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A Revision of the Widespread Spider Genus *Zimiris* (Araneae, Prodidomidae)

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ABSTRACT

The spiders of the prodidomine genus *Zimiris* Simon have a unique spinneret configuration; although seldom collected, they appear to be synanthropic and hence widely distributed. The type species, *Z. doriai* Simon, was previously known only from the Old World (Sudan, Yemen, and India), but a male is newly recorded from Hispaniola (representing the first report of the family Prodidomidae from that island). *Zimiris mammillana* Thorell from Java, *Z. grisea* Banks from Mexico, *Z. guianensis* Dalmas from French Guiana, and *Neozimiris platnicki* Alayón from Cuba are newly synonymized with *Z. doriai*. A closely related species, *Z. diffusa*, is newly described for females from St. Helena and India, and a male from Socotra, that are hypothesized to be similarly synanthropic and conspecific.

INTRODUCTION

The genus *Zimiris* was established by Simon (1882) for a juvenile spider from Yemen with a unique spinneret configuration. The elongated and widely separated anterior lateral spinnerets, which originate anterior of the other spinnerets and bear extremely long piriform gland spigots (figs. 2, 16, 17), are so striking that Thorell (1890) even proposed a new family, Zimiroidae, for these animals. Despite this pedigree, the taxon has remained

quite obscure; among modern authors, only Cooke (1964) and Brignoli (1979) have treated the genus in detail, providing good illustrations of females and less satisfactory figures of males. Our sketchy knowledge of the genus can readily be ascribed to the extreme rarity of specimens in collections; both Cooke and Brignoli examined material from only a single country (India and Sudan, respectively).

Brignoli, however, was the first to indicate

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that *Zimiris doriai* Simon, the type species, might be widespread, despite the scarcity of specimens. He noted that the epigynal illustrations provided by Dalmas (1919) and Cooke (1964) for the second species to be described in the genus, *Zimiris indica* Simon (1884), matched the female he examined, and illustrated, from Sudan. Although an adult female of *Z. doriai* was recorded by Dalmas from Yemen, damage to the epigynal area prevented Dalmas from illustrating that specimen. Dalmas noted that this female's epigynum greatly resembles that of *Z. indica*, especially in the disposition of the openings and ducts; he surmised that there might be differences in the posterior portion, but the condition of the specimen rendered that conclusion uncertain. In his key to species, Dalmas distinguished *Z. indica* from *Z. doriai* only by coloration and posterior median eye separation, features that varied within the small sample available to Brignoli. Rather than accept the hypothesis that the small Sudan sample included both species (one shared with Yemen, and one with India), Brignoli synonymized the two names.

Our interest in this species was piqued by an adult male recently captured by the second author on the island of Hispaniola. The spider fauna of that island is very poorly known; indeed, Hispaniola is unique in that more spider families are recorded from its fossil fauna (specimens in Miocene amber from the Dominican Republic) than are known in its Recent fauna (45 families of fossils, and only 40 of Recent taxa; Penney and Pérez-Gelabert, 2002; Penney, in press; all of the 45 families known from Dominican amber do have extant members). The newly collected male represents the first record of the family Prodidomidae from Hispaniola, and thus brings the total number of families known in the Recent fauna to 41.

The male from Hispaniola displays the unusual eye pattern typical of the subfamily Prodidominae, with the posterior eye row so greatly procurved that the anterior lateral,

posterior lateral, and posterior median eyes of each side appear to form a single, curved row (fig. 1). Although sometimes treated as a subfamily of the Gnaphosidae (e.g., Platnick and Shadab, 1976), spinneret morphology suggests that prodidomids are actually a sizable group including three subfamilies that together represent the sister group of the Gnaphosidae (Platnick, 1990).

