

THE HEMIDACTYLS OF THE PORTO RICO REGION

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Two species of *Hemidactylus* are known to occur in the West Indies, *H. mabouia* and *H. brookii*.

There has been some misunderstanding in the classification of the *Hemidactylus* of Porto Rico and the adjacent islands of St. Thomas, Vieques, etc. The following scientists have listed *Hemidactylus mabouia* (Moreau de Jonnes) as occurring on Porto Rico:

- 1868 Cope, Proc. Phila. Acad. p. 311;
- 1881 Gundlach, Anal. Soc. Espan. Hist. Nat., X. p. 308;
- 1887 Garman, Bull. Essex Inst., XIX p. 18;
- 1893 Boettger, Kat. Rept. Mus. Senckenberg, I, p. 28;
- 1904 Stejneger, Ann. Rept. U. S. N. M. p. 599;
- 1928 Schmidt, N. Y. Acad. Sci., X. p. 69;
- 1930 Barbour, N. Y. Zoo. Soc. XI. p. 82.

I accepted the above evidence unquestioningly until my large series showed that a mistake had been made.

I doubt whether *H. mabouia* ever occurred on Porto Rico. Both Stejneger and Schmidt admit not having taken it. Stejneger describes a Cuban specimen of *H. brookii* in ascribing Porto Rico as the range of *H. mabouia*. Later students may have followed his lead. I believe that earlier writers did not have sufficient material for a correct diagnosis and that at present the distinction between the species is little understood.

My collection contains thirty-four *H. mabouia* from Vieques and five from St. Thomas. I have seen only *H. brookii* on Porto Rico.

Hemidactylus brookii Gray is listed by Barbour as occurring in Hispaniola and West Africa. My collection contains 99 specimens taken at San Juan, Río Piedras, Humacao, Caguas, Ponce, Playa de Ponce and Mayagüez, all on the island of Porto Rico.

KEY TO THE SPECIES OF *Hemidactylus* IN THE PORTO RICO REGION

- a 1. Six rows of spines around base of tail, dorsal pattern, four black "Vs", femoral pores of males not interrupted at midline. St. Thomas and Vieques.—*H. mabouia*.
- a 2. Eight or ten rows of spines around base of tail; dorsal pattern brown, mottlings or four rings; femoral pores of males interrupted at midline. Porto Rico.—*H. brookii*.

A detailed description of both species follows. The characters which differ in the two species are italicized for comparison.

HEMIDACTYLUS BROOKII

Based on a series of 99 specimens.

Diagnosis: A gecko of moderate size, the basal half of each digit expanded and provided beneath with several pairs of lamellae and *one large* distal lamella, the distal half compressed, arising from within the tip of the expanded portion, curved, and provided with a claw at the tip; *eighteen* rows of dorsal tubercles, keeled, radially ridged, *closely set*; the males with an *interrupted* series of *thirteen* pores on each femur; females without femoral pores; tail bearing whorls of *eight* spines near base, distally six; color *brown* when any is shown; markings when visible *four irregular rings*, shoulders to sacrum, or *marbled*; tail *marbled with brown*; rudimentary eyelid scalloped, *no spines*; head *triangular*, width at ears equals snout to *half* way between eye and ear. Redescription based on series of 99 specimens.

Habitat: Porto Rico where I have taken it at San Juan, Río Piedras, Caguas, Humacao, Ponce, Playa de Ponce and Mayagüez.

Proportions: Head triangular, width at ears equals snout to half way between eye and ear; otherwise normal.

Squamation: Rostral much broader than high, squarish, usually with a nick in the posterior margin for the anterior angle of the internasal and a median cleft extending forward for more than one half the height of the shield, in contact with two supernasals; first supralabial in contact with lower post nasal and reaching nostril; *nine* supralabials including the small posterior one, the *series ending* almost under the eye; top of head covered with granules interspersed with small, slightly *elongated, keeled*, and radially ridged tubercles spread about *five* granules apart, there being about *fourteen* tubercles from ear to ear; granules greatly enlarged on snout, especially on rostral canthus where they are about the size of *head* tubercles; eye equidistant between nostril and ear, its diameter being about one half its distance from tip of snout, *no* spines on rudimentary eyelid; ear opening elongate, oblique; mental triangular, as wide as rostral, *eight*, frequently *seven* infralabials, four chin shields, center pair much the larger, irregularly pentagonal, their anterior angle fitting into the corner between mental and *most of first* and *as frequently first and part of second* infralabials, broadly in contact with each other on the median line; several rows of elon-

