

A NEW SKINK OF THE MULTIVIRGATUS GROUP FROM CHIHUAHUA

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A skink, USNM 30833, taken by the Brimley brothers in Chihuahua, Mexico, has, for lack of a better understanding of its relationships been heretofore associated with the *multivirgatus* complex. Taylor (1935:352) and Smith and Taylor (1950:166) suggested its apparent distinctness but because of a badly faded color pattern hesitated to describe it as new.

In July, 1931, D Elden Beck took a subadult at Colonia Garcia, Chihuahua. In August, 1957, the author secured an adult at Colonia Chuhuichupa, Chihuahua. A study, of these three specimens and a comparison of them with *multivirgatus* from Arizona, New Mexico, Utah and Colorado, has demonstrated significant color and scale pattern differences. I, therefore, propose that this new skink be known as

Eumeces multilineatus, n. sp.

Type: Brigham Young University No. 13798, collected by Wilmer W. Tanner and Gerald Robison, 3 miles north of Colonia Chuhuichupa, Chihuahua, Mexico, on August 26, 1957. El. 7500 ft.

Paratypes: Brigham Young University No. 11984, from Colonia Gracia, Chihuahua, Mexico, by D Elden Beck, July 12, 1931; U. S. National Museum No. 30833, from Chihuahua, Mexico, collected by H. H. Brimley and C. S. Brimley.

Diagnosis: A *Eumeces* of the *multivirgatus* group, of similar size, body and limb proportions as in *multivirgatus*. Postnasals absent; frontonasal nearly twice as wide as long; interparietal not enclosed; seventh supralabial separated from ear opening by one pair of enlarged postlabials; median ventral caudals approximately three times as wide as long; color pattern consisting of five primary light lines over a dark ground color; median line on inner third of first scale row, followed laterally by a dark stripe on median third of first scale row. Scales between dorsolateral and lateral light stripes a uniform blackish color.

Description of the type: Rostral normal, in contact with first supralabials, nasals, and internasals; two internasals followed by a frontonasal, nearly twice as wide as long; prefrontals widely sutured; frontal large, only slightly wider anteriorly than posteriorly, the latter part rounded; four supraoculars, second largest; frontoparietals smaller than interparietal, the latter arrowshape; parietals large, nearly in contact with primary temporal, not enclosing interparietal; two pair of muchals of equal size; nasal divided, anterior part slightly larger; anterior loreal higher than long, posterior longer than high, anterior scale in contact with first and second labials, nasal, internasals, frontonasals, prefrontals and

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the posterior loreal; six superciliaries, first much larger; one small preocular, nearly square; two presuboculars, anterior at least four times the larger; two postoculars, lower one largest; postsuboculars smaller than postoculars, upper largest, three on left, two on right side; primary temporal in broad contact with the upper secondary and in narrow contact with the lower secondary temporal, smallest of the three; one elongate tertiary temporal, in contact with postlabial; ear with three lobules; supralabials 7-7, seventh largest and followed by a single large postlabial extending to ear lobules; infralabials 6-6; two single postmentals, posterior one largest.

Scale rows around middle of body 24, dorsal median rows slightly enlarged; dorsals 56; ventrals 40; median row of caudals noticeably enlarged, approximately thirty per cent as long as wide; lamellae fourth toes 12-13; fourth fingers 10-10; total length 165.7 mm. snout to vent 70.0 mm; body into tail 1.37 times; toes of adpressed legs separated by six scales.

Color and color pattern: Ground color above dark brown to nearly black laterally and with a series of seventeen distinct light and dark longitudinal stripes. Median dorsal stripe yellowish-cream, faintly bifercate on head, extending along sutures of interparietal, across frontoparietals, along sutures of frontal and terminating on prefrontals; median stripe occupying the inner third of the two median scale rows; a sharply delineated dark brown stripe occupies approximately the middle third of each median scale row; lateral third of median scale row and entire second scale row, a medium brown, lateral margins of second row with an occasional darker spot; a creamy-white dorsolateral stripe extending from supraoculars posteriorly and occupying middle third of the third scale row, median and lateral thirds of this row, fourth and most of fifth rows a uniform brownish black; lateral edges of fifth row cream white; medial edges of sixth row blackish (this produces a broken white line for most of the area between the legs); lateral stripe yellowish to light cream, extending from second supralabial caudad on median part of labials, through ear, and onto middle of sixth row, terminating at insertion of hind leg; a lateral dark stripe occupies lateral part of sixth row and adjoining edges of seventh. Ventral scales a bluish-green with fine flecks of darker pigment principally on sides; scales of gular and anal regions with a cast of bronze.

Primary and secondary body stripes distinct for the entire length of the body; with little apparent fading from head to base of tail, becoming indistinct on tail near toes of adpressed hind legs.