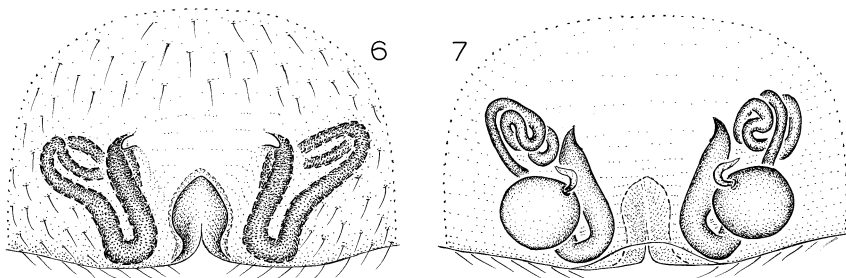
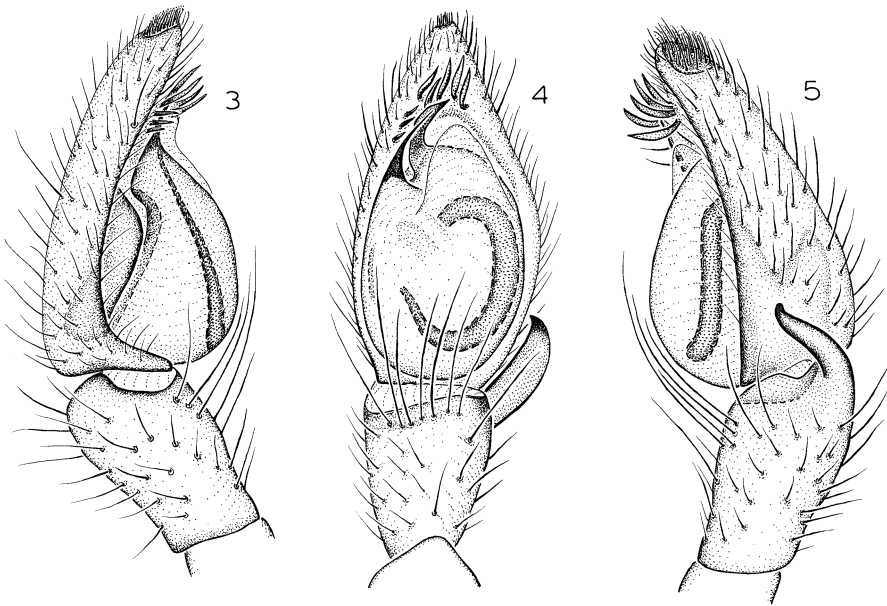
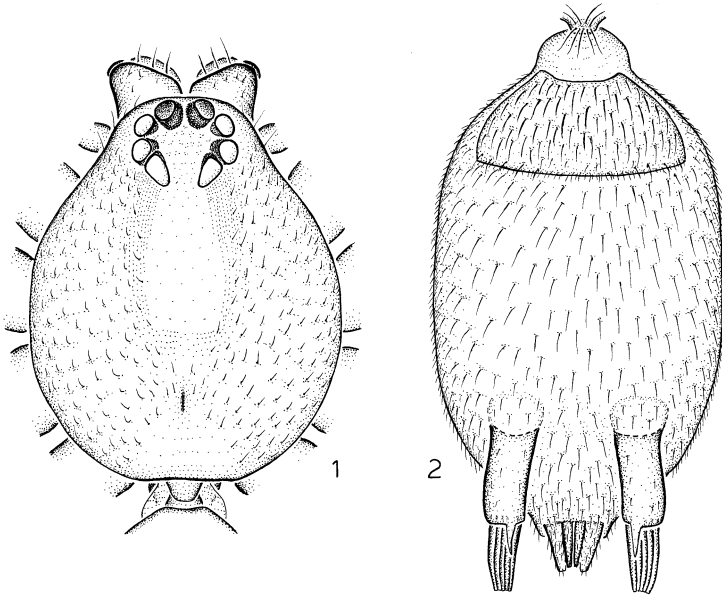
Only three genera of prodidomines have previously been recorded from the Caribbean islands: *Prodidomus* Hentz (from Cuba), *Neozimiris* Simon (from the Bahama Islands, Cuba, Puerto Rico, and Curaçao), and *Caudalia* Alayón (from Cuba; see Platnick and Shadab, 1976, and Alayón, 1980, 1992, 1995). Examination of the spinnerets indicates that this male does not belong to any of those genera. The posterior lateral spinnerets are small (unlike those of *Prodidomus*, which are greatly enlarged), and the anterior lateral spinnerets are widely separated (unlike those of *Neozimiris* and *Caudalia*, which are approximate).

Instead, the male appears to belong to *Zimiris* (and keys out to that genus in the key provided by Cooke, 1964). At present, four species are recognized in that genus (Platnick, 2003), but males are known only for *Z. doriai*. Brignoli (1979) illustrated only a retrolateral view of the male palp, but his figure, and both of those provided by Cooke (1964), match the Hispaniolan male quite well. That male was taken on the inside wall of a first floor hotel room in Puerto Plata, Dominican Republic. The unexpected palpal match, and the habitat, suggested that *Z. doriai*, already known to be synanthropic, might hence be widespread (as appears also to be the case for the type species of the family, *Prodidomus rufus* Hentz; Platnick and Baehr, in prep.).

If the type species has an artificially large distribution because of its synanthropic habits, then previously described species need to be reexamined, both within the genus and within those areas in which the species is

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Figs. 1–7. *Zimiris doriai* Simon. 1. Male carapace, dorsal view. 2. Male abdomen, ventral view. 3. Left male palp, prolateral view. 4. Same, ventral view. 5. Same, retrolateral view. 6. Epigynum, ventral view. 7. Same, dorsal view.



now known (or suspected) to occur. Such a reexamination suggests that the remaining species described as *Zimiris* are all probably conspecific with *Z. doriai*. In addition, another species described from the Caribbean, as *Neozimiris platnicki* Alayón (1992), appears also to match females of *Z. doriai*. Interestingly, Alayón's specimens were collected on books in his library (as were his specimens of *P. rufus*), where they were active only at night, and he considered the species to be synanthropic.

Alayón's observations accord well with those of Sherriffs (1919: 226), who reported that in Madras, India, this is:

A very delicate, small, nocturnal spider, found always at night running on the walls of rooms within the bungalow. Entirely a house-spider and not at all common. Found often behind pictures on the walls, the web [retreat] being just a few irregular threads on the back of the picture. Pair found together there. . . . ♂ caught running swiftly on the wall. When pursued it jumps like an Attid.

Simon (1893: 336), who collected a specimen in Yemen (Dalmas, 1919: 333), observed that these animals display an "extrême vivacité" when disturbed. We can confirm that from Hispaniola as well, and their speed may help explain the rarity with which specimens have been collected.

However, our initial hypothesis that there is a single, widespread species of *Zimiris* does not seem to be correct. Thanks to the help of several colleagues, we have been able to examine some previously unreported specimens from various Old World localities, and they do not all seem to be conspecific. Two females (from St. Helena and India) differ from those previously known, as does one male (from Socotra). In the absence of evidence indicating that there are more than two species within the genus, we here hypothesize that these three specimens represent a separate species, but that this second species is also synanthropic and widespread (at least in the Old World).

