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Two new species of the spider genus *Conifaber* Opell 1982 from Argentina and Paraguay, with notes on their relationships (Araneae, Uloboridae)

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TWO NEW SPECIES OF THE SPIDER GENUS *CONIFABER* OPELL 1982 FROM ARGENTINA AND PARAGUAY, WITH NOTES ON THEIR RELATIONSHIPS (ARANEAE, ULOBORIDAE)

Cristian J. Grismado

Abstract:

Two new species of the uloborid genus *Conifaber* Opell are described: *C. guarani* and *C. yasi*, from northern Argentina (Misiones, Corrientes, Formosa and Salta provinces). *Uloborus lactescens* Mello-Leitão, type species of the genus *Ponella* Opell, is synonymized with *Philoponella fasciata* (Mello-Leitão); consequently, the genus *Ponella* is a junior synonym of *Philoponella* Mello-Leitão. The females previously assigned to *Ponella* (all from Paraguay) are not conspecific with the male syntype, and belong to *Conifaber guarani*. A sister relationship is suggested between *Conifaber* and *Zosis* Walckenaer based mainly on genital features. The webs of one of the new species are described, which show a three-dimensional structure below the orb, probably homologous to the cone built by the type species of the genus, *C. parvus* Opell.

Key words: Araneae, Uloboridae, *Conifaber, Philoponella*, taxonomy, Neotropics.

Taxonomy:

Conifaber guarani sp. n.
Conifaber yasi sp. n.
Philoponella Mello-Leitão, 1917 = *Ponella* Opell, 1979 new synonymy,
Philoponella fasciata (Mello-Leitão, 1917) = *Uloborus lactescens* Mello-Leitão, 1947 new synonymy.

Dos nuevas especies de arañas del género *Conifaber* Opell 1982 de Argentina y Paraguay, con notas sobre sus relaciones (Araneae, Uloboridae)

Resumen:

Se describen dos nuevas especies del género de ulobóridos *Conifaber* Opell: *C. guarani* y *C. yasi*, del norte de Argentina (provincias de Misiones, Corrientes, Formosa y Salta). *Uloborus lactescens* Mello-Leitão, especie tipo del género *Ponella* Opell, es sinonimizado con *Philoponella fasciata* (Mello-Leitão); en consecuencia, el género *Ponella* es sinónimo posterior de *Philoponella* Mello-Leitão. Las hembras previamente asignadas a *Ponella* (todas de Paraguay) no son coespecíficas con el macho sintipo, y corresponden a *Conifaber guarani*. Se sugiere un cercano parentesco entre *Conifaber* y *Zosis* Walckenaer, basado principalmente en caracteres genitales. Se describen las telas de una de las nuevas especies, las cuales muestran una estructura tridimensional por debajo de la órbita, probablemente homóloga del cono construido por la especie tipo del género, *C. parvus* Opell.

Palabras clave: Araneae, Uloboridae, *Conifaber*, *Philoponella*, taxonomía, Neotrópico.

Taxonomía:

Conifaber guarani sp. n.
Conifaber yasi sp. n.
Philoponella Mello-Leitão, 1917 = *Ponella* Opell, 1979 nueva sinonimia,
Philoponella fasciata (Mello-Leitão, 1917) = *Uloborus lactescens* Mello-Leitão, 1947 nueva sinonimia.

Introduction

The Uloboridae comprises small to medium-sized web-building spiders that lack venom glands. More than 240 species of uloborids, grouped in 19 genera, have been described so far (Platnick, 2004). They have cosmopolitan distribution, with a remarkably diversity (10 genera, more than 70 species) in the Neotropical Region (Opell 1979, 1981, 1983). The history of the taxa studied here begins in 1947, when Mello-Leitão described *Uloborus lactescens* based on a male specimen and one juvenile from Minas Gerais state, Brazil. Later, when Opell revised the genera and the tropical American species of Uloboridae (1979), he created a new genus, *Ponella*, for these specimens and other females collected in Paraguay.

Opell diagnosed *Ponella* by the presence of an oval male carapace, with a wide transverse thoracic groove (as in *Zosis* Walckenaer, and *Philoponella* Mello-Leitão) and the long and narrow "conductor" which lies along the embolar distal surface, lacking a "basal lobe" and with a distal slender branch. Females were distinguished "by having a pair of low, widely separated, ventral epigynal mounds anterior to which a pair of openings is found (Opell, 1979: 516).

