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A NEW GENUS AND TWO NEW SPECIES OF SOUTH AMERICAN GECKOS (REPTILIA: LACERTILIA)

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A small but adult gecko recently obtained by the second author in the Gran Chaco of Paraguay, at the Mennonite colony in Filadelfia, has led to a review of critical congeneric material in the Museu de Zoologia da Universidade de São Paulo generously loaned to us for study by Dr. Paulo E. Vanzolini. Indeed, Dr. Vanzolini has reported most of this material in several accounts, the earliest appearing in 1968 (1968a, 1968b, 1974), and he is the only one to provide primary data upon specimens of this genus. In all these works, however, the material was referred to *Lygodactylus* without allocation to species.

Our review confirms the conclusion that the South American specimens represent taxa most closely related to *Lygodactylus*, but it is now apparent that despite the remarkable similarities to the African genus, the American populations are trenchantly distinctive in one respect — the possession of a very distinct escutcheon in males — and that they merit generic distinction from the African genus. Furthermore, two species are represented by the samples now available.

Because of Dr. Vanzolini's pioneer work with South American geckos, his original discovery, report and continued interest in this particular group, and his abundant material, it was our emphatic wish that he should share with us, if indeed he should not proceed alone, in the formalization of the taxonomy of these lizards. Thwarted in this desire by his other pressing commitments, we are pleased to name the genus

Vanzoia gen. nov.

Diagnosis and Definition. A member of the family Gekkonidae and the subfamily Gekkoninae, having a spectacle rather than true eyelids but different from the latter group in having in males an escutcheon involving at least things, and a well-developed series of 3-7 preanal pores; no femoral pores; no cloacal sacs or bones; vertebrae amphicelous; dorsal scales minute, equal, not imbricate, narrowly contacting each other between crevice areas occupied by minute granules;

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55-68 dorsals around midbody, 17-22 ventrals, totals 77-86; ventrals smooth, imbricate, about 7x dorsals; ear tiny, 2x3 times as wide as external naris; pupil round; rostral with no semidivision; no ear or eye lobules; nostril pierced between nasorostral, postnasae and 1st supralabial, not touching rostral; no enlarged tubercles on head. Tail cylindrical; when complete, with a terminal adhesive pad; lateral caudals not enlarged. Terminal phalanx on digits 2-5 very short, bearing 3 dorsal and 2 ventral lamellae, arising barely within margin of pad, in a slight notch; 1st digit minute, with minute claw but no pad; 4-5 lamellae on pads of digits 2-5, all deeply notched. Snout-vent lengths of adults 27-31 mm, tail 22-24.5 mm.

Content. Two nominal species, as now understood: *V. klugei* and *V. wetzeli*. We designate *V. klugei* as type-species of the genus.

Etymology. Since *Vanzolinius* is already occupied for a genus of frogs (Heyer, 1974), we adopt a patronym honoring Dr. Paulo E. Vanzolini, derived from the nickname "Vanzo" by which he is affectionately known by his North American colleagues. Name formation conforms with conventions of the International Code of Zoological Nomenclature, and related custom (Borrer, 1960: 113). *Vanzoia* is of masculine gender despite the -a ending (Brown, 1954: 51).

***Vanzoia klugei* sp. nov.**

(Fig. 1-4)

Holotype. Museu de Zoologia, Universidade de São Paulo (MZUSP), São Paulo, Brasil, 22531, an adult male taken June 23-24, 1971, by a joint Museum and Academia Brasileira de Ciências Expedition, at Carnaubeira, Pernambuco, Brasil. *Paratypes.* Nine, including 8 topotypes, collected with the holotype (MZUSP 22517, 22520, 22525-6, 22530, 22536, 22548, 22578), and one (MZUSP 23111) taken by the same group, July 20-28, 1971, at Fazenda Campos Bons, Floresta do Navio, Pernambuco, Brasil. Nos. 22525-6 are now in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A., and 22548 in the University of Colorado Museum, Boulder, Colorado, U.S.A.

Diagnosis and Definition. A species having the characters of the genus *Vanzoia*; preanal pores 3-5; in males, escutcheon scales sharply defined on shank, thigh and in preanal area; scales in row immediately posterior to preanal pores greatly thickened, porelike; abdominal escutcheon poorly defined or absent.

