measures 62 mm. over all, with a body length of 27 mm. The spotting of the adults is less evident in this juvenile.

¹ These two measurements taken while the specimen was pliable.

Habits and Habitat.—The country where these lizards were found is a rocky hillside with large granite boulders interspersed with heavy chaparral (Plate 1, figure 3). Some cactus is also present. In many characteristics the terrain closely resembles the San Diegan Upper Sonoran at about 3500 ft. altitude.

The granite boulders flake as they do in San Diego County. However, the specimens of *Xantusia* were found under slabs, rather than thin flakes, and on the shady sides of the boulders. Reasoning from the analogous habits of *Xantusia henshawi* (see Copeia No. 152, p. 115) it is probable that in the spring and autumn, when the sun's warmth would be more appreciated than in the oppressive summer, the lizards should be found under the thin outer flakes, rather than in the deeper cracks, and would thus be much easier to discover.

Obviously not much may be said concerning habits on such short acquaintance. The method of capture is the same as with *henshawi*; the slabs and flakes are pried off the parent boulder and the lizards are caught with the fingers while still light-struck. At the time of collection the temperature was about 85 degrees F., in consequence of which the rocks were quite warm, and, as above suggested, most of the lizards had no doubt taken refuge in the deeper crevices. Altogether we hunted for about three hours, securing six adult specimens and losing one.

Arizonae is somewhat easier to catch than *henshawi*, for it does not move so quickly when uncovered. As is the case with the latter, it clings to the parent boulder and not to the slab pried off. It bites if not caught by the head. It curls around the finger as does *henshawi* and, in addition, twists laterally, a motion which the California form does not have. When uncovered, *arizonae* does not change color conspicuously as does *henshawi*, but seems to become slightly lighter in ground color.

The reptilian associates of the new lizard, which we collected in the same locality, are *Masticophis taeniatus taeniatus* (the only snake taken here), *Crotaphytus collaris*, *Uta ornata symmetrica*, *Sceloporus consobrinus*, *Cnemidophorus sexlineatus perplexus*, and *Holbrookia texana*. The *Uta* and *Sceloporus* were quite common among the rocks and were found under slabs and flakes while in search of *Xantusia*; they were in fact more frequently discovered than the night lizards. Three of the *Xantusia* were successfully transported alive across the desert to San Diego, by keeping them in a jar wrapped in cloths continually moistened.

From the specimens taken it is evident that this species is ovovivi-

parous, giving birth to one or two young alive about September 1st.

The food, as shown by two stomachs examined, included the following: Weevils (*Curculionidae*), beetles (*Coccinellidae*), ants (*Formicidae*) and bugs (*Hemiptera*). (Identifications by W. S. Wright).

Discussion.—*Xantusia arizonae* is the first of the genus to be recorded from east of the Colorado River. Hitherto the known range has been restricted to the Californias, including some of the coastal islands, and the southern tip of Nevada, where *vigilis* was collected by the Death Valley Expedition.

The new species is undoubtedly more closely related to *vigilis* than to the other species. This is to be expected from geographical considerations and is indicated by similarity of scutellation and a certain resemblance in the markings.

Some specimens of *vigilis* are decidedly reminiscent of the bolder pattern of *arizonae*, and there is a likeness in the head marks. But the difference in habitat has definitely differentiated the yucca-branch, desert inhabiting *vigilis*, (although this habitat is not universal with the species) from the rock inhabiting, Upper Sonoran *arizonae*, so that the latter has come to resemble *henshawi*, of similar life habit, although without so extreme a morphological modification. Thus we find *arizonae* with flatter head and body than *vigilis*, of larger size and with proportionately longer limbs and toes.

A few of the differences between *arizonae* and *vigilis* which may be presented statistically are as follows:

| | <i>Arizonae</i> | <i>Vigilis</i> |
|---|-----------------|----------------|
| Scale rows across dorsum ² | 45—47 | 35—39 |
| Ratio of head width to depth..... | 1.48-1.78 | 1.32-1.39 |
| Ratio of length of plated head section to length of fourth toe..... | 1.26-1.32 | 1.57-1.79 |
| Ventral scale row reached by adpressed fore limb | 16—20 | 13—14 |
| Ventral scale row reached by adpressed hind limb | 5—9 | 12—17 |
| Lamellae on fourth toe..... | 25—26 | 18—20 |

Further differences of like character might be listed, but these will suffice to indicate the definite separation of the two species in bodily form.

