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Amazoromus, a new genus of the spider family Gnaphosidae (Araneae) from central Amazonia, Brazil

Abstract
A new genus, *Amazoromus*, is proposed for four gnaphosid species from a central Amazonian rainforest in Brazil. *Zimiromus cristus* PLATNICK & HÖFER is transfered to the new genus and three new species, *A. kedus*, the type species, *A. becki* and *A. janauari* are described.

Resumo
Um novo gênero de aranhas da família Gnaphosidae (Araneae) da Amazônia central
O gênero novo, *Amazoromus*, é proposto para quatro espécies de gnafosídeos da Amazônia central, Brasil. *Zimiromus cristus* PLATNICK & HÖFER é transferido para *Amazoromus* e três espécies novas, *A. kedus* (espécie-tipo), *A. becki* e *A. janauari* são descritas.

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Introduction

The subfamily Echeminae was relimited by PLATNICK & SHADAB (1976a; 1976c; 1979) and is characterized by the combined presence of a strongly procurved posterior eye row, dentate tarsal claws, unadvanced anterior spinnerets and a male palpal structure typically involving a long embolus originating basally on the prolateral side of the tegulum. Three New World echemine genera are known at the moment, *Scopoides* PLATNICK, *Zimiromus* BANKS and *Echemoides* MELLO-LEITÃO and all were revised by PLATNICK & SHADAB (1976b; 1976c; 1979).

During recent examination of gnaphosids collected during ecological projects developed in central Amazonia we found specimens with the characters of the Echeminae. However, these specimens are not congeneric with the New World genera already described, because they possess diagnostically distinct genitalia. Therefore we propose a new genus, *Amazoromus*, and include four species: *Zimiromus cristus* PLATNICK & HÖFER, which is transferred to the new genus and three new species, all from Amazonas, Brazil.

Material and Methods

The spiders studied are deposited in the following collections: AMNH, American Museum of Natural History, New York (N. I. PLATNICK); 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); SMNK, Staatliches Museum für Naturkunde, Karlsruhe (H. HÖFER). The format of descriptions and abbreviations follow PLATNICK & SHADAB (1975). Measurements are in millimeters. The epigynes were cleared in clove oil to study the internal structures, as proposed by LEVI (1965).

Systematics

Amazoromus, new genus

Type species: *Amazoromus kedus*, new species.
Etymology: The generic name is a contraction of the word Amazonas, region where all known species of the genus occur, and *Zimiromus*, and is masculine in gender.

Diagnosis: *Amazoromus* may be distinguished from all other gnaphosid genera by genitalic characters: male palpi with well developed retrolateral tibial apophyses, bulbus without conductor (figs 1, 2, 3); female epigynum with numerous median transversal striations (fig. 1c, d), spermathecae basal and rounded (fig. 1d). Specimens of *Amazoromus* can be easily separated from the other New World echemine genera by the following characters: from *Echemoides* by lacking the pseudosegmented tarsi on all legs; from *Zimiromus* by lacking a conductor on the male palp and a scape on the female epigynum; from *Scopoides* by having well developed tibial retrolateral apophyses in males and a reduced atrium and globose spermathecae in females.
Description: Total length 2.70-3.56. Carapace oval in dorsal view, widest between coxae II and III, narrowed in front, truncated posteriorly, orange, with black rings around anterior median eyes, with some filiform setae on clypeal margin, shorter setae in ocular area. Cephalic area not elevated. Thoracic groove longitudinal, straight. From above, anterior eye row procurved, posterior row strongly procurved. Anterior median eyes circular, dark, other eyes oval, light, all subequal in size. AME separated by 1/3 their diameter, almost touching ALE; PME separated by half their diameter, from PLE by 1/3 their diameter. MOQ roughly square. Clypeal height slightly smaller than AME diameters. Chelicerae with three promarginal teeth and one retromar-