Description of holotype. Dorsal scales on snout nearly 3 times as large as those on trunk, slightly larger than interorbitals; latter twice as large as and merging in frontoparietal area with scales of parietal area; latter equal in size to or even slightly smaller than dorsals; 16 scales rostral to midocular line; 26 interoculars, least count; 6 rows of scales between eye and supralabials, least count; no protuberant superciliaries or supraoculars; 8-9 supralabials, 8-9 infralabials; 3 scales contacting rostral between nasorostrals; nostril horizontally oval, pierced between 1st supralabial, postnasal and nasorostral, narrowly separated from rostral; 3 scales contacting mental between infralabials; mental

entire, with no grooves; no chinshields; pupil round; horizontal eye diameter (1.7 mm) a little less than 3 times eye-snout distance (4.8 mm); eye-ear distance 2.4 mm; diagonally horizontal diameter (greatest) of ear opening 0.6 mm.

Ventrals 49 shoulder level to anus, 42 to preanal pores, 36 to mental; dorsal granules asymmetrically conical, apex posterodorsal; middorsal granules round or but slightly wider than long, 48 in a head length (snout-rear margin of ear opening), slightly smaller than laterals, merging gradually with enlarged, flat ventrals; laterals distinctly but not greatly wider than long; 86 scales around midabdomen, about 19 of those being ventrals. Preanal pores in a curved row, 4 in number; abdominal escutcheon poorly defined, involving a group of 5 scales bordering preanal pores anteriorly; preanal escutcheon of 5 scales bordering preanal pores posteriorly, much thickened, similar in appearance to pore scales; escutcheon on thigh involving 4(4) scales in anterior row, 6(7) in next row, 7(8) in next, 8(9) in posterior row; escutcheon on shank involving 4(5) scales in preaxial row, 4(4) in median row, 3(2) in postaxial row, not continuous with thigh escutcheon; latter separated by 3 scales from abdominal escutcheon. Scales on limbs similar to those on body, except largest of foreleg (about 3-4 times size of dorsals) on its anterior aspect, its ventrals flatter than but about same size as dorsals; postfemorals abruptly small posterior to escutcheon, smallest at midthigh level; large scales of thigh but little smaller than ventral abdominals, extending from posterior ventral surface over much of anterior surface, grading into small dorsals at upper anterior level on thigh. Finger and toe pad formula (total enlarged laminae each digit, 1-5) 0-4-5-5-5. Tail missing except for base.

Color in preservative uniform dull dark tan above, grayish white below, unmarked except for scattered, dim light and dark flecks on dorsal surfaces, smaller and brighter on limbs; a dorsolateral series of light spots from neck to tail, brightest over shoulder, rump and base of tail, dim elsewhere, 6 between axilla and groin levels, space between adjacent spots about 6 times as long as the dimension of a single spot; a few small dark flecks on ventral surfaces of head and throat, at sides of abdomen and on base of tail.

Snout-vent, 28.2 mm; width of head, 6.3 mm; length of head to rear margin of ear opening, 7.1 mm; axilla to groin, 13.7 mm; foreleg, 8 mm; hind leg, 10 mm.

Variation. The total range of variation in the 10 specimens of the type-series in selected characters is as follows: preanal pores 3-5, the lowest number occurring only in 1 male, the highest only in 1 female; scales rostral to midorbit 13-16(13, 1; 14, 1; 15, 6; 16, 2); interocular scales 24-29(24, 1; 25, 4; 26, 2; 27, 1; 28, 1; 29, 1); rows of granules (least count) eye to supralabials 5-7(5, 6; 6, 12; 7, 2); supralabials 6-9(6, 2; 7, 10; 8, 7; 9, 1); infralabials 7-9 (7, 12; 8, 7; 9, 1); postrostrals 3-4(3, 9; 4, 1); postmentals 2-3(2, 1; 3, 9); scales around midbody 78-86(78, 1; 79, 2; 80, 1; 81, 2; 82, 2; 86, 2); ventrals in 17-21 rows at midbody (17, 1; 18, 4; 19, 2; 20, 2; 21, 1); ventrals 43-54 shoulder to anus (43, 1; 46, 2; 47, 1; 48, 2; 49, 3; 54, 1); ventrals to preanal pores, 36-42 (36, 2; 38, 2; 39, 1; 40, 1; 41, 2; 42, 2); ventrals shoulder to mental, 32-36(32, 1; 33, 3; 34, 2; 35, 3; 36, 1); 4 lamellae on 2nd digit, 5 on digits 3-5 on both foot and hand of all specimens. The sequence of single and paired scales in the midventral line of the tail

can be determined in only 4 females and 1 male with a complete or nearly complete tail: ♀ (22517) 1-1-2-1-2-2-1-1-2; ♀ (22520) 1-1-2-1-2-1-1-2-2-2-1-2-2-1; ♀ (22525) 2-2-1-2-1-1-2-1-1-2-irregular; ♀ (23111) 2-2-2-2-1-2-2-1-1-2-1-1-2-1-1-2-1-2-1-2-1-2-1-1-2-1-2-2; ♂ (22526) 2-2-2-2-1-1-2-1-2-2-1-2-1-1-2. No. 23111 (♀) has a distinct terminal adhesive pad at the tip of the tail, involving 8 pairs of lamellae (Fig. 4); none of the others exhibit a caudal pad, although only in 22520 and 22525 is the tip of the tail present. The females possess no evidence of an escutcheon, but it is well developed in all four paratype males.