All measurements are in millimeters; spination descriptions follow those of Platnick and Shadab (1976). Specimens were examined from the collections of the American Museum of Natural History (AMNH), the Museum of Comparative Zoology, Harvard University (MCZ), the Muséum National

d'Histoire Naturelle, Paris (MNHN), the Musée Royal de l'Afrique Centrale, Tervuren (MRAC), the National Museum of Natural History, Leiden (RMNH), the Swedish Museum of Natural History, Stockholm (SMNH), and the Zoological Museum, University of Copenhagen (ZMUC).

RELATIONSHIPS

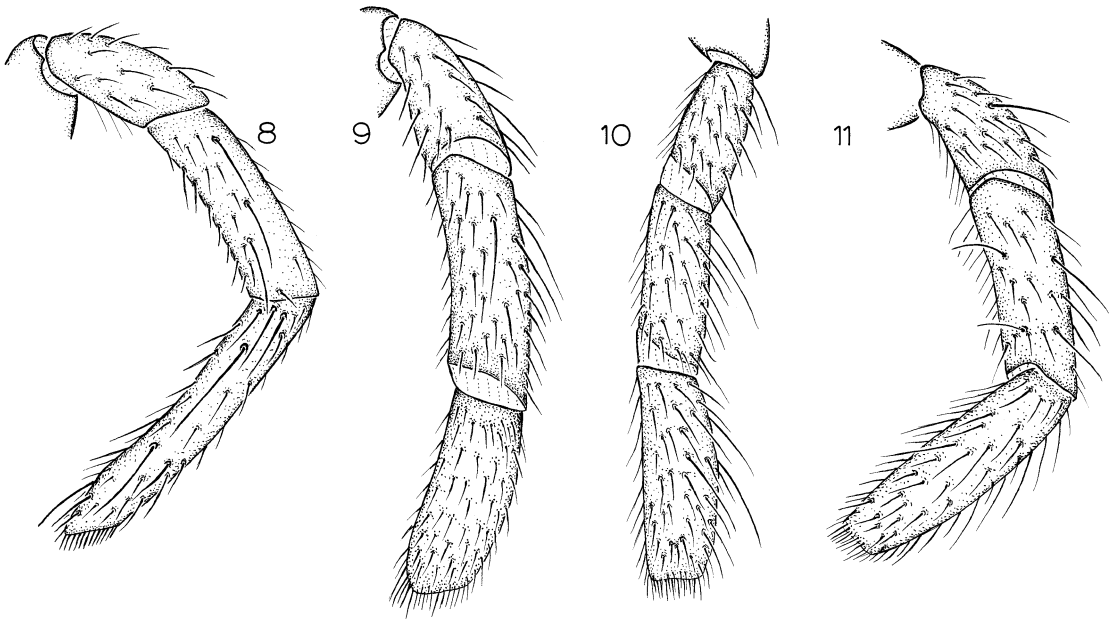
The placement of *Zimiris* in the subfamily Prodidominae has been traditional since the time of Simon (1893), but was recently questioned by Deeleman-Reinhold (2001: 553):

Several gnaphosoid genera are remarkable by having elongated anterior spinnerets whose bases are located in a much advanced position in relation to the posterior spinnerets. All these species obviously belong to the Prodidomidae. It is noteworthy that until fairly recently . . . the genera were placed in entirely different subfamilies: *Zimiris* in the Prodidomidae and *Molycria* Simon, *Honunius* Simon and *Myandra* Simon in the Gnaphosidae . . . Thus, in existing identification keys . . . they never featured together and their close relationship was not contemplated.

In her key (2001: 551), she distinguished the subfamilies Prodidominae and Molycriinae by anterior spinneret position, and she there (couplets 1, 2) placed *Zimiris* in the Molycriinae rather than in the Prodidominae.

It is certainly true that, because of their elongated and anteriorly advanced anterior lateral spinnerets, specimens of *Zimiris* could easily be confused with members of the Molycriinae. However, we disagree that prior authors were unaware of these similarities. Simon described members of both groups, and both Dalmas (1919) and Cooke (1964), in addition to treating *Zimiris* in detail, explicitly (and correctly) noted that *Cryptoerithus* Rainbow (1915) belongs to the Molycriinae, despite Rainbow's original association of it with the prodidomines.

If Deeleman-Reinhold's placement of *Zimiris* in the Molycriinae were correct, then the earliest family group name for that taxon would be Zimirinae rather than Molycriinae, based on Zimiroidea Thorell (1890) rather than Molycrieae Simon (1897). However, as Simon, Dalmas, and Cooke realized, *Zimiris* shares with other prodidomines a characteristically procurved posterior eye row (fig. 1), as well as female chelicerae that are at least



Figs. 8–11. Patella, tibia, and tarsus of left female pedipalp, prolateral view. **8.** *Zimiris doriai* Simon. **9.** *Prodidomus rufus* Hentz. **10.** *Neozimiris pubescens* (Banks). **11.** *Zimirina relegata* Cooke.

somewhat enlarged, divergent, and bear elongated fangs.