Variations: The two specimens (BYU No's. 11984 and 13798) are, except for size, almost duplicates. They show the following variations, when compared with the specimen from the national museum (30833): In the latter the frontonasal is noticeably longer, the per cent of length to width equals .71, whereas in the two it is .54 and .57 respectively. The prefrontals are narrowly separated, as opposed to a broad contact in the others, and there are four

small postlabials between the seventh supralabial and the ear lobules. The color pattern is so badly faded that any differences which may have existed are no longer possible to detect. By wetting the specimen one can see on the neck and shoulder regions the lateral, dorsolateral and median light stripes. For a short space the color pattern on the median scale rows, though faint, appears to be essentially as described for the type. Otherwise the pattern is faded to an almost uniform light brown.

Unfortunately there is no reliable locality data for the faded specimen. It does not seem likely that it came from the same general area as the other two specimens, although even this may be the case.

Habitat: On the basis of the two known localities, the general range of *multilineatus* is to be found in the higher elevations of the Sierra Madre Occidental, and may be associated with habitats in or near the pine forests.

The specimen found at Colonia Garcia was taken from a rotting pine log, not far from a small stream and along the edge of a pine forest (most of which has now been removed). North of Chihuahupa the type was taken on a steep rocky slope extending up from the river. We had just bagged two large black-tailed rattlers when I saw the skink some 25 feet away coming toward me. Without hesitation it came to within a few feet of my boots, then became startled and took refuge under a small rock. The next day we turned tons of rock without uncovering a skink. One was seen, however, but it too was abroad and too close to some porous ledges to be caught.

Relationships: For several years I have taken every opportunity to examine and record data from all specimens referred to the *multivirgatus* complex.² I have, therefore, seen such specimens at the United States National Museum, University of Kansas, and have received on loan material from Dr. Hobart M. Smith, University of Illinois, Dr. Phillip W. Smith, Illinois State Natural History Survey, and Dr. E. R. Hall, University of Kansas.

Recent trips into Arizona have permitted me to see and examine this species alive at all age groups, hatchlings to adults. On the basis of specimens of *multivirgatus* seen from Arizona, New Mexico, Colorado and Utah, the following comparisons are made.

In scalation the two species are similar. In most *Eumeces multivirgatus* a postnasal is present, out of 33 specimens seen, including the type material of *E. gaigei* (KU 7300 and 7301) and *E. taylori* (KU 13161) at the University of Kansas, the postnasals are: 2-2 in one, 1-1 in 24, 1-0 in five and 0-0 in three; one or two postlabials, which are separated from the ear lobules by two or more small scales; the frontonasal is proportionately longer and the median row of subcaudals is less widened transversely.

2. I wish to express my thanks and gratitude to those individuals who have provided me with facilities and permitted me to examine their collections.