In the 4 paratype males, the preanal escutcheon involves 6 scales in the row following the preanal pores, in 3 specimens, 4 in 1; no other preanal scales are involved. The escutcheon on the shank involves 3 rows and includes 4-6 scales on the preaxial row, 3-5 on the median, and 1-3 on the postaxial row (totals 8-14). On the thigh, 4 rows are involved except in one with 5 rows (1 scale only in preaxial row); 7-9 are in the most postaxial row, followed by rows of 7-9, 7-8, and 2-6 (totals 24-32). The abdominal escutcheon is poorly defined, with no scales clearly modified, whereas the escutcheons of shank and thigh are sharply delimited. The weakly defined abdominal escutcheon spans an area varying from 4-9 scales in length and 5-6 scales in width. The abdominal and thigh escutcheons are separated by 4-6 scales, and the thigh from shank escutcheons by 1-3 scales.

The females vary in s-v length from 27.0 to 30.9 mm, and the tail (in 3 with complete tails) from 22.0 to 24.0 mm. In males the s-v length varies from 28.0 to 30.3 mm; the tail is complete in none.

The color is a brownish gray in the paratypes, whitish below. Markings are dim, although 2 or 3 pairs of small light spots near the base of the tail are prominent in some. Other markings include a light brown dorsolateral streak, not visible in some, bordered medially by a series of small light spots (including the prominent ones, if any, at base of tail), smaller and dimmer anteriorly on trunk, and toward tip of tail. Tiny light flecks on upper surfaces of limbs often present. A dark streak between eye and nostril, and temporal region below dorsolateral light line dark brown. Sides of abdomen with small, scattered clumps of melanophores; gular area regularly dark-flecked, as sometimes are under sides of hind legs and base of tail.

One female (22525) contains 1 large egg (about 4.5 mm in diameter) in each oviduct. It may be assumed that 2 are laid in each clutch, as in the Gekkoninae, but not as in the Sphaerodactylinae, whose members deposit but a single egg in each clutch.

***Vanzoia wetzeli* sp. nov.**

(Figs. 5-8)

Holotype. Museu de Zoologia, Universidade de São Paulo, São Paulo, Brasil, 7722, an adult male with tail intact, slits in the abdomen and a perforation in the back, otherwise in perfect condition, taken Nov., 1960, by a Museum expedition, at Urucum, Mato Grosso, Brasil.

Paratype. Univ. Colorado Museum, Boulder, Colo., U.S.A., 51424, an adult male with tail broken and a slit in abdomen, otherwise in

perfect condition, taken July 30, 1975, by Robert L. Martin at Colonia Fernheim, Filadelfia, Depto. Boquerón, Paraguay.

Diagnosis and Definition. A species having the characters of the genus *Vanzoia*, but differing from *V. klugei* in having more numerous preanal pores (7 vs 3-5); escutcheon not involving shank, but large on abdomen; no porelike escutcheon scales following preanal pores.

Description of holotype (Fig. 8). Dorsal scales on snout about 3 times as large as most dorsal scales on trunk, slightly larger than interorbitals and scales in occipital-parietal area, in turn larger than temporals and middorsal body scales; 14 scales rostral to midocular line; 26 interoculars, least count; about 6 rows of small scales between eye and supralabials, least count; supraoculars not protuberant; 8-8 supralabials, 7-8 infralabials; 4 scales contacting rostral between nasorostrals; nostril diagonally oval, pierced between 1st supralabial, postnasal and nasorostral, narrowly separated from rostral; 3 scales contacting mental between infralabials; mental entire, with no grooves; no chinshields; pupil round; eye diameter (1.6 mm) nearly half eye-snout distance (3.8 mm); eye-ear distance 2.5 mm.

Ventrals 52 shoulder level to anus, 44 to preanal pores, 36 to mental; dorsals convex, each with an apical pit, median ones very weakly keeled; 77 scales around midbody, including 22 ventrals. Preanal pores in an inverse V-shaped row, 7 in number; abdominal escutcheon prominent, extending 10 scales forward from preanal pores, about 10 scales wide at widest point; no escutcheon scales on shank; femoral escutcheon involving 6 scale rows, with 12-12 in 1st (posterior) row, then 10-11, 9-10, 9-11, 5-6, 3-1; femoral and abdominal escutcheons separated by 2-3 unmodified scales; preanal escutcheon 3 scales long, 6 wide, involving 11 scales. Scales on limbs similar to those on body. Finger and toe pad lamellae (total enlarged laminae each digit, 1-5) 0-4-5-5-5. Median subcaudals irregular in arrangement. Tail tip possibly regenerated, no adhesive lamellae.

