

THE NEST AND MALE OF THE TRAP-DOOR SPIDER
POECILOMIGAS BASILLEUPI
(ARANEAE, MYGALOMORPHAE, MIGIDAE)

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ABSTRACT. The male and nest of *Poecilomigas basilleupi* Benoit 1962 are described based on specimens from Tanzania. *Poecilomigas basilleupi* nests have a single door, differing in this regard from the two-door nests of *Poecilomigas abrahami* (O.P. Cambridge 1889). A revised key to *Poecilomigas* species is presented.

Poecilomigas are aptly referred to as tree trap-door spiders, building well-camouflaged trap-door nests on the trunks and buttresses of trees. This behavior was reported for the type species, *Poecilomigas abrahami* more than a century ago (O.P. Cambridge 1889). Recently I was able to observe similar behavior in the tropical African species of the genus. In this, the third in a series of papers on the Migidae of the Afrotropical region (Griswold 1987a, b), I describe the nest and hitherto unknown male of *Poecilomigas basilleupi* and confirm that the diagnosis of *Poecilomigas* suggested in Griswold (1987b) holds for both sexes of this species. A revised key to *Poecilomigas* species and discussion of variation in females of *P. basilleupi* are included.

The specimens were discovered and observations made at the Mazumbai Forest in the West Usambara Mountains of Tanzania. The Mazumbai Forest is located at 4°49'S, 38°30'E and ranges in elevation from 1300–1900 m. It comprises one of the best preserved remnants of lower montane evergreen and montane rainforest in east Africa (Redhead 1981; Scharff *et al.* 1996).

METHODS

The format of the description follows that in Griswold (1987a). Abbreviations are standard for the Araneae. All measurements are in millimeters. Eyes are measured from above. Due to difficulties in consistently locating the margins of the domed cuticular lens, the AME diameter is expressed as that of the shiny tapetum. The sternal sigilla are the concave regions near the sternal margin as viewed in

oblique lighting, not the discolored area associated with these structures. The three nests collected are deposited in the California Academy of Sciences (CAS).

TAXONOMY

Migidae Simon 1889

Diagnosis.—Distinguished from all other mygalomorphs by having the fang with dorso-lateral keels (Fig. 9; Griswold 1987b: fig. 3), the ocular area at least 0.40× the width of the caput (Fig. 1), the thoracic fovea straight to recurved (Fig. 1), and lacking a rastellum on the chelicerae (Figs. 8, 9).

Genus *Poecilomigas* Simon

Poecilomigas Simon 1903: 23. Type species, by monotypy, *P. pulchripes* Simon (= *Moggridgea abrahami* O.P. Cambridge 1889). Roewer 1942: 192. Bonnet 1958: 3736. Brignoli 1983: 121. Griswold 1987b: 485. Platnick 1989: 73.

Diagnosis.—Distinguished from all migid genera except *Migas* L. Koch 1873 by having a tooth between the keels near the base of the fang (Fig. 9; Griswold 1987b: fig. 3), and from *Migas* by having dark dorsal and lateral maculations or annuli on the tibiae and metatarsi (Fig. 1).

Poecilomigas basilleupi Benoit

Poecilomigas basilleupi Benoit 1962: 276 (holotype, MRAC 112228, Mt. Kilimanjaro, Tanzania, examined). Brignoli 1983: 121. Griswold 1987b: 492. Platnick 1989: 73.