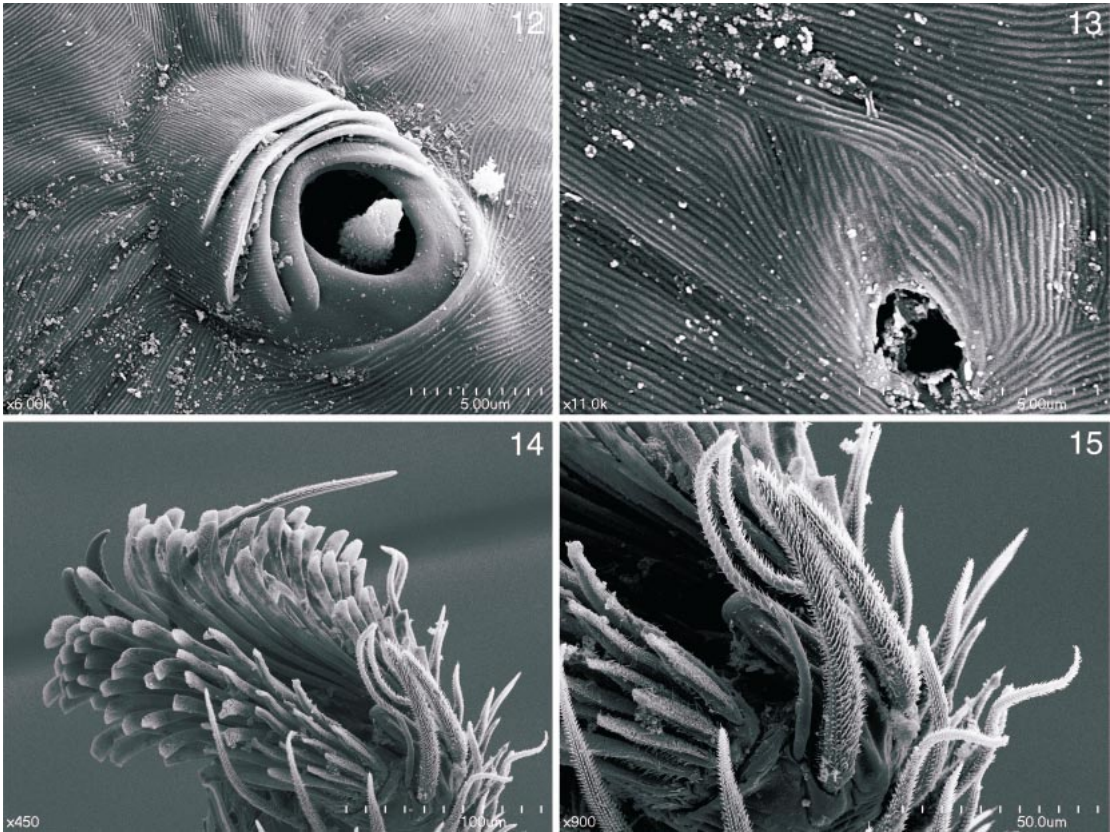
In addition to those classical characters, however, our examination of the anterior lateral spinnerets shows that in *Zimiris* the base of each piriform gland spigot is surrounded by a cluster of (presumably setal) sockets (fig. 17). Such closely clumped setae have been found in all three of the genera belonging to the Prodidominae whose spinnerets have been examined by scanning electron microscopy: *Prodidomus* (see Platnick, 1990: fig. 129), *Neozimiris* (see Platnick, 1990: fig. 125), and *Zimirina* Dalmas (see Platnick, 1990: fig. 119). They seemingly do not occur in the molycriline genera *Molycrila* or *Myandra* (see Platnick, 1990: figs. 110, 115), and we therefore hypothesize that they represent an additional synapomorphy of the Prodidominae. Thus, the eye row, cheliceral, and spigot characters all argue against the association of *Zimiris* with the Molycrilineae that is suggested by their advanced anterior lateral spinnerets. We conclude that the spinneret advancement was acquired independently, and therefore reject the transfer of *Zimiris* from the Prodidominae to the Molycrilineae.

Zimiris Simon

Zimiris Simon, 1882: 240 (type species, by monotypy, *Zimiris doriai* Simon; Simon indicated that the generic name is based on a “Nom. geogr.”, probably took it from the Natural History of Pliny the Elder, who referred to a city called Zimiris in a “sandy region of Ethiopia” [which for Pliny meant any desert region to the south, per Dr. H. D. Cameron, pers. commun.], and apparently considered it feminine in gender).

DIAGNOSIS: The combination of a prodidomine eye pattern, plus small posterior median and posterior lateral spinnerets that are widely separated from elongated, widely separated anterior lateral spinnerets bearing elongated piriform gland spigots (fig. 2), is diagnostic for the genus. Females can be distinguished from those of *Prodidomus*, *Neozimiris*, and *Zimirina* by their normal, unshortened palpal tarsi (compare figs. 8–11). The pair of enlarged and darkened setae found at the base of the claw tufts (figs. 14, 15) may also be diagnostic.