² These figures represent an average of several counts on each specimen taken approximately at mid-body. Some of these rows begin at the tips of the ventrals, others at the interstices, so that a variation of 3 to 5 is to be expected in the several counts on each specimen. The extremes of all mid-dorsal counts in *arizonae* were 43 to 50, and in *vigilis* (16 specimens) 33 to 40.

A SYNOPSIS OF THE GENUS XANTUSIA

Xantusia Baird, Proc. Acad. Nat. Sci. Phila., 1858, p. 255.

Zablepsis Cope, Am. Nat., 1895, Vol. 29, p. 758.

Amoebopsis Cope, Am. Nat., 1895, Vol. 29, p. 758.

1. *Xantusia vigilis* Baird, Proc. Acad. Nat. Sci. Phila., 1858, p. 255. (Type locality, Fort Tejon, Kern Co., Calif. Type specimen, USNM 3063).

COMMON NAME: Desert Night Lizard.

COMPLETE DESCRIPTION AND PHOTOGRAPH: Van Denburgh, 1922, Reptiles of Western North America (Occ. Papers. Cal. Acad. Sci., 10), p. 477.

HABITS: Van Denburgh, 1895, Proc. Cal. Acad. Sci., Ser. 2, Vol. 5, pp. 526-529; Bogert, 1930, Bull. Sou. Cal. Acad. Sci., Vol. 29, Part 1, p. 8.

Sherwin F. Wood writes me as follows: "Feb. 22, 1931, on a clear, bright sunny day, with a cold, strong wind, ten *X. vigilis* were collected in one hour at noon on the Mohave Desert two miles west of Palmdale, Los Angeles County. All were found under dead bushes, in the moist debris under roots or under the bark, sometimes even in holes made by termites. They were easy to capture because of the coolness prevalent in their surroundings. Only one was found in the dead trunk of a Joshua Tree; the rest were obtained from dead 'clump bush' a common shrub of the desert."

Other collectors have told me of finding this species amongst dead leaves and debris, and even in excavations. However, the most prolific source of specimens remains that originally discovered by Van Denburgh, that is, under and in the fallen, dead branches of the Joshua Tree (*Yucca brevifolia*). But this lizard must not be considered dependent on the tree-yucca; it is found in areas where this plant does not exist.

RANGE: The deserts and desert mountains of the Californias and southern Nevada from the Inyo Mountains, Inyo County, California to San Felipe Bay and San Matias Pass, Lower California, Mexico.

LOCALITIES OF COLLECTION:

Inyo County

East Slope, Inyo Mts.

8 mi. N. W. of Little Lake

Kern County

Fort Tejon (Type Locality)

Mojave

Kelso Creek Valley (4½ and 7 mi. S. E. of Weldon)

Freeman Canyon (Walker Pass)

(4900' ft., max. recorded altitude for this species)

Los Angeles County

Antelope Valley

Fairmont

Pine Creek

Peck's Butte

Neenach

Palmdale

Pallett

Lovejoy Buttes

San Bernardino County

Hesperia

Kramer Hills

Victorville

Goffs

Barstow

Purdy

Providence Mts.

30' mi. S. E. of Daggett

(near Bonanza King Mine)

Morongo Canyon

Lane's Mill

Lone Pine Canyon

(Lane's Well)

Riverside County

Cabazon

San Diego County

San Felipe Valley

La Puerta (Mason Valley)

Yaqui Well

Jacumba

Clark County, Nevada

Pahrump Valley

Lower California

San Matias Pass

San Felipe Bay

2. *Xantusia riversiana* Cope, Proc. Acad. Nat. Sci. Phila., 1883, p. 29.³ (Type locality, California; later stated to be San Nicolas Island.⁴ Type specimen, MVZ 8278).

COMMON NAME: Island Night Lizard.

COMPLETE DESCRIPTION AND PHOTOGRAPH: Van Denburgh, 1922, Reptiles of Western North America, p. 486.

HABITS: Ibid.

RANGE: Islands off the coast of California.

³ The name is first mentioned, without description, in Am. Nat., 1879, Vol. 13, p. 801.

⁴ RIVERS, Am. Nat., 1889, Vol. 23, p. 1100.

LOCALITIES OF COLLECTION:⁵

San Nicolas Island (Type Locality)
 San Clemente Island
 Santa Barbara Island

3. *Xantusia henshawi* Stejneger, Proc. U. S. Nat. Mus., 1893, Vol. 16, p. 467. (Type locality, Witch Creek, San Diego Co., Calif. Type specimen, USNM 20,339).

Zablepsis henshavi Cope, Am. Nat., 1895, Vol. 29, p. 758.