ginal denticle. Endites short, oblong, with deep median oblique depressions, strong serrulae and weak scopulae. Labium short, subrectangular, anterior margin rounded. Sternum oval, slightly rebordered, subtriangular posteriorly, not projecting between coxae IV. Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora I - II d1-1-1, p0-0-1; III - IV d1-1-1, p0-0-1, r0-0-1; tibiae I v0-0-1p, III - IV v1p-2-2, p1-1-1, r1-1-1; metatarsi I II v2-0-0, III v2-1r-2, p1-1-0, r1-1-0, IV v2-1r-2, p1-0-1, r1-1-1. Tarsi and metatarsi with weak scopulae, more strongly developed in females. Tarsi with two dentate claws and claw tufts. Trochanter notched. Metatarsi without preening comb. Abdomen light gray, with orange anterior scutum in males. Six spinnerets, anteriors long, with three large piriform gland spigots. Palp with well developed tibial retrolateral apophysis, frequently enlarged at base (figs 1b, 2b, 3b); Conductor absent. Embolus long, originating basally on prolateral side of tegulum, usually enlarged at base, coiled at tip (figs 1a, 2a, 3a). Short median apophysis (except in *A. becki*, new species, where it is long). Tegular projection, when present, distal and weakly sclerotized (fig. 3a). Epigynum with anterior hood, numerous transverse striations and a reduced atrium (fig. 1c). Internally with median lobes, short, narrow ducts and basal, globose spermathecae (fig. 1d).

Amazoromus cristus (PLATNICK & HÖFER), new combination

Zimiromus cristus PLATNICK & HÖFER, 1990: 10 (male holotype and female paratype from igapó forest at Rio Tarumã Mirím, Amazonas, Brazil (September 2, 1976: J. ADIS), deposited in INPA, examined.

Diagnosis: *Amazoromus cristus* (see PLATNICK & HÖFER, 1990: 8, figs 19-22) seems closest to *A. kedus*, but may be distinguished by an embolus bifid at its tip and the distally enlarged tibial retrolateral apophysis of the male palp and a short anterior hood and numerous transverse striations of the female epigynum.

Distribution: Known only from the type locality in central Amazonia, Brazil.

Amazoromus kedus, new species
Figure 1

Types: Male holotype and female paratype captured by arboreal funnel traps in Reserva Florestal Adolfo Ducke, Manaus, Amazonas, Brazil (November 1991 - August 1992; H. HÖFER and T. GASNIER), deposited in INPA.
Etymology: The specific name is an arbitrary combination of letters.

Diagnosis: *Amazoromus kedus* seems closest to *A. cristus* (see PLATNICK & HÖFER, 1990: 8, figs 19-22), but may be distinguished by the embolus enlarged at its middle, the distally narrowed retrolateral tibial apophysis of the male palp (fig. 1a,b) and the wide anterior hood and fewer transverse striations of the female epigynum (fig. 1c,d).
Male: Total length 3.20. Carapace 1.40 long, 1.10 wide. Femur II 0.90 long. Eye sizes and interdistances: AME 0.12, ALE 0.10, PME 0.12, PLE 0.10; AME-AME 0.04, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.05, ALE-PLE 0.04. MOQ length 0.32, front width 0.30, back width 0.27. Embolus strongly enlarged at middle, curved at tip. Median apophysis short (fig. 1a). Retrolateral tibial apophysis very long, with pointed tip (fig. 1b). Leg spination typical for genus.
Female: Total length 3,50. Carapace 1.45 long, 1.05 wide. Femur II 1.00 long. Eye sizes and interdistances: AME 0.14, ALE 0.11, PME 0.10, PLE 0.09; AME-AME 0.04, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.06, ALE-PLE 0.02. MOQ length 0.28, front width 0.27, back width 0.25. Epigynum with wide hood and few transverse striations (fig. 1c). Spermathecal ducts narrow, spermathecae basal, globose (fig. 1d). Leg spination: femora I - II d0-1-1; tibiae III v0-1p-2, p1-1-0, r1-1-0, IV v1p-2-2, p1-1-0, r1-1-0; metatarsi III v1p-1r-2, r0-1-2; IV v1p-2-2, p0-1-2, r0-1-2.

Other material examined: Brazil, Amazonas, Manaus, Reserva Florestal Adolfo Ducke, arboreal funnel trap, 3 males and 1 female October 14, 1991 - May 18, 1992 (H. HÖFER and T. GASNIER, MCN 24056; SMNK; AMNH).
Distribution: Known only from the type locality in central Amazonia, Brazil.