Color in preservative dark gray-brown above, venter pale greenish, unmarked; a vague, light brown dorsolateral line, narrow on neck, scarcely evident on trunk and tail, with a series of lighter spots bordering it medially (about 5 between axilla and groin). A narrow, dim dark line across top of head between anterior border of orbits, another from eye to near nostril, one from middle of rear edge of orbit to shoulder, a short one over eye, and a short one from middle of lower edge of orbit to corner of mouth. Sides of body and tail light brown, below lateral light line; middorsum on trunk and tail darker, with scattered light dots. Irregular dark lines and spots on distal parts of limbs.

Snout-vent, 28.5 mm; tail 24.5 mm; width of head, 5.5 mm; length of head to rear edge of ear opening, 7.5 mm; axilla-groin, 15.0 mm; foreleg, 9.0 mm; hind leg, 11.0 mm. The holotype is illustrated in Vanzolini, 1968a:pl. 8.

Variation. The paratype (Figs. 5-7) is much like the holotype except: 12 scales rostral to midocular line; 25 interoculars, least count; about 5 rows of scales between eye and supralabials, least count; 7 supralabials and infralabials; 4 scales contacting rostral between

nasorostrals; 81 scales around midbody, including 19 rows of ventrals; ventrals 43 to preanal pores, 52 to anus, 33 to mental, from shoulder level; finger and toe pad lamellae 0-4-5-5-5 on both sides; median subcaudals somewhat enlarged, in 3-scale sequences of 2 pairs followed by a single median scale; an adhesive pad at tip of tail, composed of 7 pairs of scales, the proximal 4 pairs separated by 1 or 2 median rows of scales; preanal escutcheon of 9 scales, none porelike, 7 in row behind preanal pores, 3 in next row, 1 in next; abdominal escutcheon 9 scales wide, about 9 long, merging with unmodified abdominal scales anteriorly; no shank escutcheon; thigh escutcheon involving 25-26 scales, 7-8 in 1st (postaxial) row, 8-8 next, 7-5 next, 4-4 in anterior row; snout-vent 26 mm; tail 23 mm; width of head 5.5 mm; length of head to rear edge of ear opening 7.0 mm; axilla to groin 11.0 mm; foreleg 9.5 mm; hind leg 11.0 mm.

Remarks. A small hatchling 14.5 mm snout-vent, tail 13 mm, is from Cáceres, Mato Grosso, taken July 22, 1966, by R. Grantsau (MZUSP 13993). It is so diminutive that specific allocation is not certain from its own structure; the proximity of its collecting site to the type-locality strongly indicates, however, that it is referable to *V. wetzeli*, and it has 7 preanal pores as is characteristic of that species. Although the tail appears to be unregenerated and complete, no clearcut evidence of a caudal adhesive pad can be discerned.

The specific name *wetzeli* is a patronym for Dr. Ralph M. Wetzel, in recognition of his pioneering efforts to open the Chaco Boreal of Paraguay to study of its modern vertebrate fauna.

We conclude that the population here designated *V. wetzeli* is taxonomically distinct from *V. klugei* for 7 reasons: (1) most conspicuously, the presence of 7 preanal pores in both available adults, rather than 3-5 as in *V. klugei* (both sexes); (2) consistent absent of escutcheon scales on ventral surface of shank (consistent presence in male *V. klugei*); (3) consistent presence of a large abdominal escutcheon area (absence or great reduction in male *V. klugei*); (4) absence of porelike development of scales in row next posterior to the preanal pores (consistent presence in male *V. klugei*); (5) perhaps a slightly smaller size (*V. wetzeli*, 26 and 28.5 mm snout-vent in 2 adult males; 28.0-30.3 mm in 5 male *V. klugei*, only 1 less than 29 mm); (6) the geographic correlation of these differences with the known ranges of *V. wetzeli* and *V. klugei*, separated by some 1650 km. (Map); and (7) the habitat correlation and isolation of the preceding differences (*V. wetzeli* chaco-restricted, *V. klugei* caatinga-restricted).