In a subsequent paper, Opell (in Lubin *et al*., 1982, figs. 14-15, 29) described the new genus *Conifaber* for small uloborids from Colombia which make orb-plus-cone webs, and are distinguished by the enormously elongated "tegular spur" in the male palp. The genus is so far monotypic, including only *C. parvus* Opell, 1982.

After close examination of the types of *Uloborus lactescens*, the type species of *Ponella*, I found that the adult male (Fig. 37) is not distinguishable from *Philoponella fasciata* (Mello-Leitão, 1917) (Fig. 38; Opell, 1979: fig. 280), a very common species from southern Brazil, Paraguay and northern Argentina (see below).

I also found in the collection of MACN some specimens (two morphospecies) that were provisionally identified as *Ponella*. The identification of females was unproblematic, but the males are very different from those illustrated by Opell (now *Philoponella fasciata*) and, by their palpal features, clearly belong to *Conifaber*.

I also examined Paraguayan specimens identified as *Ponella lactescena* by Opell (deposited in AMNH), and confirmed that they belong to the species described below as *Conifaber guarani*. This species lives in areas where *Philoponella fasciata* is also very common, and in the AMNH there are vials containing individuals of both species. This could explain the erroneous species assignation made by Opell.

Finally, mainly by the great collection efforts of Martín Ramírez and Lara Lopardo in Misiones province, a large number of specimens (of both sexes) and field data on the two new species were available to me, confirming that *Ponella* females (sensu Opell) are not conspecific with the adult male syntype of *U. lactescens*.

The genital features observed in the new species suggest a close relationship between *Conifaber* and *Zosis* Walckenaer (see below). Web structure data confirm that the three species construct three-dimensional webs.

The homology of the tegular sclerites of the male palpi of uloborids is still unclear. Coddington (1990) suggested that the terms "median apophysis" and "conductor," as identified by Opell, should be switched in all cases. Nevertheless, until comparative and ontogenetic studies could be made, I maintained Opell´s names to ease comparison with previously described species.

The discovery of the two new species extends the known range of the group far to the southern South America.

Materials and methods

The format of the descriptions largely follows Opell (1979). The following abbreviations have been used: CD= copulatory duct; CO= copulatory opening; CY= cymbium; E= embolus; FD= fertilization duct; MA= median apophysis; MAB= median apophysis bulb; MAS=median apophysis spur; MAmp= Major ampullate gland spigot; mAmp= minor ampullate gland spigot; PP= posterior plate of epigynum; S= spermathecae; ST= subtegulum; T= tegulum; TP= tegular process; TS= tegular spur. Abbreviation for eyes are standard for Araneae. The female genitalia was cleared with clove oil and the male palpi were expanded with a KOH solution and observed with compound microscope. Measurements are expressed in millimeters. The descriptions of webs of *C. guarani* were made mainly from photographs (courtesy of Martín J. Ramírez). Some webs collected in Petri dishes were examined, but were not in intact condition (see below). Only two specimens were maintained alive for a few days in captivity (an adult female and one juvenile of *C. guarani*). They were placed in cylindrical plastic containers (16 cm diameter x 12 cm height for adults, 8.5 cm diameter x 6 cm height for the immature). Water was provided on a piece of cotton and chloropid flies were added as food. Several twigs and leaves were added as supports for the webs. See 'Acknowledgements' section for acronyms of institutions and specimen depositories.

Results

Genus *Conifaber* Opell, 1982

Conifaber Opell, in Lubin *et al*., 1982: 29-64 (Type species: *Conifaber parvus* Opell, 1982, male holotype, male paratype and female paratype from Finca Mozambique, 15 km SW of Puerto López, Meta department, Colombia [W. G. Eberhard col.1978, in MCZ, not examined]).