Xantusia picta Cope, Am. Nat., 1895, Vol. 29, pp. 859, 939. (Type locality, Tejon Pass?)⁶

COMMON NAME: Spotted Night Lizard.

COMPLETE DESCRIPTION AND PHOTOGRAPH: Van Denburgh, 1922, Reptiles of Western North America, p. 484.

HABITS: Atsatt, Copeia, 1925, No. 146, pp. 71-72; Klauber, Copeia, 1926, No. 152, pp. 115-117.

RANGE: Rocky areas on both slopes of the mountains from southern Riverside County, California, to the San Pedro Mártir Mountains of Lower California.

LOCALITIES OF COLLECTION:

Riverside County

Aguanga

Imperial County

Boulder Park

Mountain Spring

Myers' Creek Bridge

San Diego County

Witch Creek

(Type Locality)

Valley Center

Sylvano

Crescent Valley

San Pasqual

Poway

Mussey

Foster

El Monte

Lakeside

Flinn Spring

Grossmont

Hillsdale

Dehesa

Helix

Jamacha

Oak Grove

Wynola

Sutherland

Ballena

Pamo

Goose Valley

Ramona

Mt. Woodson

Wildwood

Shady Dell

⁵ There is also a doubtful record from Santa Catalina Island.

⁶ For a discussion of this type locality see Van Denburgh, Copeia, 1916, No. 27, p. 14.

San Diego County—Continued

| | | |
|-----------------|---------------------|------------------|
| Viejas | Dulzura | Borego Palm |
| Descanso | Cottonwood | Canyon |
| Guatay | Tecate | Grapevine Spring |
| Pine Valley | Buckmans | La Puerta |
| Noble Mine | La Posta | (Mason Valley) |
| Glen Lonely | Clover Flat | Newtown |
| Alpine | Campo | Hipass |
| Harbison Canyon | Laguna Junction | Boulevard |
| Suncrest | (4050 ft., max. | Jacumba |
| Jamul | recorded altitude | |
| Lyons Valley | for this species in | |
| Deerhorn Flat | San Diego Co.) | |

Lower California

Arroyo Encantada, San Pedro Mártir Mts.

(7300 ft., max. recorded altitude for this species)

San José (Lat. 31 deg.)

4. *Xantusia gilberti* Van Denburgh, Proc. Cal. Acad. Sci., 1895, Ser. 2, Vol. 5, p. 121. (Type locality, San Francisquito, Sierra Laguna, Lower California. Type specimen, CAS 401).

Amoebopsis gilbertii Cope, Am. Nat., 1895, Vol. 29, p. 758.

COMMON NAME: San Lucan Night Lizard.

COMPLETE DESCRIPTION: Van Denburgh, 1922, Reptiles of Western North America, p. 482.

RANGE: The Cape region of Lower California.

LOCALITIES OF COLLECTION:

San Francisquito, Sierra Laguna, Lower California

La Laguna, Sierra Laguna, Lower California

VALIDITY: While I still recognize this form in the key which follows, it must be admitted that the distinguishing characters are tenuous. Van Denburgh originally differentiated *gilberti* from *vigilis* based on a divided frontal and the separation of the prefrontals by the frontonasal. Schmidt (Bull. Am. Mus. Nat. Hist., Vol. 46, p. 672) has shown that, of the two known specimens of this species, only the type has a divided frontal, and that this character occasionally appears in California specimens, which is borne out by two such individuals in my collection. The other character likewise does not hold in the second specimen of *gilberti*. Schmidt, however, finds in the second specimen a smaller and flatter head, a more

pointed nose, and smaller eye than in *vigilis*; also a narrower separation of the second pair of postmentals (sublabials). I find all of these characters variable in my series of *vigilis*, especially the last. Color and spotting are likewise highly variable in *vigilis*, for some from the Mohave desert are nearly unicolor, while others are conspicuously maculate. So, for the present, this must be considered a somewhat doubtful species, the verification of which will await the advent of more specimens from the Cape region of Lower California. No doubt specimens of the *vigilis-gilberti* group will eventually be forthcoming from between San Felipe Bay (the present known southern range limit of *vigilis*) and the Cape, for the intervening territory is of a character suited to the genus. With additional material at hand *gilberti*, if valid, may prove a subspecies of *vigilis*.

5. *Xantusia arizonae* (cf. this paper).

COMMON NAME: Arizona Night Lizard.

DESCRIPTION, HABITS, LOCALITY OF COLLECTION: See above.

KEY TO SPECIES OF THE GENUS XANTUSIA

(Adapted from Van Denburgh and Schmidt, and extended to include the new species).