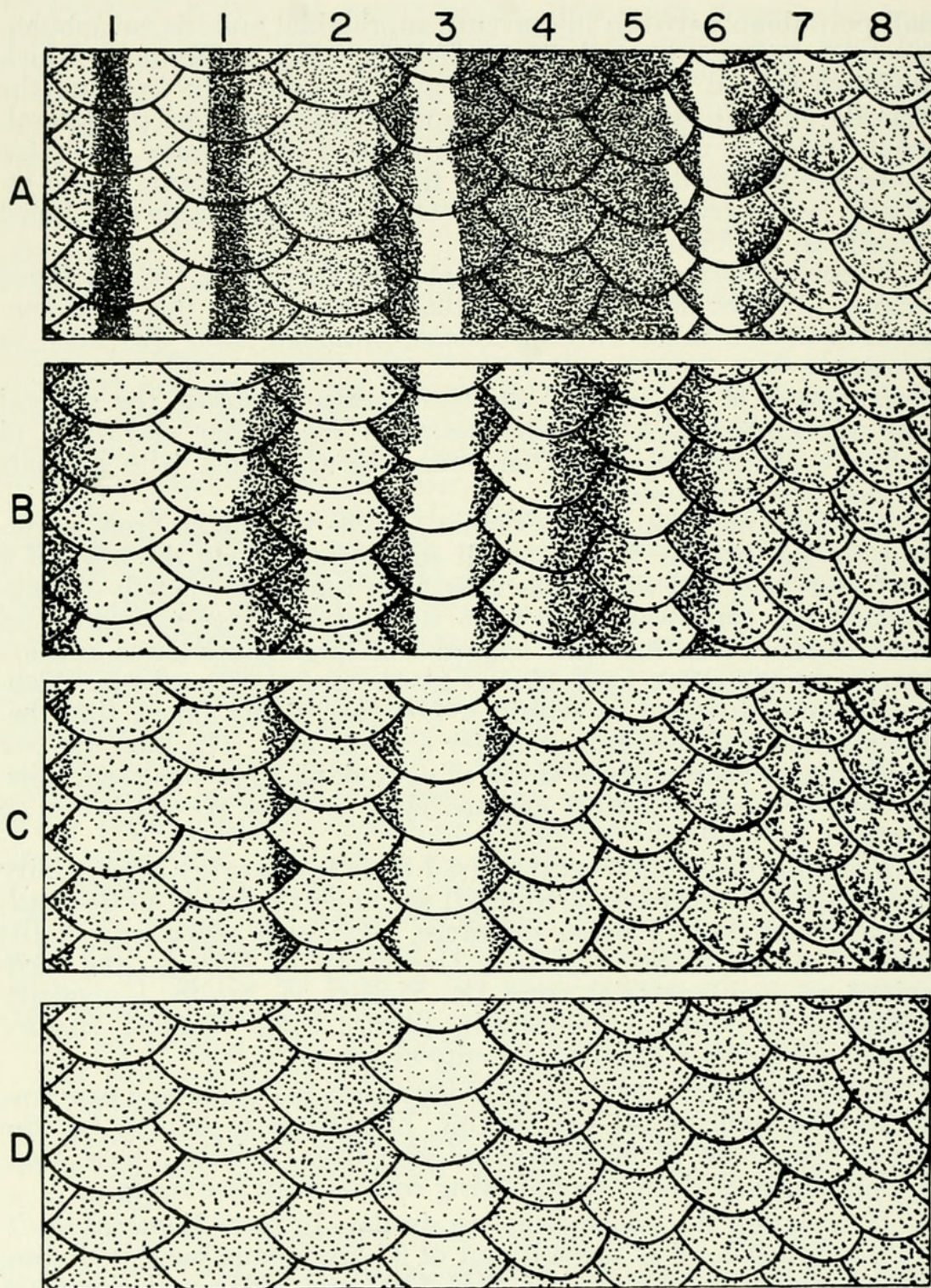


Fig. 1 - Color patterns of the dorsal and right lateral sides of *Eumeces multilineatus* and *Eumeces multivirgatus*. The numbers indicate the longitudinal rows, with the ones representing the dorso-median rows. Snout to vent measurements are included for each specimen. A. *E. multilineatus*, adult ♂, 70 mm., BYU 13798 type, Chihuahua, Mexico. B. *E. multivirgatus*, adult ♀, 63.5 mm., BYU 13242, Coconino Co., Arizona. C. *E. multivirgatus gagei*, adult ♂, 61.7 mm. INHS 7560, Coconino Co., Arizona. D. *E. multivirgatus taylori*, adult ♀, 64 mm. INHS 6496, Coconino Co., Arizona. For a comparison with *multivirgatus* from Colorado and Utah see Maslin (1957:88).

The color pattern is substantially different in *multilineatus*, though at first appearing to be much the same as that of *multivirgatus*. In general the adult ground color of *multilineatus* is darker, the stripes both primary and secondary are sharply defined from head to base of tail and the forked pattern of the median stripe is faint, but discernable, on the head plates. This is not necessarily true in *multivirgatus* in which adults may be found without stripes and grading to those in which at least the primary stripes are clearly defined. In the latter the head pattern is usually absent or obscure. A few of the significant differences may be observed in fig. I: (a) The median scale rows are each involved in three longitudinal stripes in *multilineatus*, only two stripes in *multivirgatus*. (b) The lighter brown stripe between the black stripes bordering the median and dorsolateral light stripes is approximately one and one-third scales wide, occupying the lateral third of the first scale row and all of the second row. In *multivirgatus* this stripe is usually very narrow, occupying less than one scale row, with the darker stripe bordering the median stripe as wide or wider, occupying approximately the adjoining halves of the first and second rows. (c) In *multilineatus* the space between the dorsolateral and the lateral light stripes (from the lateral third of row three to the edge of row six) is a dark brownish-black, except for the lateral edges of row five which are cream fleck with greenish-blue; *multivirgatus* is extremely variable in this area of the pattern; some specimens have a narrower area with the lateral light stripe on scale row five (See Maslin 1957:88, fig. 1), others have as many as five different shades of brown, giving a faintly striped effect, but with only the borders of the light stripes dark and distinct. (d) Below the lateral light stripe in *multilineatus* is a dark blackish stripe which separates the lateral stripe from the lighter ventrals. The lateral stripe of *multivirgatus* is not always clearly defined probably because the lateral dark stripe is not present to accentuate it.

Remarks: Recent studies (Lowe, 1955; Maslin, 1957; Mecham, 1957; and Heyl and Smith, 1957) have helped in clarifying the taxonomic status of *E. multivirgatus*. The inclusion of *E. gaigei* Taylor and *E. taylori* Smith as parts of the more widespread *multivirgatus* is seemingly justified. Agreement concerning the status of sub-species is not yet complete owing primarily to the incomplete series available. Lowe (*loc. cit.*) and Maslin (*loc. cit.*) would retain both *gaigei* and *taylori* as subspecies, whereas Mechan (*loc. cit.*) would retain only *gaigei* as a subspecies, with *taylori* becoming a color phase of *gaigei*.