DIAGNOSIS: *Conifaber* resembles *Zosis*, *Octonoba* Opell and *Purumitra* Lehtinen, in having a tegular spur in the male palp; the shape of this sclerite is broad and flattened, as in *Zosis* (Fig. 39), but is proportionately much larger and has a longitudinal groove where the embolus lies (Figs. 1-3, 15-18, 27-29, 31-32; Lubin *et al*., 1982: figs. 14-15, 29). Compared to *Zosis*, *Conifaber* males have fewer macrosetae on femur I (*C. parvus* lacks them at all). *Conifaber* females also resemble those of *Zosis* by having paired epigynal lobes and coiled copulatory ducts, but differ from those of the latter genus by having the copulatory openings in the anterior inner corners of each lobe´s atrium (Figs. 20-22, 33-35; Lubin *et al*., 1982: figs. 24-27) while in *Zosis* (Opell, 1979: figs. 171-172, 1981: figs. 13-14) they are located in the posterolateral margins of the lobes. Both sexes lack the banded color pattern in legs typical of *Zosis* (Opell, 1979: fig. 174).

DESCRIPTION: Carapace about 1.15 times as long as wide, almost piriform (except in males of *C. guarani*, that have oval carapace); thoracic groove narrow but conspicuous, slightly recurved in females, procurved in males (Y-shaped in *C. guarani* males); cephalic and thoracic regions about equal in height; both eye rows recurved, all eyes on dark rings; AME of males on a distinct anterior mound; median ocular area more or less squared. Sternum aproximately 1.5 times as long as wide. First femur length 1.22-1.32 times as carapace length. Female calamistrum length half as long as metatarsus IV. Female abdomen with two dorsal humps, slightly posterior to its center (except in *C. parvus*,