Amazoromus becki, new species
Figure 2

Types: Male holotype captured by an arboreal funnel trap in Reserva Florestal Adolfo Ducke, Manaus, Amazonas, Brazil (November 4, 1991; H. HÖFER and T GASNIER), and male paratype from the same locality (October 26, 1992; H. HÖFER and T GASNIER), deposited in INPA and SMNK, respectively.
Etymology: The specific name is a patronym in honor of Prof. Dr. LUDWIG BECK, acarologist and ecologist of Staatliches Museum für Naturkunde in Karlsruhe, for making the ecological project in central Amazonia possible.

Diagnosis: The male of *Amazoromus becki* is easily distinguished from other males by the elongated median apophysis and the short, subtriangular tibial retrolateral apophysis (fig. 2).
Male: Total length 2.70. Carapace 1.30 long, 0.90 wide. Femur II 0.80. Eye sizes and interdistances: AME 0.12, ALE 0.10, PME 0.12, PLE 0.12; AME-AME 0.05, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.04, ALE-PLE 0.02. MOQ length 0.28, front width 0.27, back width 0.25. Embolus long, coiled at tip; median apophysis strongly developed (fig. 2a); retrolateral tibial apophysis short, subtriangular (fig. 2b). Leg spinati-

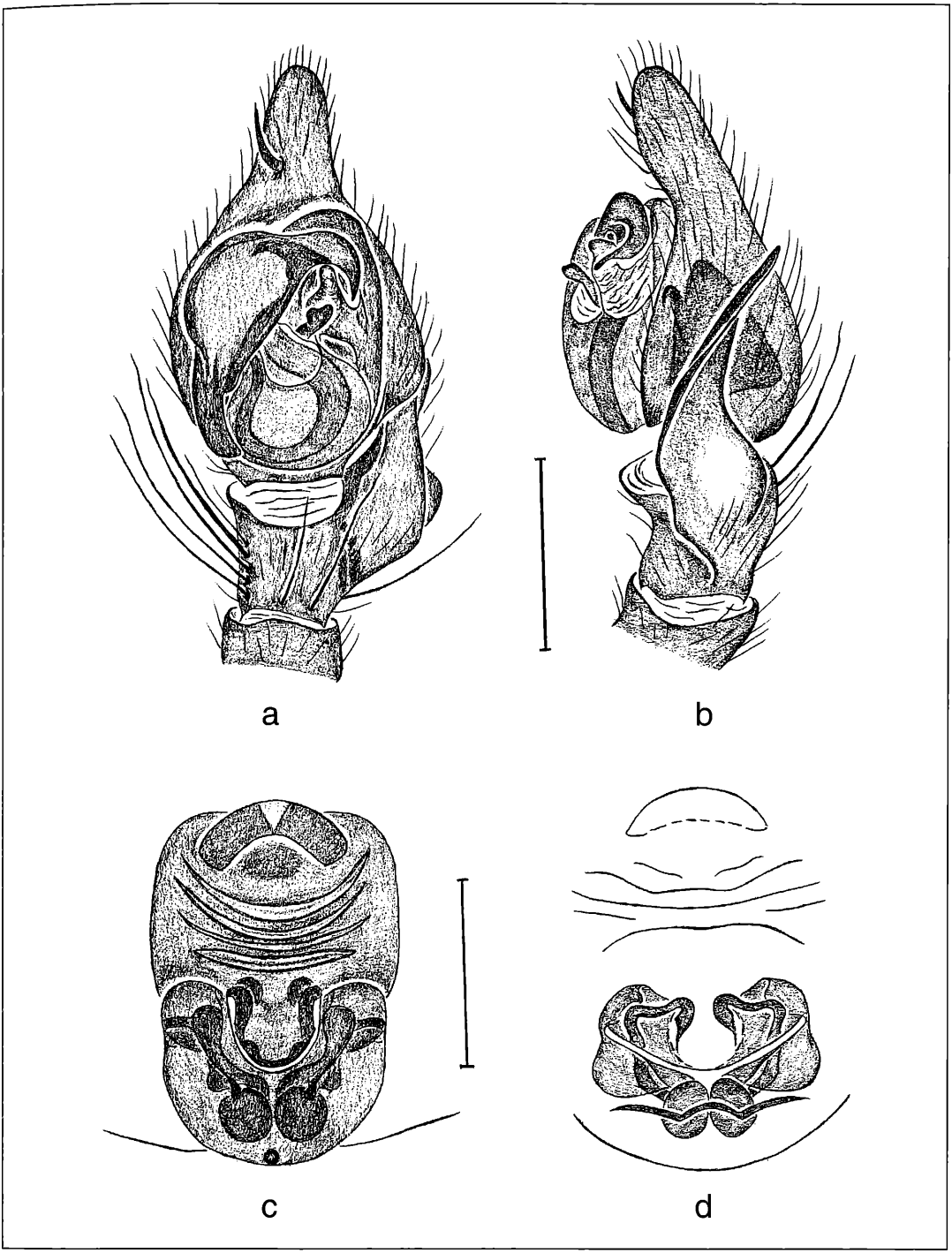

Figure 1. *Amazoromus kedus*, new species: a) Male left palpus, ventral view; b) Same, retrolateral view; c) Epigynum, ventral view; d) Same, dorsal view. Scale lines: 0.25 mm.