The availability of a sizeable series, with a larger number from Arizona than has been previously reported, has provided data which I believe to be significant. The variations in the *multivirgatus* color pattern are nearly all met in a series from Flagstaff, Arizona (Oak Creek Canyon, approximately 12 miles S.W. of Flagstaff, 6 specimens; and 6-7 miles N.E. of Flagstaff 16 specimens.) One adult (ISNHM 7562) shows no distinct stripes as in *taylori*;

some have only the dorsolateral stripes present as in the type of *gaigei*; several have only the median, dorsolateral, and lateral light stripes; and some have the pattern of *multivirgatus*. The hatchlings are much the same as the pattern given by Maslin (1957: 88, fig. 1-E) for a Utah (*gaigei*) juvenile, except that the lateral stripe is on the sixth rather than the fifth row. Out of the twenty adults and subadults from Arizona, one is of the *taylori* color phase, seven are of, or approaching the *gaigei* phase and twelve show the pattern of *multivirgatus*. Those from Oak Creek Canyon are darker and of the *taylori-gaigei* patterns, whereas the more northern populations are of the *gaigei-multivirgatus* patterns.

It is seemingly obvious that the color pattern phases of *multivirgatus*: (a) cannot, for much of the southern and western range, be effectively limited to a single geographical area for each phase; (b) are more varied than is implied by the phases listed above and may include other phases such as the five lined or "*faciatus*" phase; (c) are the products of certain, as yet undetermined, genetical principles which have provided this species with an extremely variable color pattern not often observed and certainly unusual in *Eumeces*; (d) may be more clearly set forth if hatchlings as well as adults are used in determining the basic pattern of the various populations.

The data and conclusions presented by previous studies, and that arising from the material available for this study, has demonstrated the presence of a number of intraspecific color pattern phases in *multivirgatus*. There are, undoubtedly, several of these "color phases" which will warrant subspecific rank when material is available to separate the geographical races. There is perhaps sufficient evidence to retain *E. taylori* as a subspecies. The pattern is distinct and there apparently is an established ecological isolation in western Texas and southeastern New Mexico. The occurrence of a lineless pattern in Arizona, Nebraska and perhaps in other widely separated populations might be expected in a polytypic species.

Maslin (*loc. cit.*) has demonstrated the existence of *gaigei* in southern Colorado and eastern Utah. I have not seen his material, however a specimen from Elk Ridge, San Juan County, Utah has been compared with the types of *gaigei* and is of the same basic pattern. Thus the range of *gaigei* can be, for the present, restricted to northern New Mexico, southern Colorado and eastern Utah. The specimens available from other populations in central New Mexico and Arizona are either of the *gaigei* or *multivirgatus* patterns. Those from Arizona are actually much closer to *multivirgatus* and should, in spite of their separation from other populations, be retained in this subspecies for the present. The present understanding of the species and subspecies in the *multivirgatus* group of skinks is as follows:

Eumeces multilineatus n. sp.

Eumeces multivirgatus multivirgatus (Hallowell)

Eumeces m. gaigei Taylor

Eumeces m. taylori Smith³

Eumeces humilis Boulenger

Eumeces parvulus Taylor

Eumeces parviariculatus Taylor

The following natural history notes are also worthy of recording. The two hatchlings, BYU 13886-7, were taken at an elevation of approximately 7,000 feet, August 18, 1957. They were found in a small rock pile in an open area between the Ponderosa Pine. Their snout to vent lengths are 29.1 mm. and 28.2 mm. respectively. In all, three hatchlings were seen, one escaping. Obviously hatching had occurred only a few days previously, providing little time for growth. Compared with the hatchling length listed for the Texas brood (Mecham 1957:114) they are slightly larger. I have noted equal size variation to occur in day old hatchlings of *E. skiltonianus* and would expect the same to be true in this species.

Material: Arizona: Coconino Co., Oak Creek Canyon, (ISNHM 6496, 7559-62, UI 30290); Approximately 6-7 miles NE of Flagstaff (BYU 11552-4, 13240-7, 13883-7). Colorado: Weld Co., 6 miles NW. of Keensburg (KU 16343-8). New Mexico: Taos Co., near Taos (KU 7300-1); Eddy Co., Black River, 2 miles E of entrance of Carlsbad Caverns (KU 13161); Lincoln Co., Ruidoso Creek (USNM 25437). Utah: San Juan Co., Bears Ears, Elk Ridge (BYU 534).

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3. when sufficient material is available, *taylori* Smith may be replaced by either *inornatus* Baird or *epipleurotis* Cope.



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