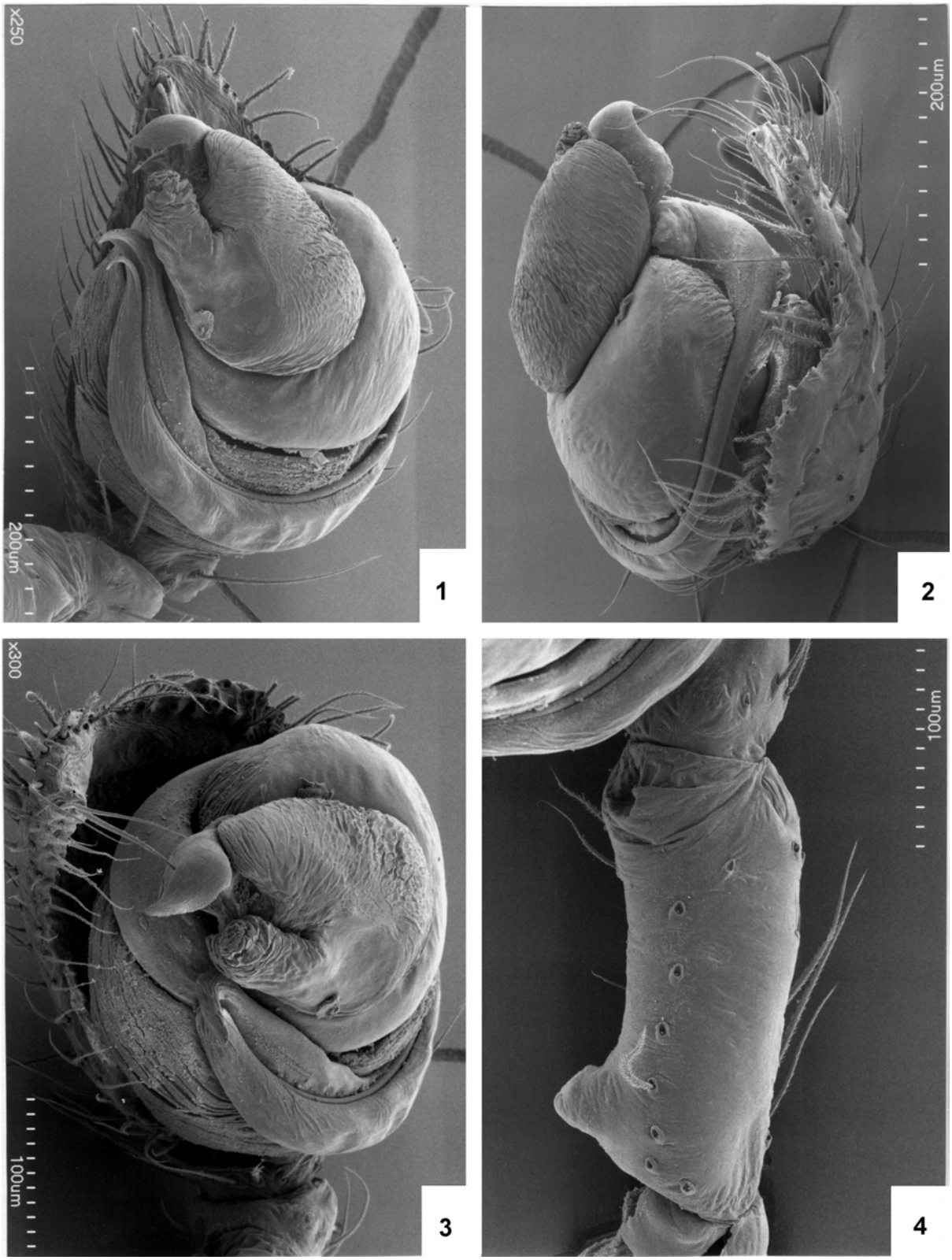

Fig. 1-4. *Conifaber guarani* new species, male palp. **1.** retrolateral view. **2.** prolateral view (slightly inclined to show the origin of embolus). **3.** apical view. **4.** femur, showing proximal tubercle.

which lack them at all). Abdomen of males lacking humps.

Male palpus: femur (except in *C. parvus*) with a ventral tubercle (Fig. 4); basal and median hematodochae present; tegular spur flattened, grooved and very long (encircling the bulb and serving as embolus guide); median apophysis bulb more or less hemispheric (in *C. guarani* and *C. yasi*) or plate-shaped (in *C. parvus*); median apophysis spur hooked (in *C. guarani* and *C. yasi*) or grooved (in *C. parvus*).