gated scales border the lower labials. There is a considerable variation in the squamation of the throat and chin. Upper surface of body and flanks and hind aspect of legs covered with granules like those of head; upper surface and flanks bearing *eighteen* or *twenty*, rarely sixteen, fairly even rows of tubercles, strongly keeled and radially ridged, separated front to rear of same row by from *one and a half* to *six* granules; tubercles about three granules long, *no* wide strip of flank without tubercles; rear aspect of legs bearing scattered tubercles; throat covered with small flat uniform granules strongly contrasting with the imbricate cycloid scales of the rest of the underside and the anterior aspect of the legs and extending along sides of tail and seven or eight rows beyond vent, being *smaller* than the dorsal tubercles; anterior to the vent there is a diamond shaped escutcheon of enlarged scales; in the males three, in the females one, outer series of scales under the thighs is enlarged, and in the males only, the outer scales bear a narrow pore extending across the upper part of the scale, there being about *thirteen* such pores on each femur, the series *interrupted* by one scale at the midline; a longitudinal umbilical scar is *sometimes* discernible, anterior to the escutcheon; fingers and toes free, all with long, compressed angularly raised and clawed distal phalanges; basal dilated portion with lamellae, a *large* single one at distal end of a series of four to seven paired ones; tail subcylindrical, a groove above extending from base nearly to tip, upper half covered with striated scales slightly larger than the granules of the back and at the base of tail *four* and sometimes *five* rows of long pointed radially ridged spines in whorls on each side of tail, beyond fourth whorl usually only three rows of spines on a side; whorls about *six* scales apart and spines about breadth of *four* scales, scales surrounding each spine slightly enlarged, tail *not* enlarged at whorls, underside either with a median series of large plates about two to a whorl, or a *paired* series of plates or *tongue shaped scales*; a regenerated tail is covered with scales *somewhat larger* than dorsal granules and is without whorls or spines, but does have irregular large median scales on underside and the groove above.

Color and Markings: Color and markings usually show in this species: distinctly brown above and finely dotted below. The illustration shows the extreme in pattern, usually this is broken up into somewhat irregular marbling; all color due to concentration of fine black or brown specks; a distinct transocular dark line bordered above and below with a light line of equal width; lamellae distinctly ash gray; a regenerated tail may be marbled above with brown sim-

ilarly to dorsal pattern. Young: The tail is banded dark and salmon, body frequently not noticeably more pigmented than adult; frequently very dark, the four dorsal rings outlined by light tubercles.

I took a baby *Hemidactylus* 31 October, 1931, by placing my finger tip on his head. He raised his tail and waved it and the end broke off without touching any object. Tail banded black and salmon. Upper surface of body almost black with four rings of light yellow dots, shoulders to sacrum. A few light dots scattered but none within the rings. Specimen taken in broad daylight. By dark it had turned lighter color inside the rings, making four light discs. By 9:30 P. M. he had turned lighter except for four dark rings corresponding to the four rings of yellow dots. The feet were flesh color. By next morning, although kept in a dark drawer, he had turned as dark as when captured. This specimen did not at any time turn any where near as light as specimen No. 3510 taken at night. This last was as light as a "colorless" adult except for the black and salmon rings.

Remarks: When caught by hand this little gecko frequently gives a squeak. Specimens taken 99, of all sizes.

Through the kindness of Dr. Stejneger and Miss Cochran of the National Museum three specimens of *H. brookii* were made available to me for comparison. They appear to be the same species that occurs on Porto Rico, but vary in a few particulars beyond the range of variability of the Porto Rican specimens. Especially are they noticeable in bearing more closely-set and heavier spines in the pelvic region.

The following table brings out a few differences, but it is to be borne in mind that it is a comparison of a series of 99 with three specimens.

<i>Hemidactylus brookii</i>	Porto Rico series of 90 specimens	U. S. N. M. 42507 Uganda, Africa	U. S. N. M. 42175 Wadelai Nile, Africa	U. S. N. M. 28992 Bacow P. I.
Femoral pores interrupted at center by	1 scale.....	3 scales.....	4 scales.....	5 scales
Spines in ear.....	none or very small tubercles	blunt spine	1 long spine	none
Pattern	typical	typical	typical	obliterated
bare flank strip..... granules in width	3-6	none	none	4-5
mental wider than rostral.....	no	slightly	yes	much
rows of dorsal tubercles.....	18	18	18	18
separated by..... granules	1½-6	1-3	2	2-3

HEMIDACTYLUS MABOUIA

Based on a series of 41 specimens.

Diagnosis: A gecko of moderate size, the basal half of each digit expanded and provided beneath with several pairs of lamellae between *small* single ones, the distal half compressed, arising from within the tip of the expanded portion, curved, and provided with a claw at the tip; *twelve* rows of dorsal tubercles spaced from *one* to *four* times their width apart, strongly keeled and radially ridged; the males with an *uninterrupted* series of *sixteen* or *seventeen* pores on each femur; females without femoral pores; tail bearing whorls of *six* spines; color *gray*; when markings are visible six black "V" shaped, point to the rear, cross bands, head to sacrum; tail barred with black at every fourth whorl of spines; one or more small *spines* along rear edge of rudimentary eyelid. Head normal, width at ears equal to snout to *one-third* distance between eye and ear. Diagnosis and description based on entire series of 41 specimens.

Habitat: Vieques and St. Thomas Islands. Found around old buildings at night.

Proportions: More slender than *H. brookii*; width of head at ears equal to snout to one-third distance between eye and ear.

