

On the genus *Xyccarph* in central Amazonia (Araneae: Oonopidae)

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Summary

The type species of the genus *Xyccarph*, *X. myops* Brignoli, is redescribed on the basis of new material, including females, from the type locality in central Amazonia. Two new species of the genus are described, *X. wellingtoni* from the same locality and *X. migrans* from a nearby inundation forest. All three species are soil-dwelling spiders with strongly reduced eyes. The spiders of the species living in the annually flooded forest migrate to the tree trunk area long before the forest floor is flooded. Descriptions are based on scanning electron micrographs of male palps, labia and gnathocoxae and study of the cleared female genitalia.

Introduction

Brignoli (1978) described the genus *Xyccarph* based on a single male, collected in 1966 by L. Beck in the forest reserve “Reserva Ducke” near Manaus in central Amazonia, Brazil. Brignoli (1978) gave no formal diagnosis of the genus, but a short description of the blind male and a discussion of the relationships with other genera in Oonopidae. He also transferred the six-eyed *Stenoconops tenuis* Vellard, 1924 to the genus.

More recently, ecological studies carried out in the same reserve (Adis, 1988; Morais, 1985) and in inundation forests near Manaus (Adis, 1984; Höfer, 1990) revealed more material of the type species and of two new species. We are now able to present a redescription of the type species, based on scanning electron micrographs and including the female, and describe the male of a new species from the same site and another new species, which was collected in very high abundance in an inundation forest.

The material studied is deposited in the following collections: AMNH, American Museum of Natural History, New York (N.I. Platnick); IBSP, Instituto Butantan, São Paulo (V.R. von Eickstedt); INPA, Instituto Nacional de Pesquisas da Amazônia, Manaus (C. Magalhães); MCN, Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre (E.H. Buckup); MCZ, Museum of Comparative Zoology, Harvard (H.W. Levi); SMNK, Staatliches Museum für Naturkunde, Karlsruhe (H. Höfer).

All measurements are in millimetres. Magnification figures in legends provide only relative scale information. Terminology of the genitalia follows that of Forster & Platnick (1985) for Dysderoidea.

Genus *Xyccarph* Brignoli

Xyccarph Brignoli, 1978: 144.

Type species: Xyccarph myops Brignoli, 1978: 146

Diagnosis: Xyccarph can be recognised by the presence of only two vestigial eyes on the anterior border of the carapace (Fig. 1), by the bifid gnathocoxae in males (Figs. 2, 13, 19) and the reduced bulbous of the male palp with a distal tubular embolus, which carries accessory structures (Figs. 3–6, 15–18, 23–26).

Note: Brignoli (1978) considered *Xyccarph* to be a close relative of *Stenoconops* Simon, 1891. He transferred *Stenoconops tenuis* Vellard, a species from south-east Brazil (Niterói, Rio de Janeiro) with a full set of functional eyes (Vellard, 1924: fig. 52a) to *Xyccarph*. Taking into account the existence of several neotropical oonopid species apparently belonging to *Stenoconops*, among which the eyes show a complete range of reduction from normal to completely absent (N.I. Platnick, pers. comm.), we decided to maintain the genus *Xyccarph* on a preliminary basis (temporarily including Vellard’s species) until a better knowledge of the neotropical genera of oonopids allows a clear delimitation.

Xyccarph migrans, new species (Figs. 1–11, 27–28)

Xyccarph cf. *myops*: Höfer, 1990: 175 (lapsus in generic name).

Types: Male holotype and one female paratype from Tarumã Mirim River, Manaus, Amazonas, Brazil, 13 April 1977, U. Irmiler coll. (INPA). Other paratypes: 6♂ 6♀, same data (MCN 25555); 10♂ 10♀, same locality, 22 April 1988, H. Höfer coll. in arboreal funnel trap (SMNK 1165); 5♂ 5♀, same data (INPA); 5♂ 5♀, same data (AMNH); 5♂ 5♀, same data (MCZ).