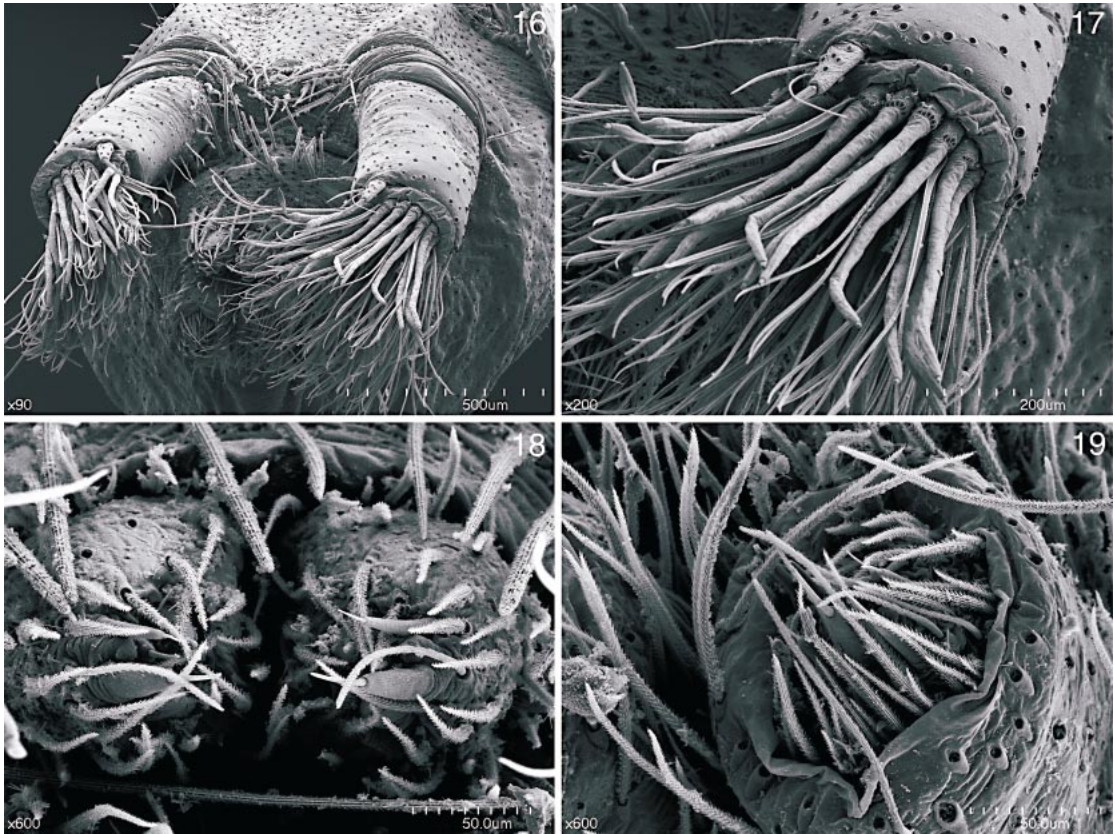
DESCRIPTION: Small to medium-sized spiders, total length 3–6. Carapace oval, narrowed in front to half its maximum width, with lateral margins heavily sclerotized only



Figs. 12–15. *Zimiris doriai* Simon, female. **12.** Trichobothrial base, tarsus I, dorsal view. **13.** Tarsal organ, leg I, dorsal view. **14.** Claws, claw tufts, and basal pair of tarsal setae, leg IV, distal view. **15.** Basal pair of tarsal setae, distal view.

in clypeal area, posterior margin invaginated at pedicel, not reflexed; surface coated with recumbent, light setae, without tubercles; thoracic groove short, shallow, longitudinal. Eight eyes in two rows, anterior medians circular, dark, other eyes oval, light, posterior medians largest, flat, triangular; from above, anterior eye row slightly recurved, posterior row very strongly procurved, from front, anterior row slightly, posterior row very strongly procurved; anterior medians separated by about their diameter, almost touching anterior laterals; posterior medians separated by about their maximum width, almost touching posterior laterals; anterior and posterior laterals separated by much less than their radius; median ocular quadrangle slightly wider in back than in front and than long. Chelicerae vertical, divergent, paturon without

boss, promargin with row of long, curved setae, seta closest to fang base greatly elongated, distinctly bent toward midline at about one-eighth its length; promargin and retro-marginal teeth absent, fang long, arched; chilum small, unipartite, triangular. Labium wider than long, widened at one-fourth its length, producing pentagonal outline, tip of pentagon at middle of anterior margin. Endites long, convergent anteriorly, bent and obliquely depressed near anterior margin of labium; serrula apparently absent (but absence not confirmed by scanning electron microscopy). Sternum shield-shaped, flat, with strongly rebordered margins except along distinct posterior protrusion between coxae IV, not expanded anteriorly, with only indistinct extensions between coxae but with large, triangular extensions to middle of cox-



Figs. 16–19. *Zimiris doriai* Simon, female. **16.** Spinnerets, distal view. **17.** Anterior lateral spinneret, distal view. **18.** Posterior median spinnerets, distal view. **19.** Posterior lateral spinnerets, distal view.

ae; surface smooth, with long setae at lateral margins between coxae, posterior margin with numerous long setae, widely separating coxae IV. Single epimeric sclerite on each side, above coxae, not extending between coxae, not fused to carapace. Pedicel composed of two dorsal sclerites (anterior sclerite deeply excavated anteriorly) and weak, triangular ventral sclerite almost reaching posterior tip of sternum.

Abdominal dorsum without anterior scutum in males; cuticle with long, recumbent setae; epigastric scutum weakly sclerotized, without postepigastric sclerites, booklung covers not ridged; colulus apparently absent but wide, straight posterior spiracle apparently present at level of anterior lateral spinneret insertions. Six spinnerets, anterior laterals greatly elongated, widely separated, advanced anteriorly (fig. 16), originating at po-

sition about four-fifths of distance between epigastric furrow and anal tubercle, with elongate ventral tubercle arising from cuticle of basal segment, bearing major ampullate gland spigot, soft portions of cuticle bearing greatly elongated piriform gland spigots almost as long as basal segment (fig. 17); posterior medians small, narrow, contiguous with only slightly larger posterior laterals, each with at least one minor ampullate gland spigot, one aciniform gland spigot, and one cylindrical gland spigot (fig. 18); posterior laterals each with at least two aciniform gland spigots and one cylindrical gland spigot (fig. 19).