Diagnosis.—Distinguished from other *Poecilomigas* by having the dorsum and sides of

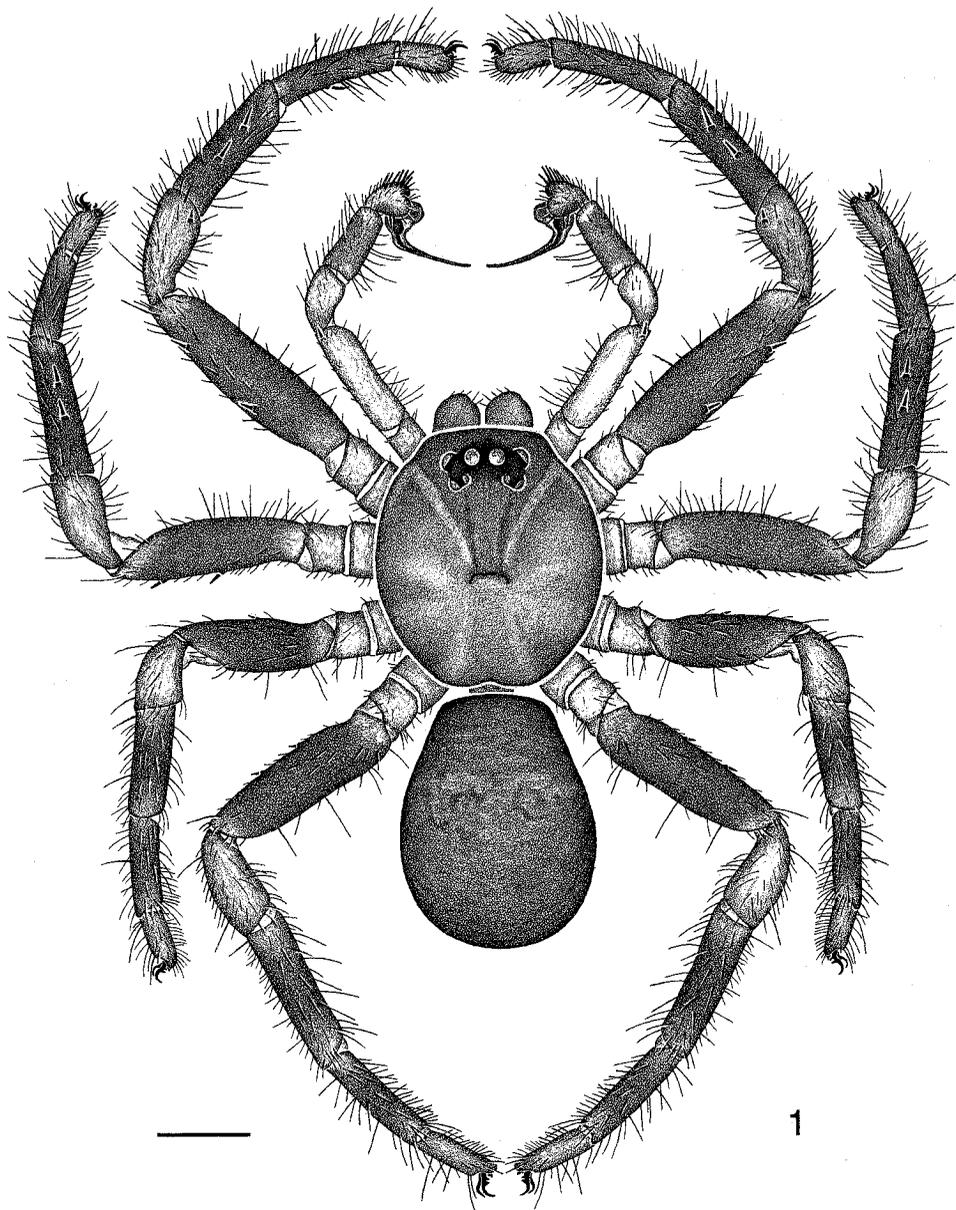


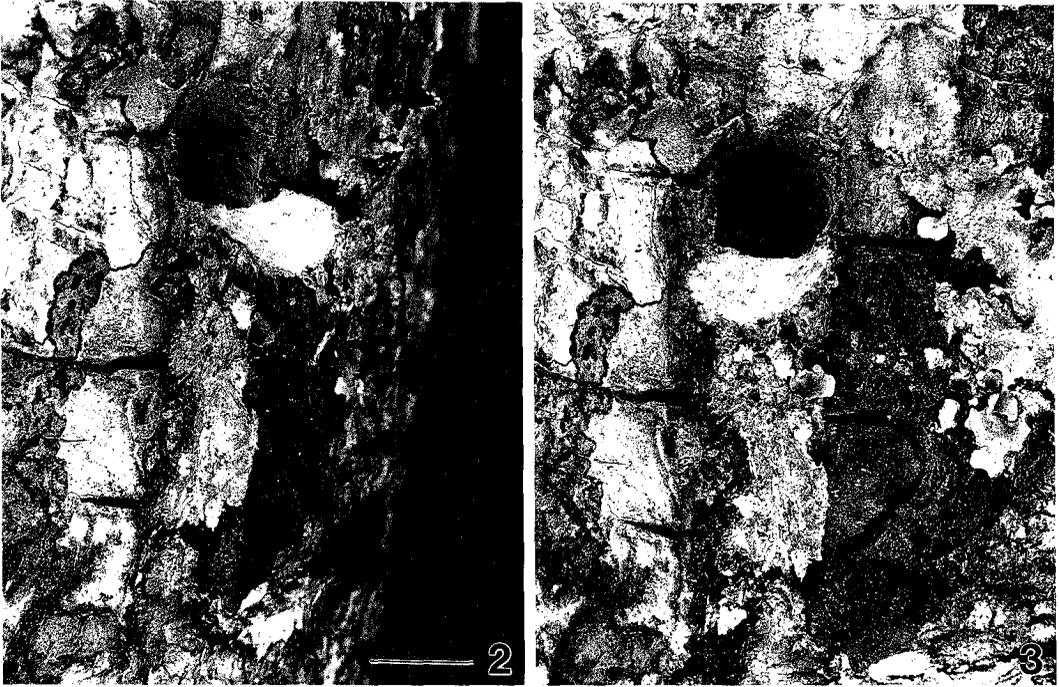
Figure 1.—Male of *Poecilomigas basilleupi*, Mazumbai, dorsal. Scale = 1.0 mm.

the abdomen entirely dark (Figs. 1, 8; Griswold 1987b: figs. 1, 33).