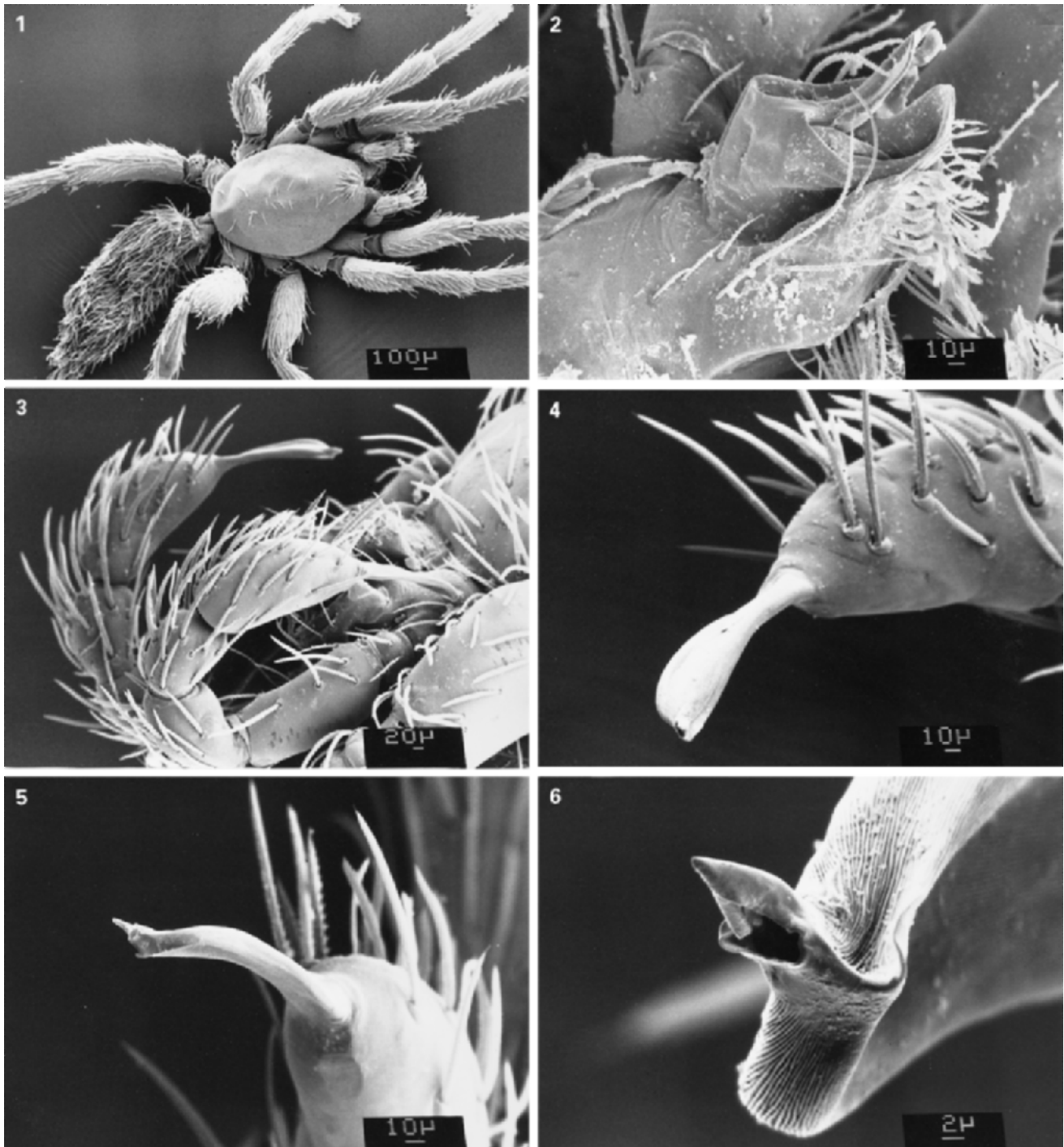
Etymology: The specific name refers to the annual migration of the population of the species in the type locality.

Diagnosis: Males are recognised by the strongly modified bifid gnathocoxae (Figs. 2, 7), the external branch bearing four projections, and by the distally originating long and slightly curved tubular embolus (Figs. 3–6). Females are characterised by an epigyne with a conspicuous straight copulatory opening, a narrow enlarged sclerotised plate and a large posterior receptaculum (Figs. 27–28).

Male: (holotype): Cephalothorax yellowish white, with anterior border of carapace slightly darker. Abdomen pale white, with two black posterior ventral spots. Legs white. Total length 2.00 (paratypes 1.80–2.00). Carapace 0.70 long, 0.50 wide, with two lines of strong hairs terminating in concentration of hairs in cephalic area (Fig. 1). Whole carapace covered by elongated oval plates, slightly elevated above striated surface, at least some of them with pore (Fig. 11). Two vestigial eyes without pigment on anterior border of carapace. Chelicerae without teeth. Gnathocoxae strongly modified, bifid, internal branch subtriangular with distal scopula, external branch with four projections (Figs. 2, 7). Labium with anterior subrectangular excavation, bordered by pair of setae (Fig. 7). Abdomen

1.00 long, 0.60 wide, without scutum. Leg measurements: I - femur 0.52/patella 0.37/tibia 0.40/metatarsus 0.35/tarsus 0.25/total 1.89; II-femur 0.42; III-femur 0.40; IV-femur 0.65. Leg spination: femora dorsally with enlarged spines (Fig. 1), I-II d1-1-0; II-IV d1-1-1, p0-0-1. Single, subdistal trichobothrium on metatarsi (Fig. 9). Tarsi with prominent onychium, bearing spatulate hairs on ventral surface (Fig. 10). Palp with reduced bulbous. Embolus originating distally, long and tubular with semicircular dorsal accessory structure and sub-apical opening with sinuous border (Figs. 3–6). Embolus probably accommodated and protected by modified gnathocoxae (Fig. 3).