Leg formula 4123, legs elongate, coated with recumbent, dark setae; coxae and trochanters without dorsal tubercles, fourth trochanters elongated, twice as long as others; anterior coxae without protuberant postero-

lateral corners; trochanters not notched; metatarsi I, II with weak prolateral scopula composed of short, straight setae; posterior metatarsi without distal preening brushes; tarsi elongated, without cuticular cracks, with two long claws bearing no ventral teeth, strong claw tufts composed of distally widened setae, accompanied ventrally by pair of thick, darkened, almost spiniform bristles (figs. 14, 15); dorsal surface of tarsi with unmodified proximal margin; trichobothria present dorsally on all tarsi and metatarsi, evenly spaced along segments, bases ridged (fig. 12); tarsal organ capsulate (fig. 13). Female palpal femur, tibia, and tarsus with few, long spines, tarsus long, not enlarged distally, with weak distodorsal pad of setae. Anterior legs without spines, but tibiae with weak proventral bristle at distal tip; posterior tibiae and metatarsi with few long, ventral spines.

Male palpal tibia wider distally than proximally, with distal, bent retrolateral apophysis; embolus originating prodistally, accompanied by narrow conductor, median apophysis apparently obsolete. Epigynum with conspicuous midpiece and anterior openings; spermathecae small, situated posteriorly.

Zimiris doriai Simon

Figures 1–8, 12–19

Zimiris doriae Simon, 1882: 240, pl. 8, figs. 12–15 (juvenile female holotype from Aden, Yemen, should be in the Museo Civico di Storia Naturale, Genoa, not examined).—Deeleman-Reinhold, 2001: 553, fig. 962 (habitus, male from Sudan).

Zimiris indica Simon, 1884: CXLI (female holotype from Ramnad, India, in MNHN, examined).—Dalmás, 1919: 333, fig. 33 (epigynum).—Cooke, 1964: 261, figs. 65–68 (both sexes, from Madras, Tamil Nadu, India; this male first described, but not illustrated, by Sherriffs, 1919: 220, sub *Z. doriai*).—First synonymized by Brignoli, 1979: 125.

Zimiris mammillana Thorell, 1890: 384 (female holotype from the Dutch East Indies, probably Java, in SMNH, examined). NEW SYNONYMY.

Zimiris doriai: Simon, 1893: 338, fig. 300 (emendation of patronym for Giacomo Doria).—Dalmás, 1919: 332 (description of first adult female, with damaged epigynum, from Yemen).—Brignoli, 1979: 125, figs. 5–8 (both sexes, from Sudan).

Zimiris griseus Banks, 1898: 214, pl. 13, fig. 4 (juvenile female holotype from Mexico, no spe-

cific locality, deposited in California Academy of Sciences, destroyed). NEW SYNONYMY.

Zimiris guianensis Dalmás, 1919: 335, figs. 20, 34 (female holotype from French Guiana, should be in MNHN, lost). NEW SYNONYMY.

Zimiris grisea: Dalmás, 1919: 336 (emendation of gender).

Neozimiris platnicki Alayón, 1992: 2, fig. 1A, B (female holotype from San Antonio de los Baños, La Habana, Cuba, in the Museo Nacional de Historia Natural, Havana, compared with our figures by Dr. G. Alayón). NEW SYNONYMY.

DIAGNOSIS: Males differ from those of *Z. diffusa* by the bent, sinuous retrolateral tibial apophysis (figs. 4, 5) and the relatively narrow, retrolaterally excavated conductor (fig. 4); females differ from those of *Z. diffusa* by the omega-shaped rather than triangular epigynal midpiece (fig. 6) and by the longer, narrower paramedian epigynal ducts (figs. 6, 7).

MALE (Dominican Republic): Total length 3.0. Carapace 1.29 long, 1.00 wide, abdomen 1.71 long, 1.07 wide. Carapace and legs pale yellow, abdomen pale white. Legs unusually long (femora, tibiae I 1.67, 1.59; II 1.36, 1.16; III 1.19, 1.03; IV 1.71, 1.71). Leg spination: tibiae III p0–0–1, v1p–1p–1p; IV p0–0–1, v2–1p–2; metatarsi: III v0–0–1p; IV v0–1p–2. Retrolateral tibial apophysis bent, sinuous (figs. 4, 5), embolus proapical, spiniform, accompanied by narrow, retrolaterally excavated conductor (figs. 3, 4).

FEMALE (Sudan): Total length 3.5. Carapace 1.54 long, 1.38 wide, abdomen 1.98 long, 1.32 wide. Coloration as in male. Legs unusually long (femora, tibiae I 1.76, 1.58; II 1.58, 1.38; III 1.39, 1.26; IV 2.05, 2.00). Leg spination: tibiae III p0–0–1, v1p–1p–1p; IV p0–0–1, v2–1p–2, r0–0–1; metatarsi: III v0–0–1p; IV v1p–1p–2. Epigynal midpiece omega-shaped (fig. 6), paramedian ducts long, narrow (figs. 6, 7).