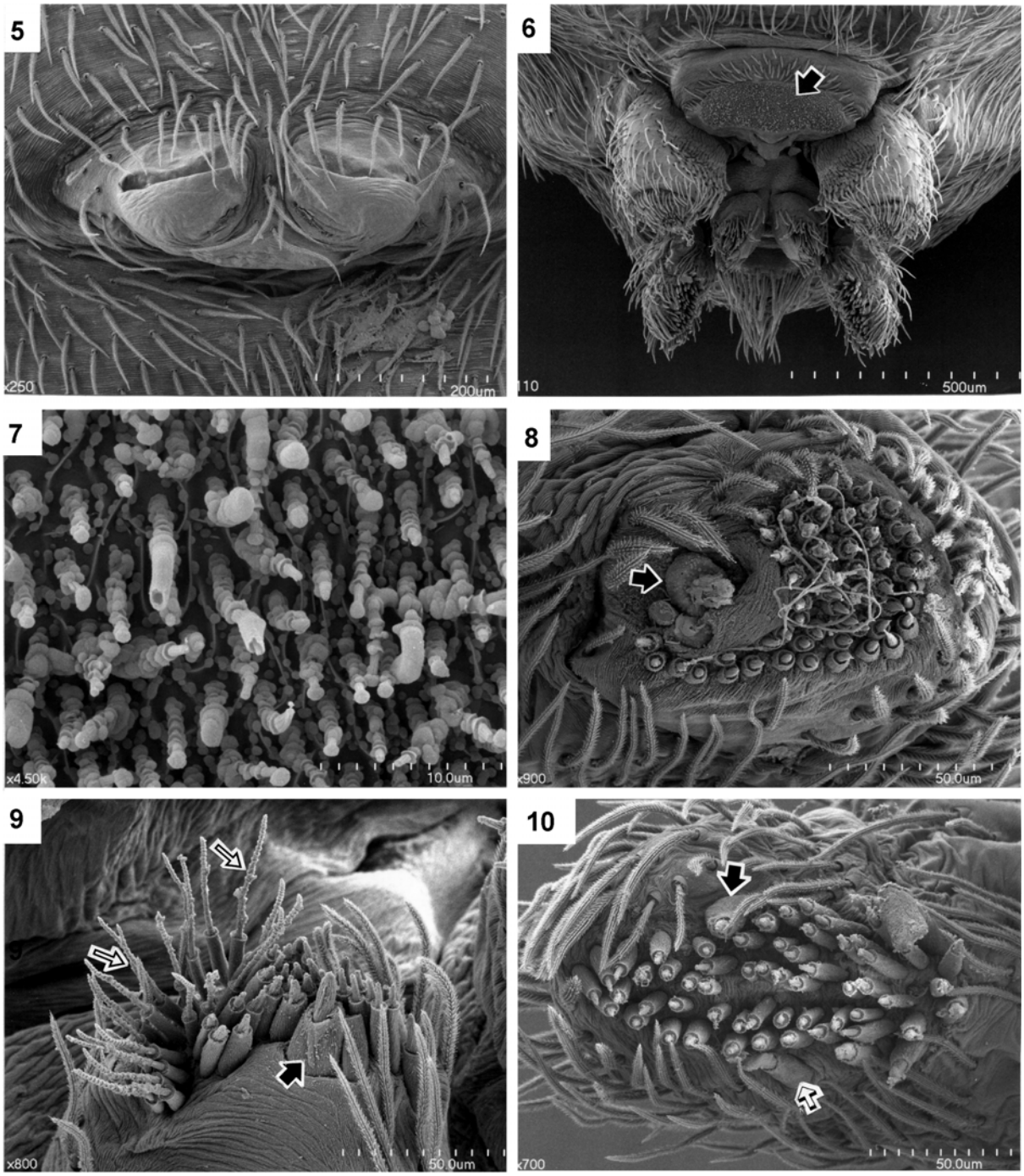

Fig. 5-10. *Conifaber guarani* new species, female. **5.** epigynum, ventral view. **6-10.** spinnerets: **6.** spinneret group (arrow: cribellum). **7.** cribellar spigots. **8.** ALS (arrow: MAmp, with one nubbin and one tartipore). **9.** PMS (black arrow: mAmp, white arrows: paracribellar spigots). **10.** PLS (black arrow: pseudoflagelliform gland spigot; white arrows: cylindrical gland spigots).

Epigynum: Two ventrally directed lobes, each with a concavity anteriorly directed (atrium); copulatory openings in the inner anterior angle of each atrium; internally, coiled copulatory ducts, connecting with a pair of thick-walled spheric spermathecae from which arise posteriorly the thin fertilization ducts.

Spinnerets (Figs. 6-10): Compared to other uloborid species studied so far (Kovoor, 1977, 1978; Peters & Kovoor, 1980; Kovoor & Peters, 1988; Coddington, 1989; Platnick *et al*., 1991), the only aspect of the spinneret morphology of *Conifaber* that deserves attention is the presence of two "nubbins" contiguous to the major ampullate gland spigot in the anterior lateral spinneret of adult female (Fig. 8). The presence of a second type of nubbin in ALS has been reported in some orb-weavers (Townley, 1993, Townley *et al*., 1993, and references therein). Following these studies, it is appropriate to restrict the use of the term "nubbin"

to vestigial spigots (i. e., a spigot only partially developed located in the position that would have been occupied by a functional spigot in the penultimate instar). We should use the term "tartipore" for the cuticular scar where the duct of a gland passed through the exoskeleton when the duct was first forming beneath the previous cuticle, a few days before the ecdysis (Townley & Tillinghast, 2003). Accordingly, there are, next to the major ampullate spigot, one major ampullate nubbin and one major ampullate tartipore. This arrangement is also seen in *Octonoba* Opell, 1979 (Coddington, 1989) and *Waitkera* Opell, 1979 (Platnick *et al*., 1991), while *Polenecia* Lehtinen, 1967 apparently lacks the tartipore (Kovoor & Peters, 1988: fig. 2a). The spinnerets of other uloborid genera have not been studied.

Conifaber guarani new species

Figs. 1-22, 40-48.

Ponella lactescena: Opell, 1979: 515-518 (in part, only females).

TYPE MATERIAL: Male holotype, female paratype, 3 males and 12 females paratypes (together there are two immatures) from Argentina, Misiones province, Parque Nacional Iguazú, Ruta Nac. 101, 6 km E Seccional Yacuy, 14-16.XII.1999, M. Ramírez and L. Lopardo (MACN-Ar 9857, 9858 and 9859 respectively).

ETYMOLOGY: The specific name refers to the Guaraníes, the indigenous people that live in the region inhabited by this species. Substantive in apposition.