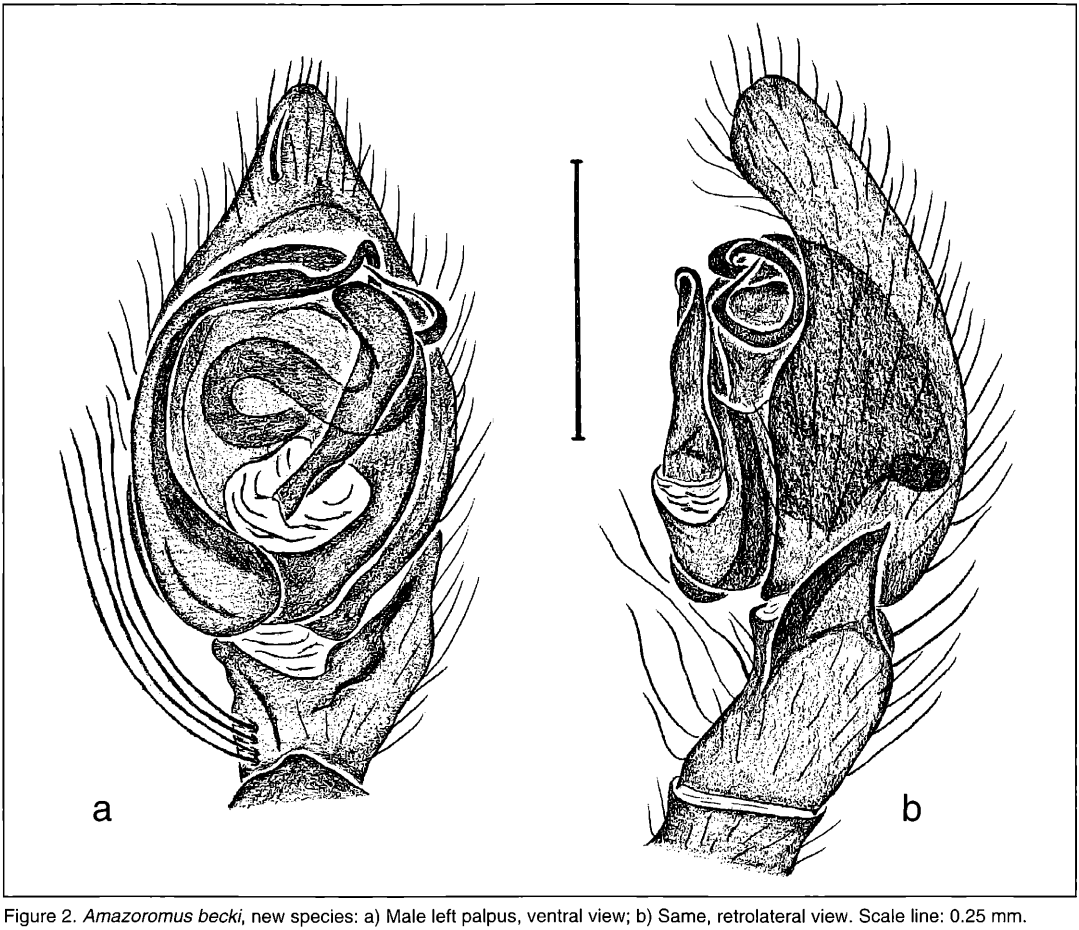

Figure 2. *Amazoromus becki*, new species: a) Male left palpus, ventral view; b) Same, retrolateral view. Scale line: 0.25 mm.

on: femora: I r1-0-0; IV p0-1-1; tibiae: III r1-1-0; IV p0-2-1, r0-1-1; metatarsi: I v1p-0-0, III v1p-2-2, p1-0-1, r1-0-1, IV v1p-2-2, p1-1-1.
Female: Unknown.

Other Material Examined: None.
Distribution: Known only from the type locality in central Amazonia, Brazil.

Amazoromus janauari, new species

Figure 3

Type: Male holotype from a mixed-water inundation forest at Lago Janauari (03 20'S 60 17'W), Manaus, Amazonas, Brazil (October 15, 1987; J. ADIS), deposited in INPA.
Etymology: The specific name refers to the type locality.

Diagnosis: *Amazoromus janauari* is a distinct species easily recognized by the long retrolateral tibial apophysis, with many globose projections on the enlarged base (fig. 3).

Note: The specimen lacks the abdomen.
Male: Carapace 1.70 long, 1.35 wide. Femur II 1.40 long. Eye sizes and interdistances: AME 0.16, ALE 0.12, PME 0.15, PLE 0.12; AME-AME 0.05, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.06, ALE-PLE 0.02. MOQ length 0.37, front width 0.32, back width 0.35. Tegulum with apical projection, weakly sclerotized. Embolus long, coiled distally; median apophysis short, curved at tip (fig. 3a). Retrolateral tibial apophysis extremely elongated, with dorsal dilation at base, bearing numerous projections (fig. 3b). Leg spination: femora III p0-1-1; tibiae II v1r-1r-1p, III v1p-2-2, p1-1-0, r1-1-0; IV v2-2-2, p1-1-0; metatarsi I v1p-0-0, III r0-0-1, IV v2-0-2, p1-1-1.
Female: Unknown.

Other Material Examined: None.
Distribution: Known only from the type locality in central Amazonia, Brazil.