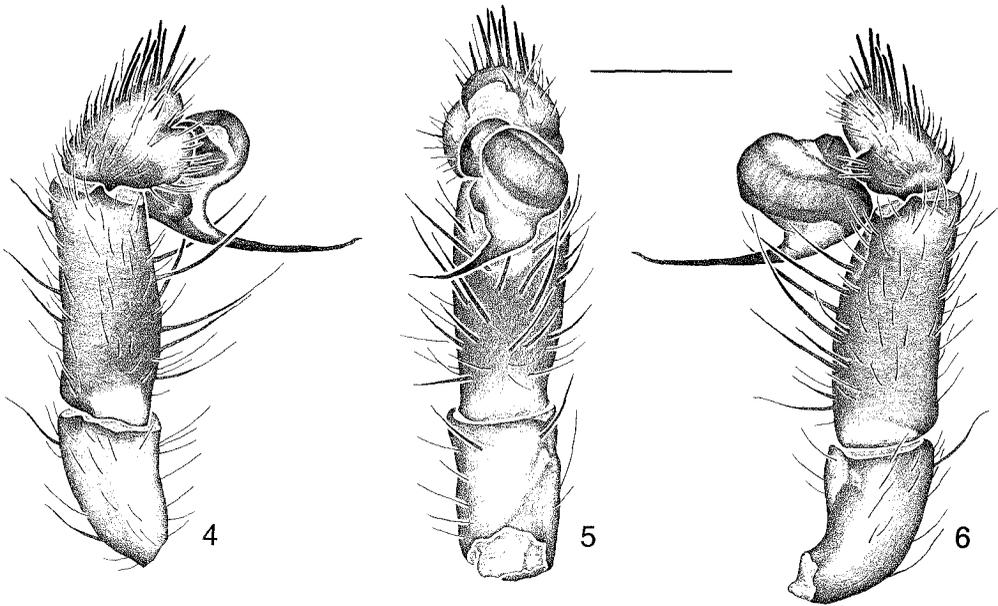
Description.—*Male* (Mazumbai). Total length 6.53. Carapace orange-brown, becoming dusky at margins above coxae and on pair of faint longitudinal bands on caput (Fig. 1); ocular area black with black extending on clypeus half way to anterior margin; chelicerae yellow-brown; sternum, coxae, and tro-