1. Two series of small plates (superciliaries and supraoculars) over the eye; ventrals in 16 longitudinal rows (*i.e.* counted transversely) *riversiana*
 One series of small plates (superciliaries) over the eye; ventrals in 14 or fewer longitudinal rows..... 2
2. Ventral plates in 14 longitudinal rows..... *henshawi*
 Ventral plates in 12 longitudinal rows..... 3
3. Dorsal scales across midbody⁷ number 42 or more..... *arizonae*
 Dorsal scales across midbody number less than 42..... 4
4. Eye larger *vigilis*
 Eye smaller *gilberti*

⁷ See footnote, p. 7.

EXPLANATION OF PLATE

PLATE I

- Fig. 1. Dorsal view of *Xantusia arizonae*, Arizona Night Lizard.
- Fig. 2. Side view of *Xantusia arizonae*, Arizona Night Lizard.
- Fig. 3. Type locality of *Xantusia arizonae*, Arizona Night Lizard.

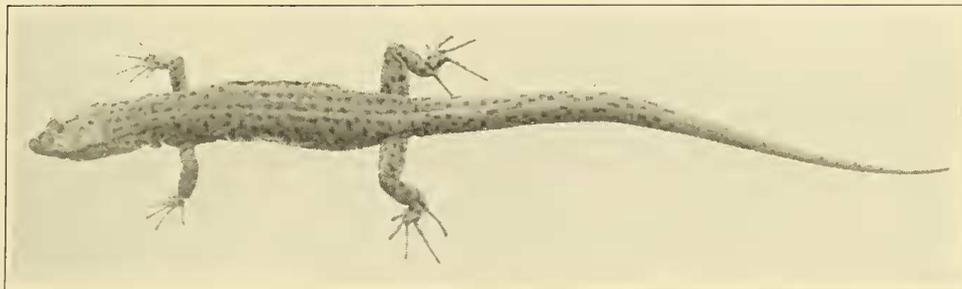


Fig. 1

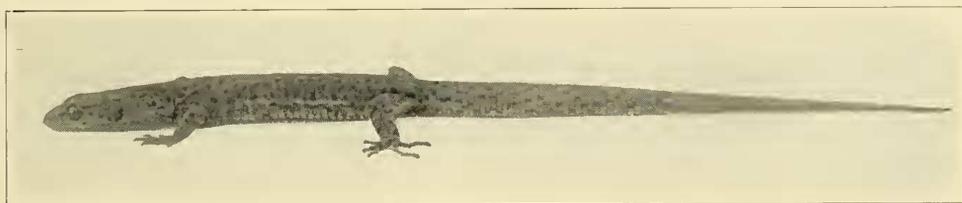


Fig. 2

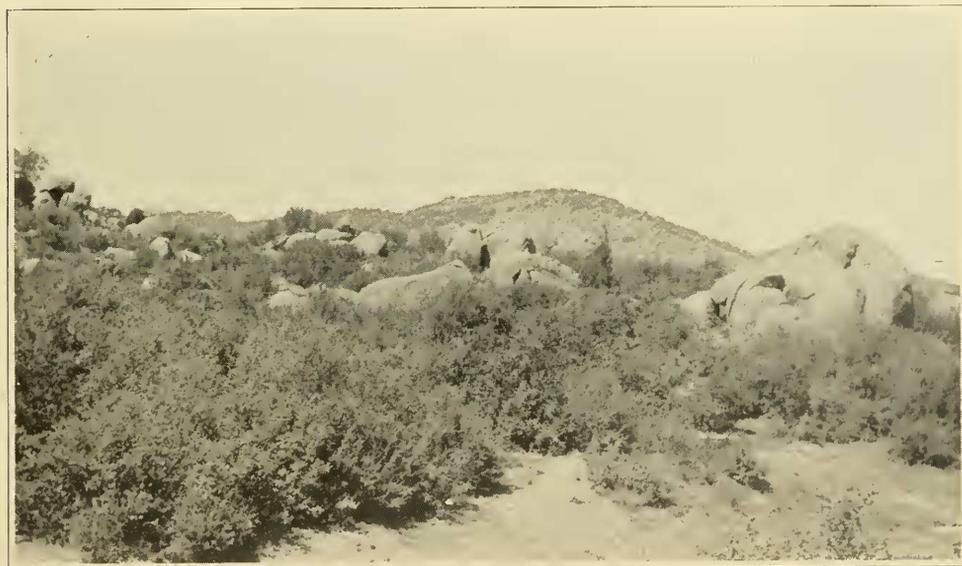


Fig. 3