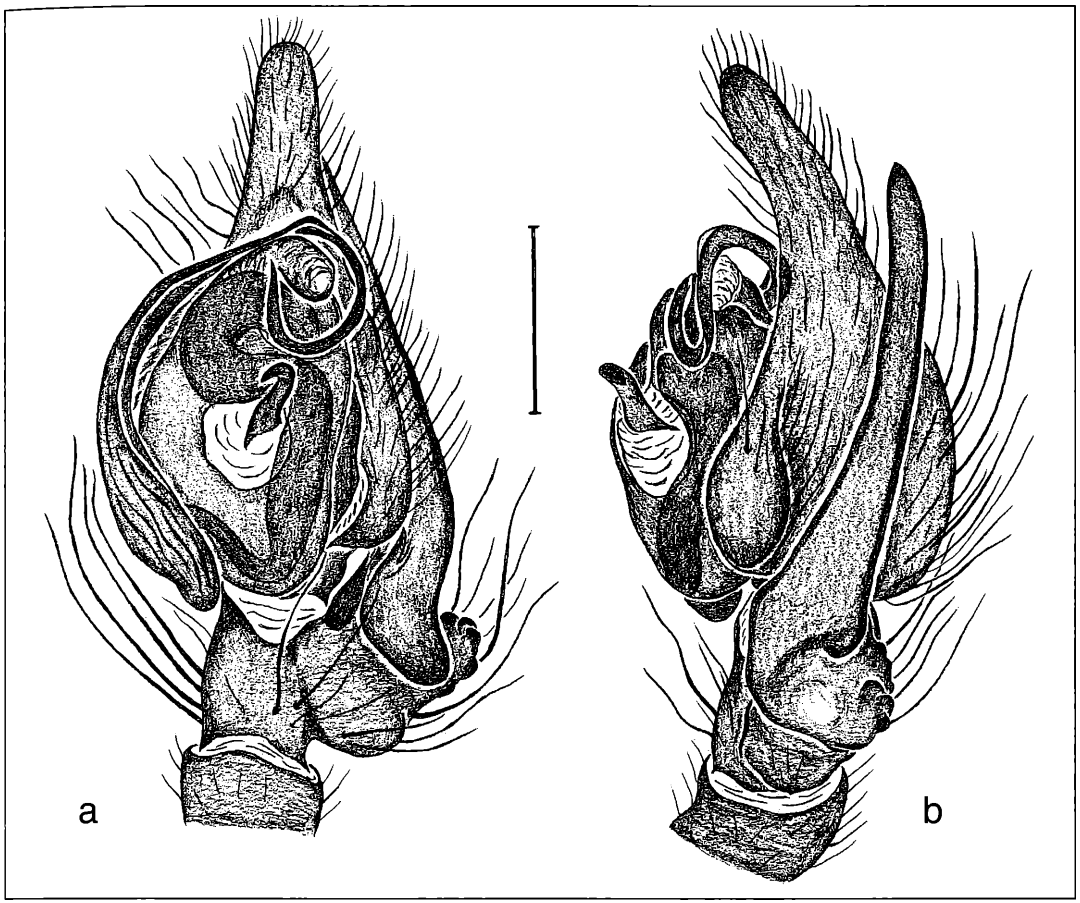

Figure 3. *Amazoromus janauari*, new species: a) Male left palpus, ventral view; b) Same, retrolateral view. Scale line: 0.25 mm.

Discussion

Our intense collecting in the central Amazon so far did confirm PLATNICK's view of the total allopatry of the echemine genera (PLATNICK & SHADAB 1979, Fig.3). Since his revisions of the three genera and two papers with additional records of *Zimiromus* species (PLATNICK & SHADAB 1979, 1981) we described nine new species of *Zimiromus* from within the supposed range of the genus (PLATNICK & HÖFER 1990, BUCKUP & BRESCOVIT 1993, BRESCOVIT & HÖFER 1994) and one species from northeastern Brazil (BUCKUP & BRESCOVIT 1993), amplifying the genus range. Specimens of *Scopoides* or *Echemoides* were not found within this distribution range. But the new genus *Amazoromus* is totally sympatric with *Zimiromus*. PLATNICK & SHADAB (1979, p.4) in their discussion of the relationships among *Zimiromus*, *Scopoides* and *Echemoides*, used the development of the palpal conductor into a solid sheet surrounding the embolus to relate *Zimiromus* and *Echemoides*. As *Amazoromus* appeared in the center of the distribution range of *Zimiromus*, the two genera could be expected to be sister groups. However, *Amazoromus* seems to be more closely related to *Scopoides*, based on the absence of a conductor on the male palp and the presence of an anterior hood on the female epigynum. On the other hand the possibility of *Zimiromus* becoming paraphyletic by the simple proposal of *Amazoromus* is remote. We do not believe that the scape on the female epigyne of *Zimiromus* species is homologous with the transverse striations of the epigyne of *Amazoromus* species. The presence of a scape on the female epigynum is regarded as a synapomorphic character of *Zimiromus* species.

Within the Manaus region, where we sorted and identified samples from seven forest sites, the *Zimiromus* and *Amazoromus* species seem to have very small distribution areas and are probably restricted to certain habitat types (e.g. inundation forest, terra firme).

Z. atrifus, *Z. boistus*, *Z. kleini* and *Z. syenus* have been collected in more than one study site in central Amazonia, but none of the species was found in inundation forests and terra firme forests. On the other hand *Z. beni* was recorded from an inundation forest in the Beni region of Bolivia (Upper Amazon) and from an inundation forest near Manaus (Lower Amazon). Thus for a better understanding of the biogeographic situation and the relationships of the echemine genera we surely need more intense sampling within the large Amazon region.

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