DIAGNOSIS: *C. guarani* males differ from those of *C. parvus* and *C. yasi* by the larger body size and the elongated abdomen (Figs. 12, 14); male palp is similar to that of *C. yasi* but differs by the shape of MA (Figs. 1-3, 15.16), the shape of tegular process (Fig. 18) and by the tegular spur (proportionally shorter and wider). Males have also two retrolateral macrosetae on tibia I (as in *C. parvus*) but have three dorsal-retrolateral macrosetae (Fig. 19) rather than two. Females are distinguished also by the large and elongated body (Figs. 11, 13) and by the shape of epigynum (Figs. 5, 20-21).

DESCRIPTION: Male (holotype): Total length: 2.40, carapace length: 0.94, maximum carapace width: 0.80, sternum length: 0.60, femur I length: 1.14. Carapace oval, dorsally gray with light yellow margins; sternum, endites and labium light brown. Legs yellowish (except tibiae, metatarsi and tarsi I, pale orange). Abdomen oval, with wide, longitudinal dorsal gray band (with two paraxial lines of light spots –almost a "chevron" pattern-); sides yellowish, venter also with wide brown band, between epigastric furrow and spinnerets. Palp, as in Figs. 1-3 and 15-18.

Female (paratype): Total length: 3.72, carapace length: 1.10, maximum carapace width: 0.98, sternum length: 0.74, femur I length: 1.24. Carapace yellowish with diffuse, small dots, mainly concentrated in front to fovea; margins light yellowish. Legs yellow, sternum, endites and coxae grayish yellow, with dark margins. Abdomen oval, yellowish with dorsal and lateral white guanine deposits, and, dorsal, gray, longitudinal stripe (with two pairs of diffuse, short branches at midline). Two conspicuous dorsal humps. Venter with wide brown band between pedicel and spinnerets. Epigynum as in Figs. 10-12.

VARIABILITY: Many females from Iguazú have black pigment in dorsum of abdomen, ranging from almost entirely black (with few white spots) to only an anterior dark area.

NATURAL HISTORY: All the webs in Yacuy were found on low and medium sized plants in a wet subtropical forest. The webs of mature females (Figs. 41-48) are typical, more or less horizontal orbs with sticky spiral (sometimes with a concentric stabilimentum), more than 40 radii, and a three-dimensional mesh below the hub (Figs. 41-42). The outermost loop of sticky spiral follows a zigzagging path (Figs. 41, 44, 46). The inferior mesh, probably homologous to the cone of *C. parvus*´s web, varies in size and density (Figs. 43, 45); detritus and prey remains are sometimes attached to this mesh (Figs. 46-47). The mesh is attached to the substrate below by several vertical and oblique threads; other lines connected the substrate directly to the frame. The inferior threads tense the orb, pulling down it at the hub. During the collection of webs part of the structures above or below the orb were destroyed, but both samples contained some cribellar threads that are not part of the spiral. This suggests that they were situated originally on the inferior mesh. The adult female kept in captivity built normal and planar orbs with sticky spirals, stabilimentum, and few oblique threads between the frame and the substrate, but not the mesh. Mature males, as those of *Philoponella*, *Uloborus* and *Zosis* build orbs without sticky spirals, that have a sheet appearance (Fig. 48), similar as those of second instar spiderling webs (Eberhard, 1977; Opell, 1979; Lubin, 1986), attached to female webs. The resting posture at the hub of mature females is similar to that of *Philoponella* species (posture D of Opell & Eberhard, 1984), with legs I and II folded so that the tarsi and metatarsi are ventral to and nearly parallel with the sternum (Fig. 47). Only in one occasion could I see the prey attack behavior, which was similar in all details to that of *C. parvus* (Lubin *et al*.1982: 44-45) and other uloborids (Lubin 1986): the insects are wrapped in silk and transported to the hub where they are consumed. Some females were collected with two or three chained stellate grey eggsacs, with several marginal points. These points could represent attachment sites of lines supporting a basal platform, if they are constructed as those of *Zosis geniculatus* (Olivier, 1789) and *Philoponella tingena* (Chamberlin & Ivie, 1936), which are very similar in appearance (Opell, 1979: 449, fig. 233). One eggsac (Yacuy, MACN-Ar 9868) contained 17 eggs.