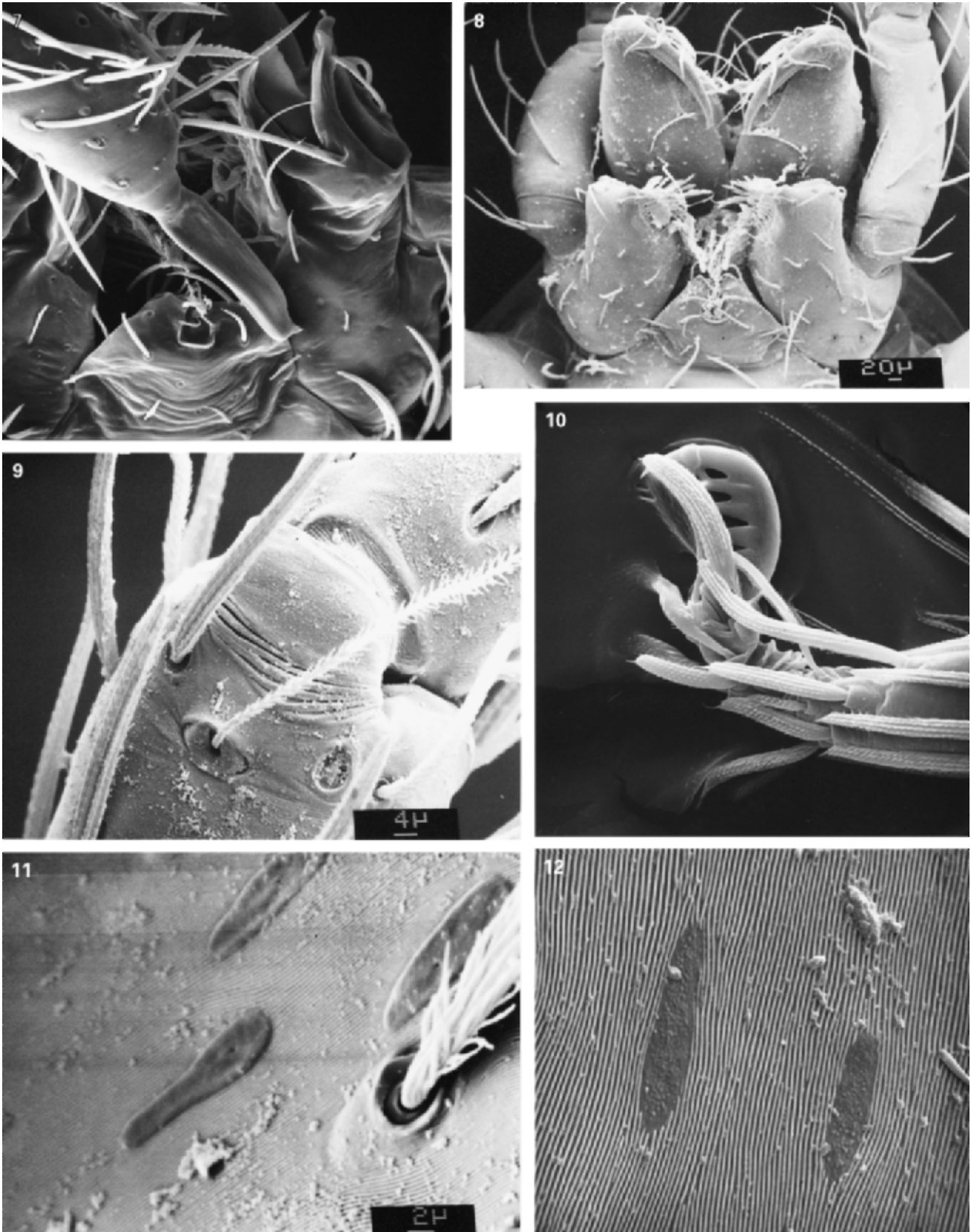
Female (paratype): Coloration as in male. Total length 1.80. Carapace 0.70 long, 0.55 wide. Eyes absent. Chelicerae without teeth. Endites not modified (Fig. 8). Labium as in male. Abdomen 1.00 long, 0.60 wide, as in male. Leg measurements: I - femur 0.52/patella 0.30/tibia 0.40/metatarsus 0.35/tarsus 0.20/total 1.77; II-femur 0.47; III-femur 0.35; IV-femur 0.60. Leg spination as in male. Cleared female genitalia in ventral view showing narrow, enlarged anterior sclerotised plate. Copulatory opening conspicuous, straight. Internally with slender tubular anterior receptaculum, anterior median rod, central V-shaped plate and large U-shaped posterior receptaculum (Figs. 27–28).



