Catalogue of American Amphibians and Reptiles.

AXTELL, RALPH W. 1968. *Holbrookia lacerata.*

Holbrookia lacerata Cope
Spot-tailed earless lizard

Holbrookia lacerata Cope, 1880:15 (part). See *H. l. lacerata.*

• CONTENT. Two well differentiated and probably disjunct subspecies are recognized, *H. l. lacerata* and *H. l. subcaudalis.*

• DEFINITION. A medium-sized *Holbrookia* with an average snout-vent length of about 59 and a maximum of 71 mm. The tail is circular in transverse section (not dorsoventrally flattened) and about as long as the head and body in adult males, but slightly shorter in adult females. The sum of femoral pores varies from 21 to 41. Two series of dusky brown dorsal blotches (paravertebral and dorsolateral), on a gray to grayish tan ground color, extend from occiput to groin. The paravertebral blotches continue as paired chevrons to the tail tip. The dorsal blotches are distinct (never obliterated by the fine pale speckling present in male *H. maculata* or *H. propinqua*), and completely encircled by a black border with a white outer margin. Dorsally, the limbs resemble the trunk and tail in coloration and blotching. The ventral coloration is usually opaque white, with concentrations of melanophores interrupting the whiteness of the gular region, along the lateral margins of the trunk, and beneath the tail. Gular marks, when present, consist of pale grayish spots or lines radiating from the mid-gular region anterolaterally. The small, rounded, lateral abdominal dark spots (as contrasted with the more elongate blotches of *H. maculata* and *H. propinqua*) vary from only a trace of pigmentation to six well-defined spots on each side. There is no brightly colored (blue or green) areola surrounding the lateral spots. The rounded subcaudal spots (not transverse bands) are invariably present but vary greatly in pigmentation and number. The neck, trunk and base of the tail become pale yellow or yellowish green in gravid females. This coloration is lost after oviposition. Males show less tendency for color change during the breeding season but occasional individuals may develop a female-like yellowish suffusion along the lateral fold, and in some populations, an orange-red coloration laterally on the neck.

• DESCRIPTIONS. Taxonomic and gross morphological descriptions have been given by Axtell (1956; MS, 1958). Handbook treatment appeared in Conant (1958). Earlier systematists (Cope, 1880, 1900; Stejneger, 1890; Schmidt, 1922; Smith, 1946) erroneously combined *H. lacerata* with *H. maculata* (*perspicua*), so their evaluations may refer to more than one species. Earle (1961) discussed middle ear morphology, comparing this form with other species of *Holbrookia* and with *Callisaurus draconoides.* Clarke (1965), described display activity, courtship behavior, nuptial coloration and color change.

• ILLUSTRATIONS. Cope (1900:292) figured line drawings of the head and pelvic region of *H. l. lacerata* (U. S. Natl. Mus. 13531, misidentified as number 13621) from Helotes, Bexar County, Texas. Dorsal and ventral views of *H. l. lacerata* appeared in Smith (1946:123, pl. 18, A,C) and of *H. l. subcaudalis* in Axtell (1956: pl. 2). Conant (1958:127) included a color illustration of *H. l. subcaudalis.* Tail display is illustrated by a sketch in Clarke (1965).

• DISTRIBUTION. *Holbrookia lacerata* has a range limited to central and southern Texas and adjacent northeastern Mexico. The species is partial to moderately open prairie-brushland regions which are subjected to seasonal drought. Fairly flat surface expanses free of obscuring vegetation (open meadows, old and new fields, graded roadways, cleared and disturbed areas, prairie savanna) seem to be required. Rough, eroded areas are not inhabited. The Balcones Escarpment, forming the southern and eastern margin of the Edwards Plateau, effectively separates the two subspecies. Although the escarpment itself is a minor topographic feature, the extensive areas of roughland associated with it and the differences in substrate annectant to it, collectively bar gene exchange between these allopatrically distributed subspecies. The species as a whole shows a pattern of discontinuous distribution with disjunct populations being the rule, not the exception. As this pattern is not generally correlated with human influences (actually human modification tends to be advantageous), it can be assumed that this species is in a contracting phase distributionally. Vertical range extends from sea level on the southern Texas coast to about 1220 meters (4,000 ft.) in Coahuila, Mexico.