MATERIAL EXAMINED: **Dominican Republic:** *Puerto Plata:* Hotel Victoriana, Puerto Plata, Mar. 25, 2003, on wall in room at night (D. Penney, AMNH), 1 ♂. **India:** *Tamil Nadu:* Madras, Sept. 1917, bedroom wall, College House (R. Sherriffs, ZMUC), 2 ♂, 4 ♀; Ramnad [= Ramanathapuram] (MNHN 4615), 1 ♀ (holotype). **Indonesia:** *Java:* probable locality, no further data available (Van Hasselt, SMNH), 1 ♀ (holotype). **Ivory**

Coast: Appouesso, 6°35'N, 3°29'W, Feb. 15, 1997, in house (R. Jocqué, L. Baert, MRAC 205391), 1 ♀. **Sudan:** *Al-Khartum:* Khartoum, June 1967 (W. Wismeyer, RMNH 7997), 1 ♀, Aug. 1967 (W. Wismeyer, RMNH 7996), 2 ♂. **Yemen:** no specific locality (MNHN 9841), 1 ♀ (with damaged epigynum).

DISTRIBUTION: Widespread, probably including at least Mexico (Banks, 1898), Cuba (Alayón, 1992), Dominican Republic, French Guiana (Dalmás, 1919), Ivory Coast, Sudan, Eritrea (juvenile of undetermined species, recorded from Massawa by Kulczyński, 1901: 2), Yemen, India, Malaysia (Simon, 1893: 336, 338), and Java.

SYNONYMY: The type species of *Zimiris* was originally described on the basis of a juvenile from Yemen; given that a male from nearby Socotra is here assigned to *Z. diffusa*, that Yemeni juvenile holotype might belong to either of the species recognized here. In the interest of nomenclatorial stability, it seems best to accept Dalmás' (1919) identification of an adult female from Yemen as representing *Z. doriai* (i.e., to accept MNHN 9841 as the "defactotype" of this name); given that assumption, the material examined by both Cooke (1964) and Brignoli (1979) remains correctly identified. Under that assumption, however, it also seems likely that each of the remaining available names is a synonym of *Z. doriai*.

Although Dalmás (1919) expressed doubts that *Z. mammillana* Thorell is correctly placed in *Zimiris*, Thorell's description of the epigynum typographically likens the shape of the epigynal midpiece to the Greek letter omega, which fits exactly the structure of *Z. doriai* (rather than *Z. diffusa*). Since Simon (1882) had illustrated the spinneret characters of the genus, but did not illustrate the epigynum of *Z. indica* (the only other adult female described prior to Thorell's work), this epigynal (and presumed spinneret) match made it seem very unlikely that Thorell's specimen was misplaced, or anything other than a female of *Z. doriai*. At our request, Dr. Giuliano Doria of the Museo Civico di Storia Naturale, Genoa, kindly attempted to locate Thorell's specimen; when he was unsuccessful, he suggested that because the specimen had been received by Thorell from

Van Hasselt, rather than from Genoa, it might be retained in the Thorell collection in Stockholm. Our colleague Dr. Torbjörn Kronstedt was able to find the type for us in that collection, and as a result we can confirm both the generic placement of the specimen and the status of the name as a junior synonym of *Z. doriai*.

Banks' illustration of the spinnerets of *Z. grisea* clearly shows a member of this genus, but his description of the juvenile includes no features that separate that now-destroyed specimen from *Z. doriai*. Jiménez (1999) recorded specimens from the inside and outside walls of houses in the city of La Paz, Baja California Sur (under the names *Zimiris griseus* and *Zimiris* sp.); she has kindly compared that material with copies of our illustrations and confirmed that the specimens belong to *Z. doriai*.

Dalmás' figure of the epigynum of *Z. guianensis* differs little from the one he provided for *Z. indica*, and in those few details that do differ, his figure corresponds more closely to *Z. doriai* than to *Z. diffusa*. Dalmás based his species on a specimen from the Simon collection; the absence of that tube from the Simon collection in MNHN (C. Rollard, in litt.) may indicate that Simon had already determined that the name is a synonym.