chanters yellow-white; legs with dusky annuli extending over most of femora, tibiae, and metatarsi, leaving only patellae, tarsi, and regions near joints yellow-brown; pedipalpi yellow-white except for dusky annulus on tibia; abdomen purple-grey except yellow-white on venter anterior of epigastric furrow, on booklung covers, and on spinnerets.

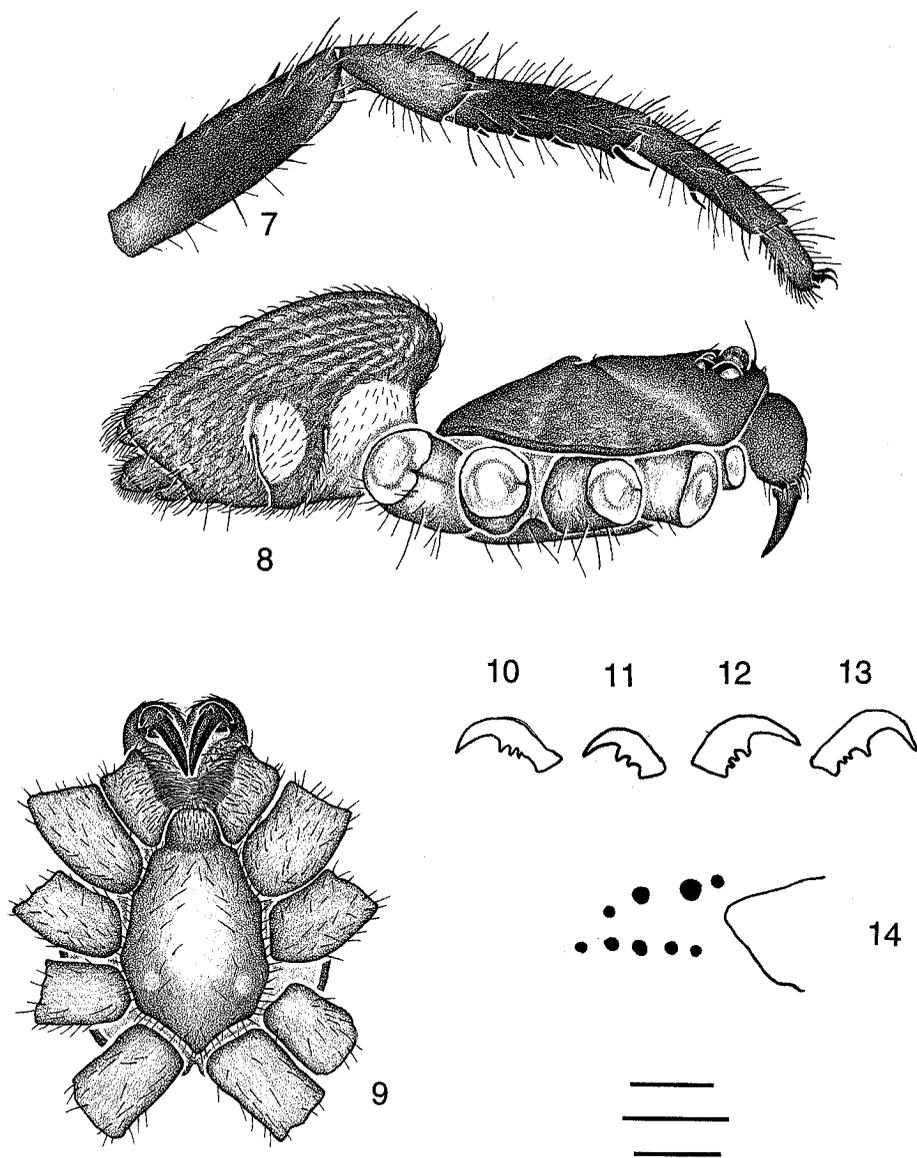
Carapace 2.81 long, 2.50 wide, height at