Figs. 1–6: *Xyccarph migrans*, new species. **1** Male, dorsal view; **2** Male, gnathocoxa, ventral view (i=internal branch, e=external branch, l-4=projections on external branch); **3** Male, right palp in accommodated (protected) position; **4–6** Details of male palp: **4** Prolateral view; **5** Ventral prolateral view; **6** Ventral distal view.

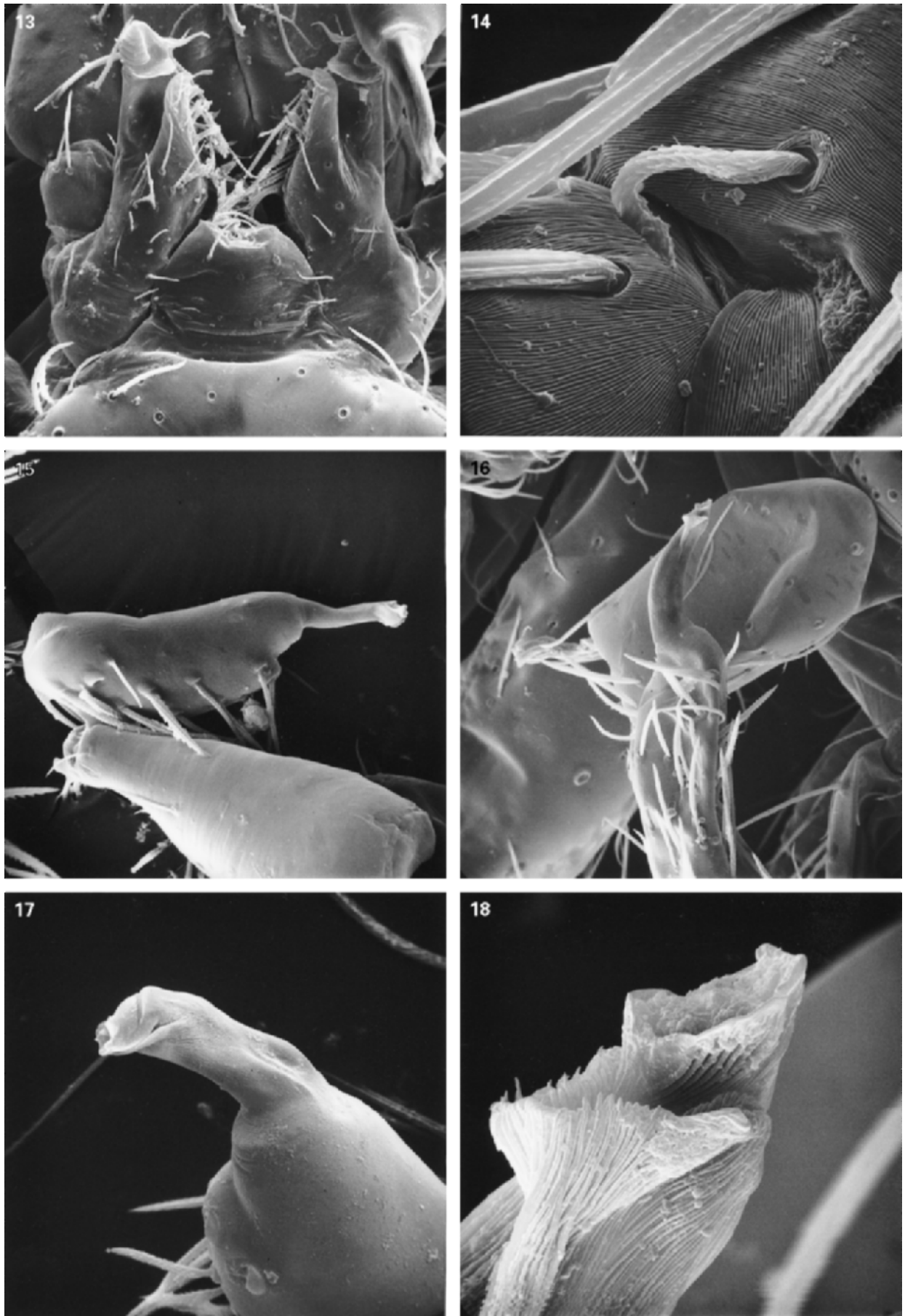
Natural history: The species was found exclusively in a blackwater inundation forest near Manaus, where during the non-inundated period the spiders live in the

matting of fine roots on the base of buttressed trees. One observation was made of the spiders in rotten wood together with termites (*Nasutitermes*). About two