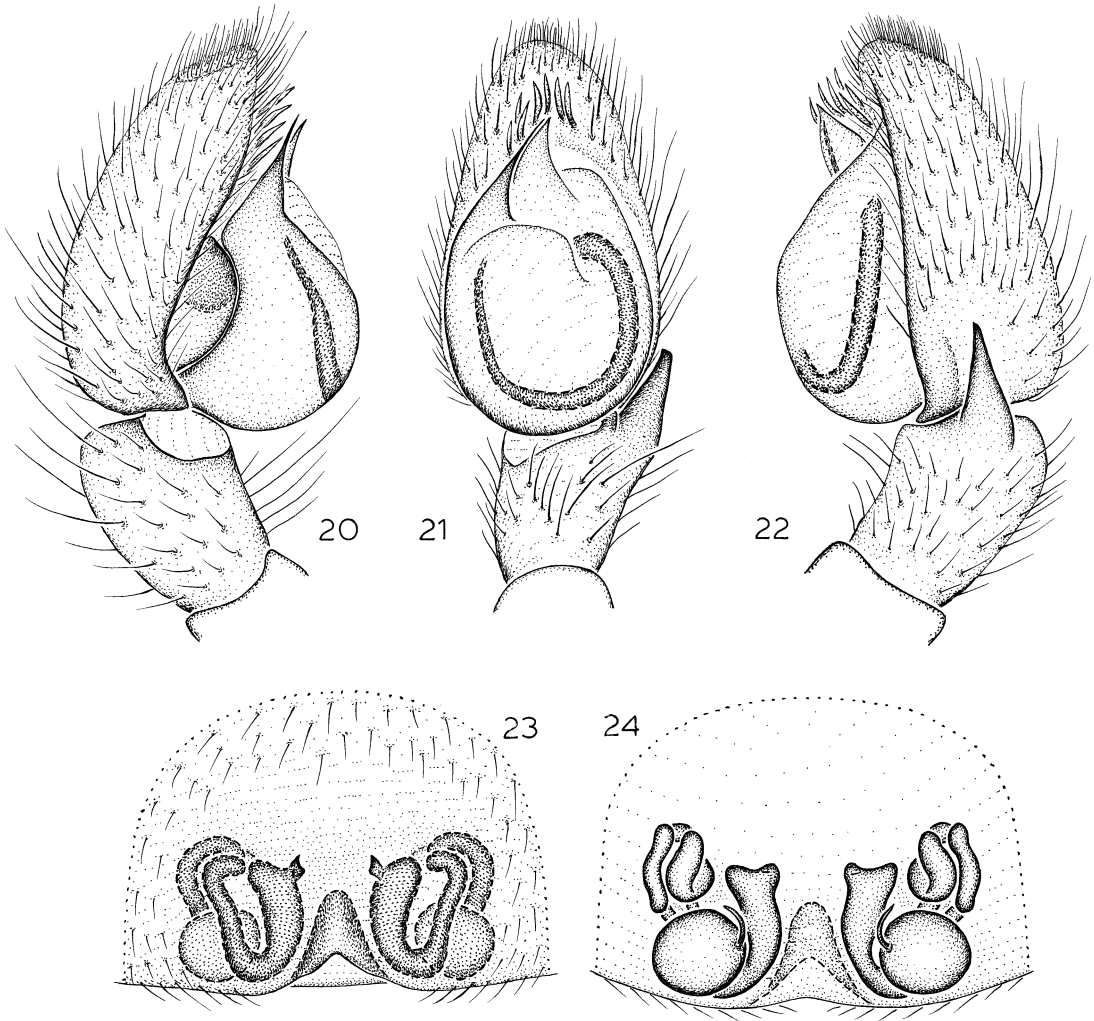
Alayón's epigynal figures for *N. platnicki* also show a relatively large and open epigynal midpiece, and relatively long and narrow paramedian ducts; given that *Z. diffusa* has not yet been found anywhere in the New World, Alayón's synanthropic specimens seemed much more likely to represent *Z. doriai* than *Z. diffusa*. That has now been confirmed by Dr. Alayón, who was kind enough to compare the holotype with copies of our figures.

Zimiris diffusa, new species
Figures 20–24

TYPE: Holotype female from Birddown Point, St. Helena (Jan. 4, 1995; N. Ashmole), deposited in AMNH.

ETYMOLOGY: The specific name refers to the widespread, presumably synanthropic (inferred) distribution of the species.

DIAGNOSIS: Males and females have not yet been collected together, but there is so far



Figs. 20–24. *Zimiris diffusa*, new species. 20. Left male palp, prolateral view. 21. Same, ventral view. 22. Same, retrolateral view. 23. Epigynum, ventral view. 24. Same, dorsal view.

no evidence that more than two species exist within the genus. Males differ from those of *Z. doriai* by the straight, triangular retrolateral tibial apophysis (figs. 21, 22) and by the relatively wide, retrolaterally straight conductor (fig. 21); females differ from those of *Z. doriai* by the triangular rather than omega-shaped epigynal midpiece (fig. 23) and by the shorter, wider paramedian epigynal ducts (figs. 23, 24).

MALE (Socotra): Total length 2.3. Carapace 0.95 long, 0.76 wide, abdomen 1.17 long, 0.78 wide. Carapace and legs pale yellow, abdomen pale white. Legs less elongate

than in *Z. doriai* (femora, tibiae I 0.98, 0.75; II 0.86, 0.58; III 0.70, 0.48; IV 0.97, 0.92). Leg spination: tibiae III p0–1–1, v1p–2–2, r0–0–1; IV p0–1–1, v2–1p–2, r1–0–1; metatarsi: III v0–0–1p, r0–0–1; IV p1–0–1, v2–0–1p, r1–0–1. Retrolateral tibial apophysis straight, triangular (figs. 21, 22), embolus proapical, spiniform, accompanied by wide, triangular conductor (figs. 20, 21).

FEMALE (holotype): Total length 3.8. Carapace 1.58 long, 1.31 wide, abdomen 2.27 long, 1.61 wide. Coloration as in male. Legs relatively longer than in male (femora, tibiae I 1.80, 1.64; II 1.58, 1.40; III 1.53, 1.29; IV

2.13, 2.05). Leg spination: tibiae III p0–0–1, v1p–1p–1p; IV p0–0–1, v2–1p–2, r0–0–1; metatarsi: III v0–0–1r; IV v1p–0–2. Epigynal midpiece triangular (fig. 23), paramedian ducts short, wide (figs. 23, 24).

OTHER MATERIAL EXAMINED: **India:** *Kerala:* Calicut, 1946, in house (W. Davis, MCZ), 1♀. **Yemen:** *Socotra Is.:* Hadibo Plain, Nov. 1, 2000 (A. van Harten, RMNH), 1♂.

DISTRIBUTION: If the sexes are correctly matched here, the species is widespread in the Old World, from St. Helena east to Socotra and India.

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