DISCUSSION

It is possible that the enigmatic *Hemidactylus peruvianus* Wiegmann is congeneric with *Vanzoia*, for the latter genus resembles *Hemidactylus* in a number of ways. Furthermore, the digital expansions could well appear "slight" with the magnification available in 1835 when Wiegmann described *H. peruvianus*. Boulenger (1885: 141) states that there are 2 pairs of chinshields, one following the other, and that the tail is "depressed, the lateral edges obtusely angular, with a denticulation of spine-like scales;" none of these characters apply to *Vanzoia*. Unfortunately, according to Vanzolini (1968a: 60) and others (e.g. Peters

and Donoso-Barros, 1970: 142), the species has never been rediscovered since its original description. If the locality is correct, it is very unlikely that the species actually belongs in *Hemidactylus*, since that genus has no early endemic groups of New World species, other than Wiegmann's supposed representative; all have been derived in relatively recent times (although certainly prior to recorded history) from African groups, as indicated by Kluge (1967: 49). In reality the locality is very likely in error; Vanzolini (1968a: 60) points out that the specimen is part of the collections obtained on Meyen's voyage around the world, and may have been taken elsewhere than Tacna, Peru, as labelled. Meyen recorded one species from Peru that certainly does not occur anywhere in South America — *Cryptoblepharus boutoni poecilopleurus* of the western Pacific islands. In any event, Wiegmann's species cannot be regarded the same as the species here described, not only because of prominent differences evident in comparison of descriptions of *H. peruvianus* with our material, but also because of great biogeographic discontinuity, if indeed Wiegmann's locality data are correct.

The greatest resemblance to *Vanzoia* is to be found, however, not in *Hemidactylus* but in *Lygodactylus*, to which genus Vanzolini (1968a: 63-64, pl. 8; 1968b: 97(map), 103; 1974: 78(map), 79) referred his material. The present proof of presence of an escutcheon, however, which occurs in no known member of the subfamily Gekkoninae, to which *Lygodactylus* belongs, clearly distinguishes the South American species from that genus.

Not only does *Vanzoia* now appear generically distinct from *Lygodactylus*, but fundamental questions of subfamilial allocation of the genus and the taxonomic significance of the escutcheon are raised. The escutcheon is, according to Kluge (1967: 18), restricted in occurrence to the Sphaerodactylinae, and he implied its presence in all genera of that subfamily, including *Coleodactylus* and *Pseudogonatodes*, both of which he examined. However, Vanzolini (1968b: 86) stated that the escutcheon is absent in both the named genera, and Kluge himself (1967: 18) noted that Pasteur (1964) had indicated the presence of an "escutcheon analogue" in *Lygodactylus* "and related groups." The presence of an escutcheon in the latter was rejected by Kluge, but its absence in two of the five Sphaerodactyline genera, as indicated by Vanzolini, cannot be denied, and neither can its presence in *Vanzoia*.

Assuming that Kluge is correct in denying the presence of an escutcheon in *Lygodactylus*, *Vanzoia* is unique in the occurrence of both preanal pores and an escutcheon in one species. Preanal pores occur in no genus of the Sphaerodactylinae, and therefore *Vanzoia* occupies an intermediate position between the subfamilies Gekkoninae and Sphaerodactylinae on the basis of these characters. This is not an unexpected development, for Kluge (1967:50) had already concluded that "The ancestral sphaerodactyline doubtless was derived from a gekkonine stock..., possibly near the African *Lygodactylus* and its relatives (*sensu lato*). This relationship is suggested primarily on the basis of the common loss of cloacal sacs and bones and diurnal habits." He goes on to say that "It is possible that the ancestral sphaerodactyline stock arrived in the New World tropics (probably early Tertiary) by trans-Atlantic rafting." This conjecture is undoubtedly correct in broad outline, but present knowledge of continental drift suggests that at the time of gekkonid interchange between the pre-South American and

pre-African fragments of the disintegrating Gondwana, the proximity of these two continents may have been much greater than at the present time — if indeed the ancestral stock of the sphaerodactylines was not already present in the South American land mass before it separated completely from the African land mass.

Assuming, then, that *Vanzoia* is a little-modified descendant from pre-sphaerodactyline genera, as indeed Kluge himself had in effect concluded (although using a different name), the question of subfamilial allocation is critical. Either it became the last of the most ancient gekkonine line in South America, so far as is now evident, giving rise to the sphaerodactyline radiation, or is the earliest, so far as is now evident, of the Sphaerodactylinae population line. Unfortunately, the paucity of material and observations on live specimens does not permit acquisition of the data essential for a definitive answer. The digital pholidosis is distinctly gekkonine, as is the presence of preanal pores, oviposition of 2 eggs/clutch, and amphicelous vertebrae (latter present in sphaerodactylines only in *Gonatodes*), whereas the presence of an escutcheon is distinctly sphaerodactyline. Unknown are critical data on voice (no voice in sphaerodactylines; voice present in gekkonines).