Figs. 7–11: *Xyccarph migrans*, new species. **7** Male, labium and gnathocoxae, ventral view; **8** Female, labium and gnathocoxae, ventral view, $\times 350$ (right palp coming down from top left corner); **9** Male, trichobothrium on metatarsus I; **10** Male, tarsus with onychium, $\times 800$; **11** Male, plates on carapace.

Fig. 12: *Xyccarph myops* Brignoli. Male, plates on carapace, $\times 4000$.



Figs. 13–18: *Xyccarph myops* Brignoli. **13** Male, labium and gnathocoxae, $\times 300$ (left palp coming down from top right corner); **14** Male, proprioreceptor bristle on metatarsus I, $\times 3000$; **15** Male palp, retrolateral view, $\times 300$; **16** Male palp, dorsal view, $\times 300$; **17–18** Details of embolus: **17** Prolateral ventral view $\times 600$; **18** Dorsal distal view $\times 3000$.

months before their microhabitat is inundated the population started migrating to the higher trunk region, resulting in captures in arboreal funnel traps of 1200–3500 individuals/trunk within 2 months (Höfer, 1990). Only adults were caught on the floor and during upward migration, thus we suppose reproduction to take place in the trunk region, from where the forest floor is recolonised after the water has receded (Höfer, 1990).

Distribution: Known only from the type locality.

Other material examined: BRAZIL: Amazonas, Manaus, blackwater inundation forest at Tarumã Mirim River, numerous males and females collected by U. Irmeler in 1977, J. Adis in 1983 and 1984, and H. Höfer in 1988 (SMNK 1166, MCN 25556, 25557, 25558, INPA, IBSP).

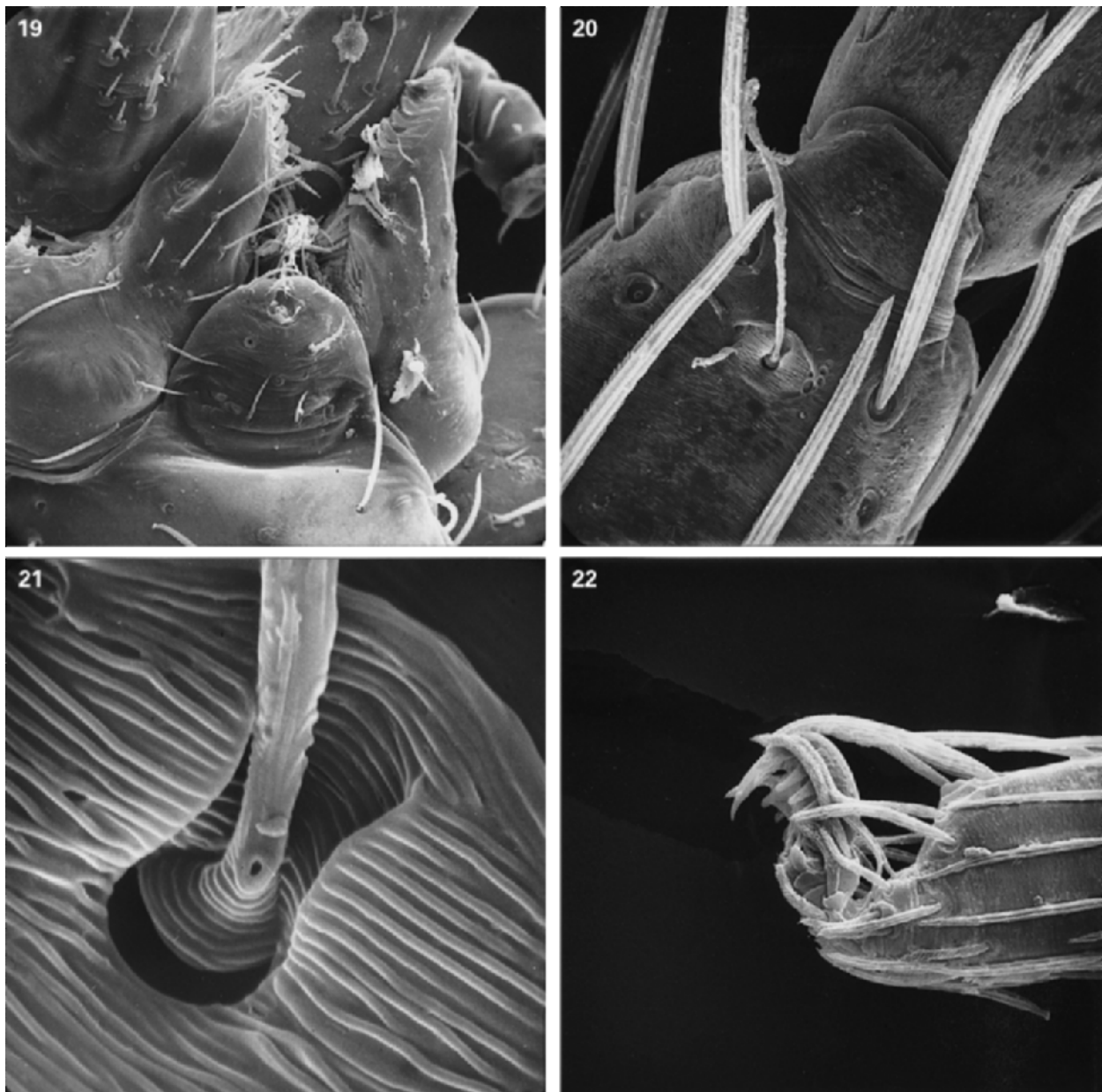
***Xyccarph myops* Brignoli** (Figs. 12–18, 29–30)