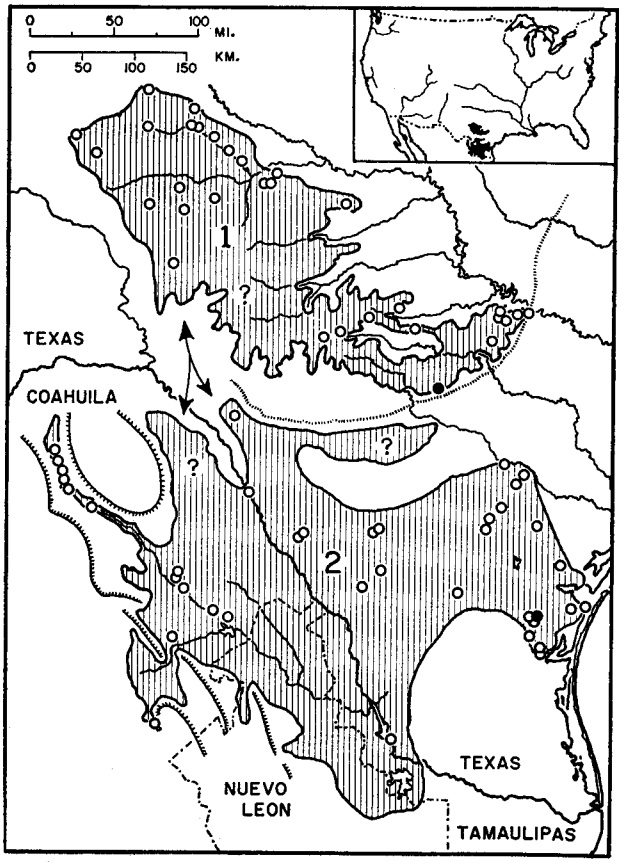
• FOSSIL RECORD. None.

• PERTINENT LITERATURE. See Axtell (1956) for taxonomic history, relationships with *H. maculata*, natural history notes and locality records. For keys, group, inter- and intraspecific relationships, osteology, evolution, habits, habitat and geographic distribution see Axtell (MS, 1958). Bailey (1905) and Brown (1950) give additional locality records. For interspecific relationships apropos the middle ear see Earle (1961). Clarke (1965) gives information on behavior and temperature range.

• ETYMOLOGY. The specific name *lacerata* is derived from the Latin term *lacerare* = "torn; mangled," and presumably refers to the conspicuous serrations on the posterior edges of the dorsal blotches. The name *subcaudalis*, from the Latin *sub* = "below," and *cauda* = "tail," refers to the distinctive subcaudal dark spots which are characteristic of this species. The common name, spot-tailed earless lizard, refers to this same character.

1. *Holbrookia lacerata lacerata* Cope
Northern spot-tailed earless lizard

Holbrookia lacerata Cope, 1880:15 (part). Type locality, "Erath County, west of the upper Brazos . . . . in Comanche County," and "on the Guadalupe River in Kendall or Comal County." Revised by Axtell (1956:172) to "within a circle with a three mile radius from Helotes [29° 35′ N - 98° 41′ W], Bexar County, Texas," (see COMMENT). Lectotype, adult male, U. S. Natl. Mus. 10160A, collected by G. W. Marnock, May 1879 (chosen



MAP. The solid symbols mark the type-localities; hollow symbols show other localities. The Balcones Escarpment is shown by a line of hatches. Hatched lines indicate upland areas in Mexico.

from two cotypes having the same number by Axtell, 1956:172).

Holbrookia maculata lacerata: Stejneger, 1890:109 (part). First synonymization of *lacerata* with *maculata*; followed by all workers except Schmidt (1922, 1953), who continued to recognize both as full species.

Holbrookia lacerata lacerata: Axtell, 1956:164. Redescribed species as separate from *H. maculata*.

• DEFINITION. The maximum and average snout-vent lengths are 65.0 and 55.1 mm. respectively. The paravertebral and dorsolateral body blotches usually are fused into continuous transverse bands which are deeply serrated posteriorly. The dark blotches on the hind legs usually form distinct crossbands, not semicircular markings. The sum of the femoral pores is 27 or fewer (79%) in both sexes. The tail is longer than the snout-vent length in 37 per cent of the males, but shorter in all females. The hind legs average 77.5 per cent of the snout-vent length in males, 70.8 per cent in females. Males often have a reddish suffusion on the lateral neck and shoulder region during the breeding season.

• REMARKS. The area inhabited by this form conforms well to the boundary of the Edwards Plateau and the Balconian Biotic Province of Blair (1950:112). A considerable hiatus exists (see question mark on map) between the populations inhabiting the southeastern sector of the range (nearer the Balcones Escarpment) and those found farther to the northwest. In color pattern morphology (dorsal body and femoral blotches) there is a distinct shift from *lacerata* pattern in the southeast to a *subcaudalis*-like pattern toward the northwest. The hiatus mentioned above appears to separate these two trends. Although these trends are not completely understood or thoroughly studied, they must be attributed either to a pattern of convergent evolution through selection for similar habitat (the area around San Angelo is similar edaphically, floristically and climatically to southern Texas), or to closer temporal and spacial relationships through pre-Recent gene exchange across the elevated short-grass prairies now extensively dissected by headwater erosion of the Devils and Pecos river systems (see arrows on map).