Figures 2-3.—Nests of female *Poecilomigas basilleupi*, Mazumbai, showing camouflaged outer surface of exposed nest wall with attached, open door. Scale = 5.0 mm.



Figures 4-6.—Left male pedipalpus of *Poecilomigas basilleupi*, Mazumbai. 4, Prolateral; 5, Ventral; 6, Retrolateral. Scale = 0.5 mm.



Figures 7-14.—Morphology of male *Poecilomigas basilleupi*, Mazumbai. 7, Leg I, retrolateral; 8, Habitus, lateral; 9, Cephalothorax, ventral; 10, Prolateral STC I; 11, Retrolateral STC I; 12, Prolateral STC IV; 13, Retrolateral STC IV; 14, Cheliceral teeth, schematic, promargin to top. Scale: top bar for 7 = 1.0 mm; middle for 8, 9 = 1.0 mm; bottom for 10-14 = 0.2 mm.

thoracic fovea $0.30\times$ carapace width; weakly rugose. Caput $0.62\times$ carapace width, low (Fig. 8), height at OA equal to that at fovea; with pair of short prefoveal setae but lacking setal rows; one large seta between AME; clypeus $0.45\times$ length OAL, margin weakly curved. Thoracic fovea recurved, width $0.20\times$ that of carapace, $3.20\times$ wider than long.

Ocular area width $0.61\times$ caput, $2.10\times$ wider than long; AER 0.97 wide, $1.07\times$ width PER. Ratio of eyes: AME:ALE:PME:PLE: $2.00:2.14:1.00:1.43$, diameter AME 0.22 ; AME separated by 0.43 of their diameter, PME by $3.43\times$ their diameter. Ocular quadrangle $1.31\times$ wider than long, posterior width $1.22\times$ anterior.

Sternum 1.84 long, 1.42 wide, widest behind coxae II and narrowed anteriorly, sparsely setose laterally; sigilla $0.14 \times$ width sternum, round, lateral, distance between $7.00 \times$ distance from margin (Fig. 9). Labium and pedipalpal coxae lacking cuspules; labium 0.39 long, 0.52 wide, pedipalpal coxae 0.87 long, 0.58 wide, apex weakly produced. Chelicerae 0.44 long, promargin of fang furrow with small basal, two large median, and one small distal tooth, retromargin with five small teeth (Fig. 14).

Legs sparsely covered with short setae. Femur I 1.02, tibia I 0.70, femur IV 0.90, and tibia IV $0.52 \times$ width carapace. Scopulae entire beneath tarsi III and IV and apically on metatarsi III ($\frac{1}{5}$) and IV ($\frac{3}{4}$). Spination: pedipalpus: femur d0-0-1, tarsus 10-12 dorsoapical; leg I (Fig. 7): femur d1-0-1, tibia p0-1-1-0, v1-1-1-1 (all r, apical enlarged); metatarsus v0-1(r)-0; leg II: femur d0-1-1-0, tibia p0-0-1-0, v1-1-1 (all r); leg III: femur d0-1-0; leg IV: femur d0-1-1-0. Superior tarsal claws with 2-4 basal teeth (Figs. 10-13). Leg measurements (Femur + Patella + Tibia + Metatarsus + Tarsus = [Total]): I: $2.62 + 1.45 + 1.84 + 1.77 + 0.77 = [8.45]$; II: $2.29 + 1.29 + 1.64 + 1.58 + 0.71 = [7.51]$; III: $1.81 + 1.09 + 1.26 + 1.19 + 0.87 = [6.22]$; IV: $2.32 + 1.93 + 1.35 + 1.55 + 1.00 = [8.15]$; pedipalpus: $1.45 + 0.74 + 0.93 + (\text{absent}) + 0.55 = [3.67]$.