Xyccarph myops Brignoli, 1978: 146 (male holotype from Reserva Ducke, Manaus, Amazonas, Brazil, 15 April 1966, L. Beck

coll., deposited in SMNK, not examined, loaned to P. Lehtinen and not returned to SMNK collection); Brignoli, 1983: 193.

Diagnosis: Males are recognised by the modified bifid gnathocoxae, the external branch bearing a subterminal sulcus and terminating in a spiral on the external side and a filamentose projection on the internal side (Fig. 13). Embolus originating distally, short and tubular, with subapical opening and accessory structures (Figs. 15–18). Females are characterised by an epigyne with a conspicuous curved copulatory opening, a small subrectangular sclerotised plate and a small, curved posterior receptaculum (Figs. 29–30).

Male: Cephalothorax yellowish white. Abdomen pale white. Legs white. Total length 1.20. Carapace 0.50 long, 0.35 wide, with two lines of strong hairs, but without concentration of hairs in cephalic area. Whole carapace covered by elongated oval plates without pores (Fig. 12). Two vestigial eyes without pigment on anterior border

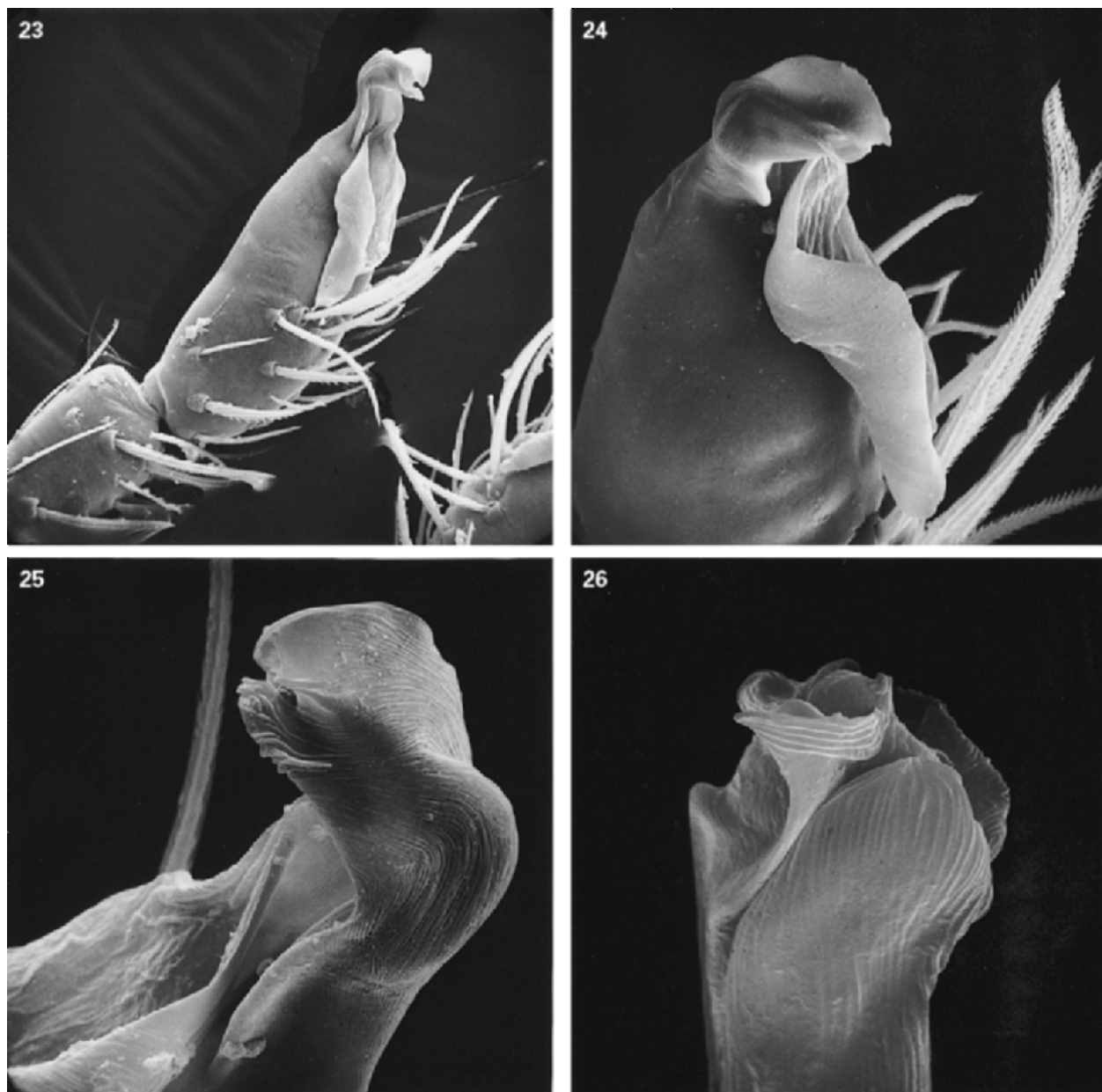