Squamation: Rostral much broader than high, squarish, split nearly to lip, bordered above by supernasals and the anterior of two small scales between the latter; first supralabial in contact with lower postnasal and reaching nostril; about *twelve* supralabials including the small posterior one, the *ninth* under the center of eye; top and sides of head covered with fine granules interspersed with small, *circular*, radially ridged, *unkeeled* tubercles, spaced about *seven* granules apart, there being about *eighteen* tubercles from ear to ear; granules greatly enlarged on snout, especially on rostral canthus where they are nearly the size of *dorsal* tubercles; eye equidistant between nostril and ear, its diameter being about one-half its distance from tip of snout, *one* or *more distinct black tipped spines* on posterior part of rudimentary eyelid; ear opening elongated, oblique; mental triangular, as wide as rostral, *nine* or *ten* infralabials; four chin shields, center pair much the larger, irregularly pentagonal, their anterior angle fitting into the corner between mental and first and *nearly always* part or second infralabials, broadly in contact with each other on the median line; several rows of elongated scales border the lower labials. There is a considerable variation in the squamation of throat and chin. Upper surface of body and flanks and hinds aspect of legs covered with granules *larger* than those of

head; upper surface of body bearing *twelve* fairly even rows of tubercles, strongly keeled and radially ridged, separated front to rear of same row by from *four* to *eight* granules; tubercles about three granules long; a *wide strip* of flank bears *no* tubercles; rear aspect of legs bearing scattered tubercles; throat covered with small flat uniform granules, strongly contrasting with the imbricate cycloid scales of the rest of the underside and the anterior aspect of the legs and extending along sides of tail and seven or eight rows behind vent, being the *size of* or frequently *larger than* the dorsal tubercles; anterior to the vent there is a diamond shaped escutcheon of enlarged scales; in the males three and in the females one outer series of scales under the thighs is enlarged, and in the males only, the outer scales bear narrow pores extending across the upper part of the scales, there being *sixteen* or *seventeen* such pores on each femur, the series *not* interrupted at midline; a longitudinal umbilical scar is visible anterior to the escutcheon; fingers and toes free, all with long, compressed angularly raised and clawed distal phalanges; basal dilated portion with lamellae, a *very small* single one at each end of a series of four to seven paired ones; tail subcylindrical, a groove above extending from base nearly to tip, upper half covered with striated scales slightly larger than the granules of the back and *three* rows of long pointed radially ridged spines in whorls on each side of tail; whorls about *seven* scales apart and spines about the breadth of *three* scales, scales surrounding each spine slightly enlarged, tail *enlarged* at each whorl, underside *always* with a median series of large plates which begins below the seven or eight rows of pointed scales and possibly one or two divided plates, about two to a whorl; a regenerated tail is covered with scales about *four times* the size of dorsal granules and is without whorls, spines, enlargements or large lateral cycloid scales, but does have the large median plates on underside and the groove above.

Color and markings: No sexual dichromatism apparent; most specimens show little color. Whether because they are killed when pigment is not on surface or because of being killed at night I do not know. When pattern shows at maximum; upper surface gray, snout brown, marbled, six black cross lines, head to sacrum, somewhat "V" shaped, point to rear, dorsal tubercles black dotted, a black band at every fourth whorl on tail; no transocular dark line; a regenerated tail is speckled, but no marblings appear. Underside: clear white save for a few minute dots on lower labials and mental and tail; lamellae very dark gray, very noticeably in contrast to underside of body. Young: Same pattern above, but very dark as

a whole, due to fine black dots; underside dark from multitude of fine black dots; labials and side of head noticeably marked with white or cream colored dots.

Remarks: Specimens taken, 34 from Vieques, 7 from St. Thomas.

Through the kindness of Dr. Stejneger and Miss Cochran, of the National Museum, I have been able to study 10 specimens of *Hemidactylus* from each of Cuba 3; St. Thomas 3; Barbados 2; Guadeloupe 1; Antigua 1.

The specimens from Cuba, U.S.N.M. Nos. 75843, 27630-1 catalogued as *H. mabowia* are in reality *H. brookii*. The rest are *H. mabowia*. One specimen U.S.N.M. 11186 differs in having the dorsal tubercles noticeably flat. Otherwise it agrees in all particulars.

Conclusion: I have definitely identified *H. brookii* from Porto Rico and checked specimens from Africa, The Philippines and Cuba as of this species. I have identified *H. mabowia* from Vieques and St. Thomas and checked specimens from Barbados, Antigua and Guadeloupe as of this species.

Careful search has failed to reveal any *Hemidactylus* on Mona, Culebra or Caja de Muertos Islands. The inhabitants maintain that this lizard does not exist on their islands.

NOTE: I am indebted to Miss Adrienne Serrano of Vieques for most of my series from that island, and to Mrs. Heiberger of St. Thomas for the specimens from St. Thomas.

EXPLANATION OF PLATE X

Fig. 1.—*Hemidactylus brookii*. Note pattern of rings and the coarse tubercles.

Fig. 2.—*Hemidactylus mabouia*. Note chevron shaped pattern and small tubercles.

Fig. 3.—Young *H. mabouia*.