Pedipalpus (Figs. 4-6) with femur 0.57, tibia $0.36 \times$ carapace width; femur 1.55, tibia

$1.70 \times$ length tarsus; tibia slender, height $0.41 \times$ length; bulb width $1.14 \times$ tarsus length; embolus length $1.51 \times$ bulb width. Abdomen 2.75 long, 2.19 wide, sparsely covered with coarse setae.

Female variation: (encompassing specimens from Mazumbai and Mt. Kilimanjaro; $n = 4$): Total length 7.60-8.93; height at fovea $0.32-0.36 \times$ carapace width. Caput $0.73-0.82 \times$ carapace width, flat to inclined, height at AER $0.94-1.12 \times$ height at fovea; width ocular area $0.50-0.59 \times$ caput width, diameter ALE $1.07-1.50 \times$ AME, PLE $1.11-1.28 \times$ PME; clypeus length $0.31-0.53 \times$ OAL, margin straight to curved, with 4-6 marginal and 5-9 median setae; thoracic fovea width $2.25-3.00 \times$ length. Sternal sigilla width $0.13-0.17 \times$ sternum width, round to slightly oval; labium with 14-19 cuspules, pedipalpal coxae with 15-23 cuspules; retromargin of fang furrow with 4-6 teeth. Tibia I with 5-7, metatarsus I with 4-5 retroventral spines, tibia II with 2-3 proventral spines. Prolateral STC IV with 1-3 teeth. Spermathecal length $4.00-4.54 \times$ diameter, length $0.74-1.47 \times$ base width.

Material examined.--**TANZANIA:** *Tanga Region:* West Usambara Mts., Mazumbai, $4^{\circ}49'S$, $38^{\circ}30'E$, elev. ca. 1400 m, 10-20 November 1995 (C. Griswold, D. Ubick, and N. Scharff) 1♂1♀ (CAS), 2♀ (ZMUC). *Kilimanjaro Region:* Mt. Kilimanjaro, Marungu, SE slopes, elev. 1800-2200 m, 20-27 July 1957 (P. Basilewsky & N. Leleup) 1♀ (MRAC #112228) (holotype of *Poecilomigas basilleupi*).

KEY TO SPECIES OF *POECILOMIGAS*

1. Males 2
- Females 4
- 2(1). Dorsum of abdomen pale, with anteromedian dark diamonds and posterior chevrons (Griswold 1987b: fig. 62); pedipalpal tibia relatively stout, height greater than $0.50 \times$ length; embolus elongate, length greater than $1.80 \times$ bulb width (Griswold 1987b: fig. 61). *elegans* Griswold 1987
- Dorsum of abdomen dark (Figs. 1, 8; Griswold 1987b: figs. 2, 33); pedipalpal tibia relatively slender, height less than $0.45 \times$ length (Fig. 6); embolus length less than $1.60 \times$ bulb width. . . . 3
- 3(2). Dorsum of abdomen with broad, dark median band, middle of sides pale (Griswold 1987b: figs. 2, 33); with at least weak scopulae beneath tarsi I (Griswold 1987b: fig. 35) and II
 *abrahami* (O.P. Cambridge 1889)
- Dorsum and sides of abdomen entirely dark (Figs. 1, 8); scopulae absent from tarsi I (Fig. 7) and II. *basilleupi* Benoit 1962
- 4(1). Dorsum and sides of abdomen entirely dark (Griswold 1987b: fig. 47); spermathecae straight, length less than $4.80 \times$ diameter (Griswold 1987b: fig. 46) *basilleupi* Benoit 1962
- Dorsum of abdomen with broad, dark median band, middle of sides pale (Griswold 1987b: figs. 1, 22); spermathecae of most specimens sinuate, length greater than $5.00 \times$ diameter (Griswold 1987b: figs. 41-45) *abrahami* (O.P. Cambridge 1889)