Figs. 19–22: *Xyccarph wellingtoni*, new species. **19** Male, labium and gnathocoxae, $\times 400$; **20** Male, trichobothrium on metatarsus I, $\times 1600$; **21** Detail of trichobothrium, $\times 16000$; **22** Male tarsus with onychium, $\times 800$.

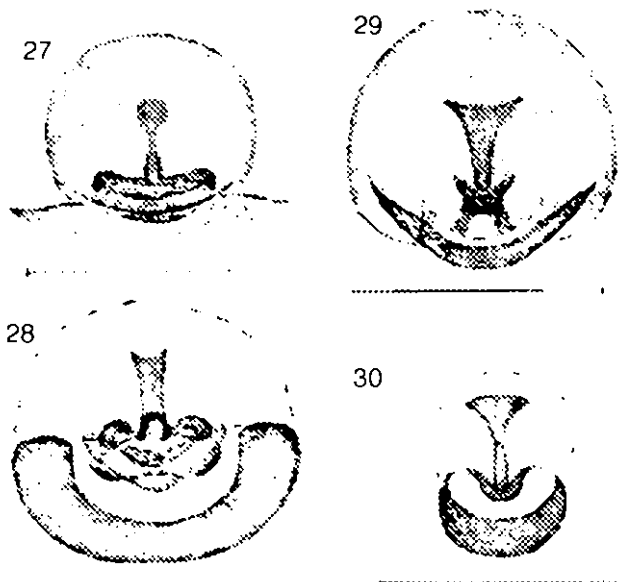
of carapace. Chelicerae without teeth. Gnathocoxae modified, bifid, internal branch subtriangular with distal scopula, external branch subtriangular, with subterminal sulcus and terminating in spiral on external side and filamentose projection on internal side (Fig. 13). Labium with anterior subrectangular excavation, bordered by pair of setae (Fig. 13). Abdomen 0.70 long, 0.30 wide, without scutum. Leg measurements: I - femur 0.40/patella 0.30/tibia 0.35/metatarsus 0.25/tarsus 0.13/total 1.43; II-femur 0.35; III-femur 0.30; IV-femur 0.55. Leg spination: femora dorsally with enlarged spines, I-II d1-1-0; III d1-1-1, p0-0-1; IV d1-1-1-1, p0-0-1. Single trichobothrium subdistally on metatarsi. Metatarsi with distal lateral proprioceptor bristle (Fig. 14). Tarsi with prominent onychium bearing spatulate hairs on ventral surface. Palp with reduced bulbous. Embolus originating distally, tubular with subapical opening and accessory structures (Figs. 15–18).