Gonatodes is currently regarded as the most primitive member of the sphaerodactylines (Kluge, 1967: 36), partly because of its primitive (relative to the Sphaerodactylinae) amphicelous vertebrae, but also because if its large coronoid, squamosal and paroccipital process of the opisthotic, and its primitive type of digits. The latter character, at the opposite extreme from the gekkonine digits of *Vanzoia*, and bolstered as primitive by the cranial characters, gives a firm indication that *Vanzoia* is a member of the Gekkoninae, and thereby the last of the most ancient radiation of that subfamily in the Americas. Further data on *Vanzoia* will be required to confirm or refute this tentative allocation.

Returning to the clear relationship of *Vanzoia* and *Lygodactylus*, the escutcheon of all of the males examined of both species of *Vanzoia* is so well-defined that we cannot envision that the character would be overlooked or minimized if it actually occurred in *Lygodactylus*. On the other hand, comparison with the species recognized by Pasteur (1964) of *Lygodactylus* reveals a similarity that would place *Vanzoia*, if it were an African group, in his "pan-African" phylum and *picturatus* group or superspecies. *Vanzoia* agrees in having an entire mental and a caudal adhesive pad, but its size is smaller, the digital pads narrower, the tail shorter, the pattern more subdued (the *picturatus* group is rather brightly marked, especially on head), and of course it has an escutcheon, which is apparently missing in *L. picturatus* and its relatives. The latter group, furthermore, is not strongly silvicolous, but for the most part lives in trees, tall or short, in open plant formations. The habitat to which *Vanzoia* appears to be restricted is likewise a tropical belt of open formations although the genus may well be arboreal within that zone, or may be an ecotone inhabitant. It is not a strictly savanna (or "cerrado," in the nomenclature adopted by Vanzolini for South American ecology) species.

In any event, it appears that *Vanzoia* may be linked in origin not only to *Lygodactylus*, but to the large central-African group designated the *L. picturatus* group by Pasteur. The rather considerable differentiation from that group, however, does not bespeak a recent (even

later Tertiary) derivation. The hypothesis of early Tertiary or late Mesozoic derivation, consistent with the concept of continental drift, remains tenable. The common possession of an escutcheon by *Vanzoia* and the Sphaerodactylinae requires common origin, unless introgression or parallel evolution from *Lygodactylus*-like ancestors arriving independently in South America (*Vanzoia*, later, as in mid-Tertiary) is hypothesized. Definitive conclusions await more information.

Natural History. No information exists relative to the habits of either species of *Vanzoia*. Vanzolini (1974: 77) has clearly indicated the restriction in Brasil of *V. klugei* to the semi-arid caatinga, which forms the northeastern end of the continuous diagonal corridor first noted herpetologically by Schmidt and Inger (1951). The latter authors referred to it as a savanna, but such a designation is vigorously rejected by Vanzolini (1974). The latter author found *V. klugei* sharing the category of greatest abundance in the caatinga of Pernambuco with *Tropidurus torquatus*, *T. semitaeniatus* and *Cnemidophorus ocellifer*. All of the latter species occurred equally abundantly in the ecotonal (with the coastal forest) agreste zone, whereas *Vanzoia* was not found there at all.

The specimen from Paraguay was taken by one of us (RLM) under bottle trees in a courtyard in town; the native habitat is, however, clearly the gran chaco in which Filadelfia is located. The general background of herpetological knowledge and gross ecology of the gran chaco of Paraguay has been succinctly summarized by Scott and Lovett (1975). Their appraisal of the scant knowledge of the area at the present time is well borne out by the discovery of this distinct gecko. Short (1975: 179) notes that the Paraguayan-Mato Grosso chaco (to which *V. wetzeli* is presumably limited) is separated from the caatinga-cerrado vegetation of northeastern Mato Grosso, extending thence in an unbroken stretch to Pernambuco, by a large pantanal (swamp) area. We hypothesize that this pantanal has served as a barrier between the chaco-restricted *V. wetzeli* and the caatinga-restricted *V. klugei*. A considerable extension of range for both species is to be expected from further field exploration. The geographic situation suggests that the two taxa do not intergrade, but constitute allospecific members of a single superspecies.