The following unpublished locality records shown on the map (Abbreviations used are: KSTC, Kansas State Teachers College; KU, University of Kansas Museum of Natural History; RWA, R. W. Axtell Collection; TAI, Texas College of Arts and Industry; TNHC, Texas Natural History Collection). TEXAS. - *Coke Co.*: 2 mi. SE Broome (KSTC). *Crockett Co.*: 4 mi. W Ozona (TNHC). *Gillespie Co.*: 12 mi. W Fredericksburg (TNHC). *Glasscock Co.*: 8 mi. N - 3 mi. E Garden City (Los Angeles Co. Mus.). *Midland Co.*: 16 mi. SW; 22 mi. SE Midland (Texas Tech. Coll.). *Stirling Co.*: 3 mi. NW Stirling City (KSTC). *Tom Green Co.*: 3 mi. NW Sanatorium (KSTC).

2. *Holbrookia lacerata subcaudalis* Axtell
Southern spot-tailed earless lizard

Holbrookia lacerata subcaudalis Axtell, 1956:174. Type locality, "In plowed field 4.8 miles east northeast (27° 36′ N - 97° 45′ W) of Bishop, Nueces County, Texas. Elevation 75 feet." Holotype, adult male, R. W. Axtell Coll. 1163, [originally TNHC 20,000] collected by R. W. Axtell, 6 June, 1955.

• DEFINITION. The maximum and average snout-vent lengths are 70.8 and 61.0 mm. respectively. Most of the paravertebral and dorsolateral body blotches are separated medially into two distinct series. The dark blotches on the hind legs form circular or semicircular markings, not crossbands. The sum of the femoral pores is 28 or more (93%) in both sexes. The tail is longer than the snout-vent length in 82 per cent of males, but shorter in most females and young. The hind legs average 80 per cent of snout-vent length in males, 75 per cent in females. The males, so far as is known, exhibit no reddish suffusion at any time. Occasionally they become yellowish or greenish during the breeding season—as do all females of both races.

• REMARKS. This form inhabits a number of alluvium filled intermontane valleys (see MAP) along the eastern front of the Mexican Sierra Madre orogenic zone. As most of these valleys are in agradational rather than degradational sedimentary phases, they probably have been invaded by populations expanding from the species core to the east.

Unpublished locality records shown on the map are: TEXAS. - *Bee Co.*: 7 mi. SW Berclair (TNHC); 2.4 mi. W Pawnee (RWA). *Karnes Co.*: 10 mi. SW Kenedy on Tex. 72 (RWA). *Kinney Co.*: 12.5 mi. WNW Bracketville on U.S. 90 (RWA). *Kleberg Co.*: 5 mi. S - 2 mi. E Kingsville (TAI). *La Salle Co.*: 5 mi. S Cotulla (J. R. Dixon Coll.). *Live Oak Co.*: 5 mi. S; 10 mi. NE Three Rivers (RWA); 8 mi. NW Junction U.S. 281 & FM 624 (TAI). *Maverick Co.*: Eagle Pass (KU). *Nueces Co.*: 1 mi. NNW Calallen (TAI); Oso Creek in vicinity Rodd Field (TAI). MEXICO. - *Coahuila*: 27° 35′ 45″ N - 100° 41′ W nr. Don Martin Dam (RWA); 13 mi. N Estacion Hermanas on Mex. 57 (TNHC); 1 mi. SSE; 6 mi. SSE; 12 mi. SSE; 18 mi. SSE; 20 mi. SSE Hacienda Santa Domingo (TNHC); 28° 34′ N - 102° 03′ W nr. La Babia (RWA). 18 mi. NW; 20 mi. NW; 23 mi. NW La Babia (TNHC); 12 mi. S - 17 mi. E Sabinas (KU).

COMMENT

Axtell (1956:164) objected to the statements of "Type Locality" for *H. lacerata* (see above) as interpreted in the most recent check lists (Smith & Taylor, 1950; Schmidt, 1953), because Cope's (1880) original locality information alluded only to reports of occurrence and were, therefore, not verifiable. Axtell also pointed out that the Erath (where Smith & Taylor, 1950, restricted the type locality) and Comanche county reports were actually outside the range of *H. lacerata* and were referable to a phenotypically similar species. The type locality as redesignated by Axtell is that indicated on the tag of the lectotype.

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