NATURAL HISTORY

Six nests of *Poecilomigas basilleupi* were observed at Mazumbai, and three collected and measured. All were vertically oriented on tree trunks or stumps (Figs. 2–3) and located in a crack or depression so that the exposed nest wall protruded out slightly or not at all from the surrounding bark. Each had a single thin, flexible, wafer door at the upper end attached by a horizontal hinge that was located on the exposed wall of the nest. The outer surface of the exposed wall incorporated bits of the surrounding substrate (e.g., lichen, bark and moss) such that the silken weave was not visible, effecting excellent camouflage (at least to human eyes). The outer surface was rough like bark but flexible, and felt like a soft spot on the bark. The inner surfaces of the nest and door were lined with a densely woven layer of off-white silk. The hidden wall of the nest that attaches to the bark was thinner than the exposed wall and had gaps exposing parts of the inner chamber directly to the bark. The dimensions (in mm) of these nests ($n = 3$), each of which contained a mature female, were (\bar{x} : min–max) length (21.67: 18.0–24.0), width (11.67: 10.0–14.0), depth (7.33: 6.0–8.0), door length (7.17: 6.5–8.0), and door width (9.00: 7.0–10.0). Doors were broadly oval, ratio of width/length = 1.07–1.43; the length of the nest was 2.37–2.67 \times the length of the occupant. A single male was found wandering at midnight on the trunk of a *Ficus* tree where occupied nests had been observed. The nests observed occurred on trees and stumps forming hedgerows along the edges of fields and small roads. No concerted effort was made to locate nests in undisturbed forest, and the occurrence of *P. basilleupi* in such forest is possible.

DISCUSSION

In addition to having the diagnostic strikingly banded tibiae and metatarsi typical of both sexes, males of *Poecilomigas abrahami* and *P. elegans* were diagnosed from males of *Migas* by having scopulae beneath at least some tarsi and dorsal femoral spines short to absent (Griswold 1987b). This diagnosis works for males of *P. basilleupi* as well.

The single door nests of *Poecilomigas basilleupi* resemble those recorded for *Calathotarsus* Simon 1903 (Schiapelli & Gerschman de Pikelin 1973), *Migas* L. Koch 1873 (Wil-

ton 1968) and *Moggridgea* O.P. Cambridge 1875 (O.P. Cambridge 1875; Griswold 1987a). They differ from the nests typical of *P. abrahami*, which have a door at each end, suggesting that the latter behavior may be derived.

ACKNOWLEDGMENTS

Principal support for this project was provided by National Science Foundation grant DEB-9296271, with additional support from the Exline-Frizzell Fund (California Academy of Sciences). Research was made possible through a Research Permit from the Tanzania Commission for Science and Technology (COSTECH) and Residence Permit Class C from the Tanzanian Department of Immigration, and export of specimens made possible by a CITES Exemption Certificate from the Wildlife Division of the United Republic of Tanzania, facilitated by Professor Kim M. Howell of the University of Dar-es-Salaam. Research at Mazumbai was made possible by Dr. S.A.O. Chamshama, Dean of Forestry, Sokoine University, Morogoro, and Mr. Modest S. Mrecha, Officer in Charge, Mazumbai Forest Reserve. Rudy Jocqué of the Musée Royal de L'Afrique Centrale, Tervuren (MRAC), lent the holotype of *Poecilomigas basilleupi*.

Nikolaj Scharff and Darrell Ubick helped in the field. All illustrations except claws and cheliceral armature are by Jenny Speckels. Assistance with manuscript preparation was provided by D. Ubick and Keith Dabney; N. Scharff took the nest photos and Gert Brovad (both ZMUC) made the prints. The manuscript was read and criticized by Fred Coyle and D. Ubick.

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- Manuscript received 15 June 1997, revised 10 November 1997.*