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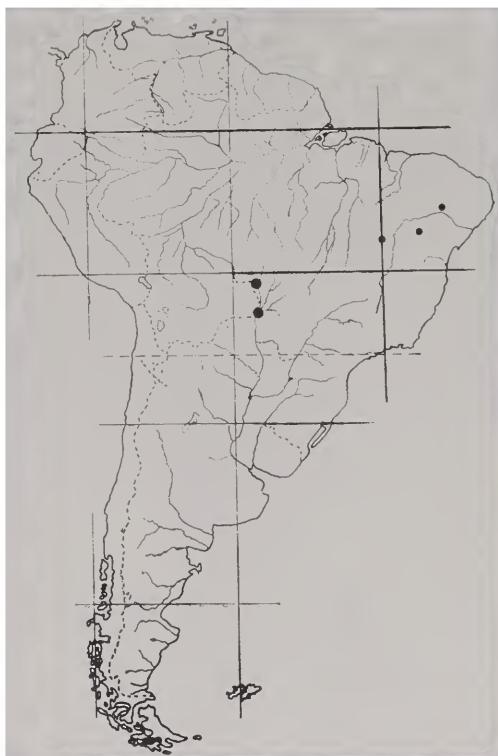
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Distribution of *Vanzoia klugei* (small dots) and *V. wetzeli* (large dots), adapted from Vanzolini (1974: 78, map 3).



Fig. 1. Dorsal view of holotype of *Vanzoia klugei*.



Fig. 2. Ventral view of holotype of *Vanzoia klugei*; note the small abdominal and well-defined thigh and shank escutcheons, as well as the single row of porelike escutcheon scales bordering the row of 4 preanal pores.



Fig. 3. Lateral view of holotype of *Vanzoia klugei*.



Fig. 4. Tip of tail of a paratype, no. 23111, of *Vanzoia klugei*, showing the caudal adhesive pad.

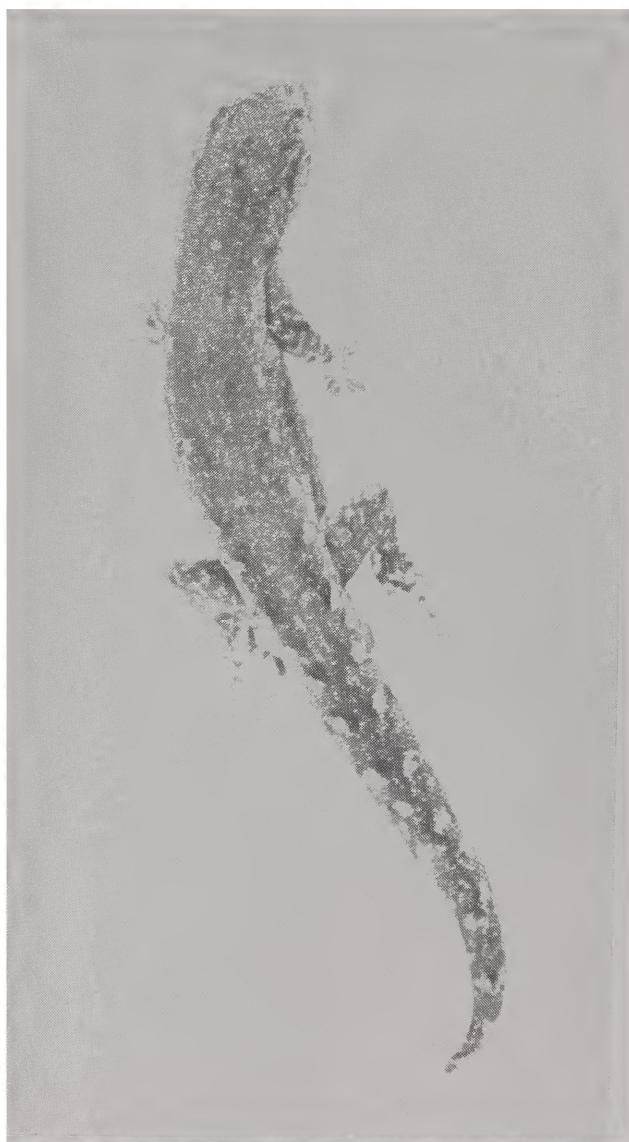


Fig. 5. Dorsal view of the paratype of *Vanzoia wetzeli*.