Female: Coloration as in male. Total length 1.60. Carapace 0.60 long, 0.40 wide. Eyes absent. Chelicerae without teeth. Endites not modified. Labium as in male. Abdomen 0.70 long, 0.45 wide, as in male. Leg measurements: I - femur 0.42/patella 0.22/tibia 0.32/metatarsus 0.25/tarsus 0.12/total 1.33; II - femur 0.40; III - femur 0.30; IV-femur 0.55. Cleared female genitalia in ventral view showing small subquadrangular plate, sulcated anteriorly. Copulatory opening conspicuous, curved. Internally with slender tubular anterior receptaculum, anterior median rod and small, strongly curved posterior receptaculum (Figs. 29–30).

Natural history: The spiders were collected in soil samples in a non-inundated rainforest, extracted by a modified Kempson apparatus (Morais, 1985). We never found them in our numerous litter samples from the same sites and therefore suppose that the spiders live deep in the root mat or soil.



Figs. 23–26: *Xyccarph wellingtoni*, new species. **23** Male palp, retrolateral dorsal view, $\times 360$; **24–26** Details of embolus: **24** Dorsal retrolateral view, $\times 800$; **25** Dorsal prolateral view; **26** Ventral distal view.



Figs. 27–28: *Xyccarph migrans*, new species. **27** Female epigyne, ventral view; **28** Ditto, dorsal view.

Figs. 29–30: *Xyccarph myops* Brignoli. **29** Female epigyne, ventral view; **30** Ditto, dorsal view.

Distribution: Known only from the type locality.

Material examined: BRAZIL: Amazonas: Manaus, Reserva Florestal Adolfo Ducke, 1♂ 1♀, 13 October 1982, J. W. de Morais coll. (SMNK 1167); 4♂ 2♀, 6 September 1983, J. W. de Morais coll. (MCN 25559, INPA, SMNK 1168).

Xyccarph wellingtoni, new species (Figs. 19–26)

Types: Male holotype, Reserva Florestal Adolfo Ducke, Manaus, Amazonas, Brazil, 8 September 1982, J. W. de Morais coll. (SMNK 1169). Paratypes: 1♂ (without abdomen), one immature, same locality and collector, 6 September 1983 (MCN 25554); 1♂ (without abdomen and legs), same locality and collector, 8 September 1982 (INPA).

Etymology: The species name is a homonym in honour of José Wellington de Morais, the collector of both species of *Xyccarph* in the Reserva Ducke.

Diagnosis: Males are recognised by the modified bifid gnathocoxae, the external branch relatively short and simple, with a subterminal sulcus and a filamentose projection on the internal side (Fig. 19). The tubular embolus originates distally and is short and curved, with accessory structures and a large membranous lamella reaching down the dorsal side of the bulbus (Figs. 23–26).

Male: Cephalothorax yellowish-white. Abdomen pale white. Total length 1.15. Carapace 0.55 long, 0.40 wide, with two lines of strong hairs, but without concentration of hairs in cephalic area. Whole carapace covered by elongated oval plates. Two vestigial eyes without pigment on anterior border of carapace. Chelicerae without teeth. Gnathocoxae modified, bifid, internal branch subtriangular with distal scopula, external branch subtriangular, with subterminal sulcus and a filamentose projection on internal side (Fig. 19). Labium with anterior oval excavation, bordered by pair of setae

(Fig. 19). Abdomen 0.65 long, 0.42 wide, without scutum. Leg measurements: I-femur 0.32/patella 0.25/tibia 0.27/metatarsus 0.20/tarsus 0.12/total 1.16; II-femur 0.30; III-femur 0.22; IV-femur 0.40. Leg spination: femora dorsally with enlarged spines, I d1-1-0, p0-0-1; II d1-1-0; III–IV d1-1-1, p0. Single trichobothrium subdistally on metatarsi, with pore on base of bothrium (Figs. 20–21). Tarsi with prominent onychium bearing spatulate hairs on ventral surface (Fig. 22). Palp with reduced bulbus. Embolus originating distally, shorter than in other species, curved, with subapical opening, very complex distal accessory structures and large membranous lamella reaching down on dorsal side of bulbus (Figs. 23–26).

Female: Unknown.

Natural history: All specimens were found in the same extracted soil samples as *X. myops* (see above).

Distribution: Known only from the type locality.

Other material examined: BRAZIL: Amazonas, Manaus, Reserva Florestal Adolfo Ducke, 1♂, 6 September 1983, J. W. de Morais coll. (used for scanning photographs).

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