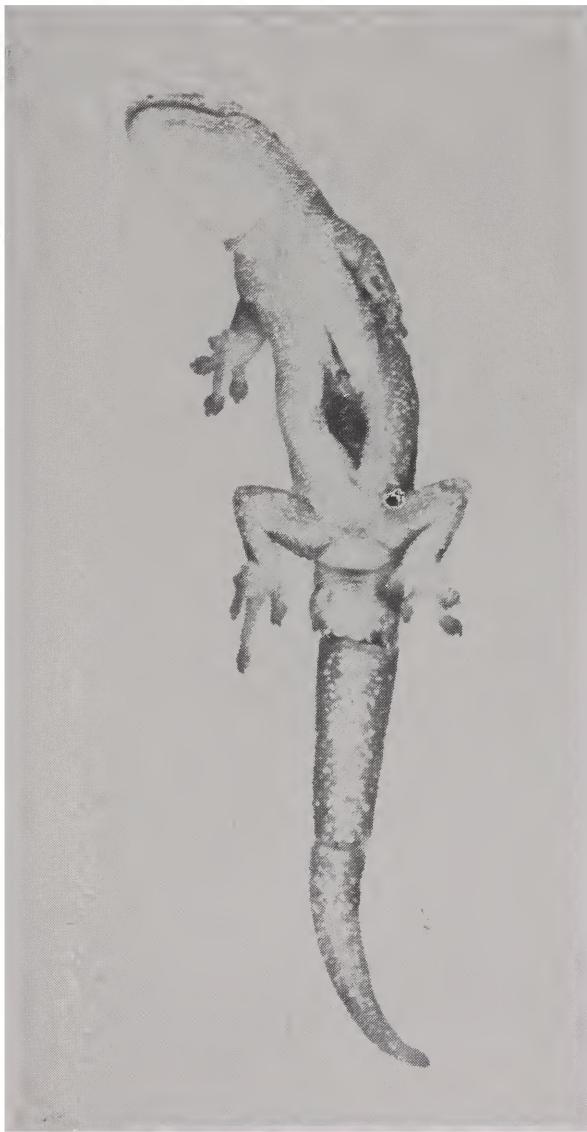


Fig. 6. Ventral view of the paratype of *Vanzoia wetzeli*.



Fig. 7. Lateral view of the paratype of *Vanzoia wetzeli*.

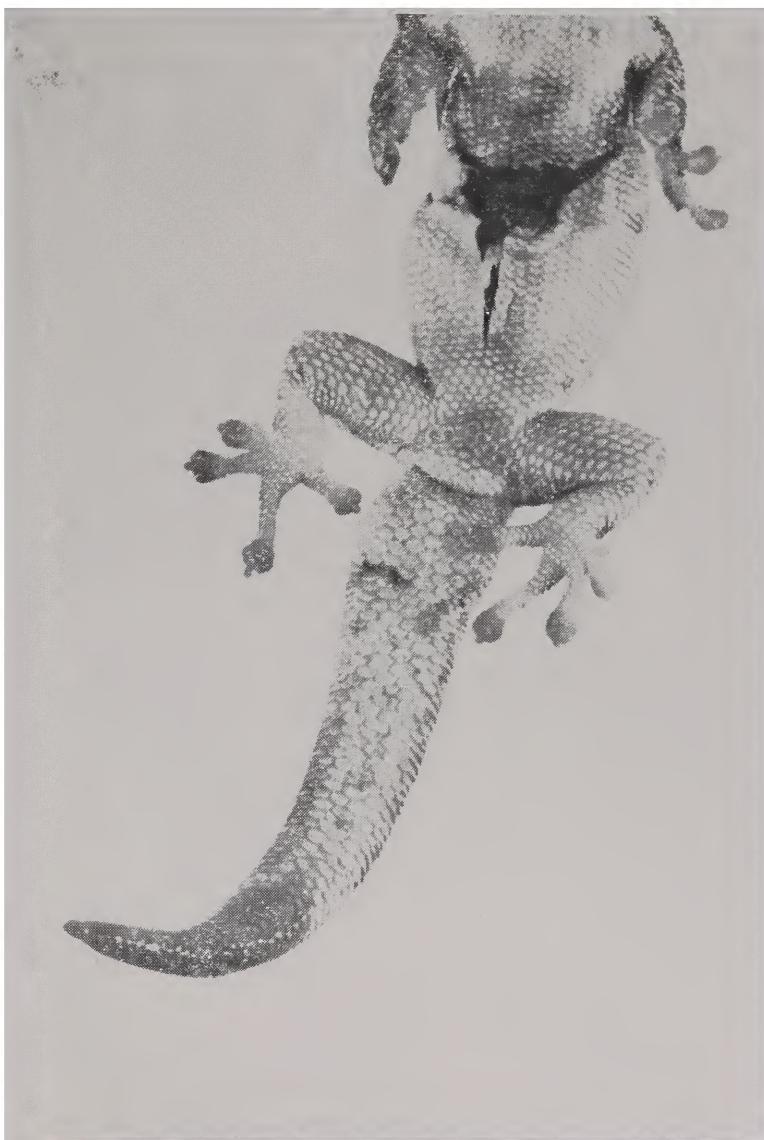


Fig. 8. Ventral view of escutcheon areas of the holotype of *Vanzoia wetzeli*; note complete absence of escutcheon scales on shank, greater areas of involvement on abdomen and preanal areas, and greater number (7) of preanal pores, as compared with *V. klugei*.