OTHER MATERIAL EXAMINED: ARGENTINA: Same data as the types: 1 % (MACN-Ar 9860); 1 &, 1juv. (MACN-Ar 9861); 1 & (fixed with Dubosq-Brasil, MACN-Ar 9862); 1 &

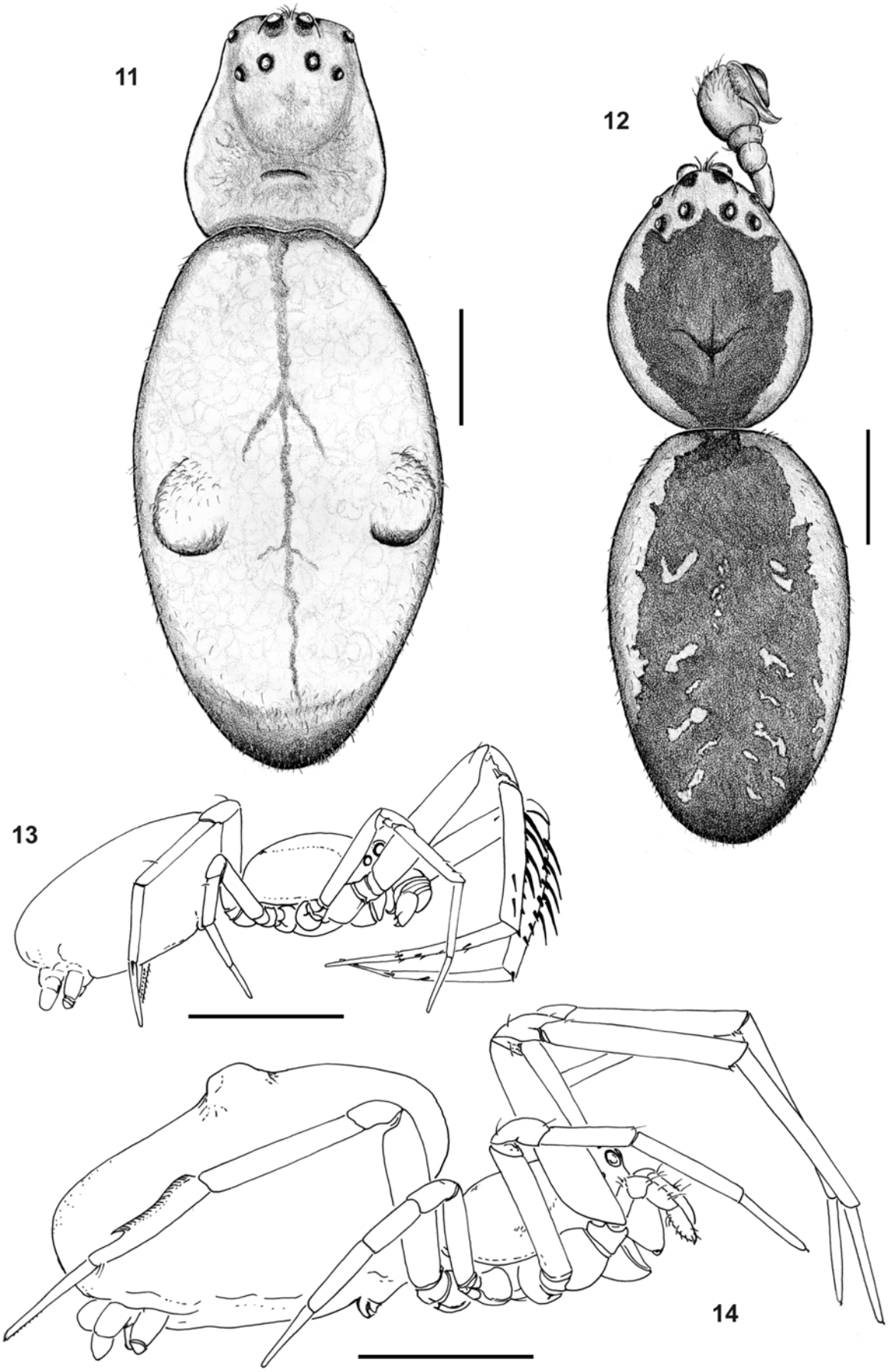

Fig. 11-14. *Conifaber guarani* new species. **11.** female, dorsal view. **12.** male, dorsal view. **13.** female, lateral view. **14.** male, lateral view. Scale bars = 11-12: 0.5 mm; 13-14: 1 mm.

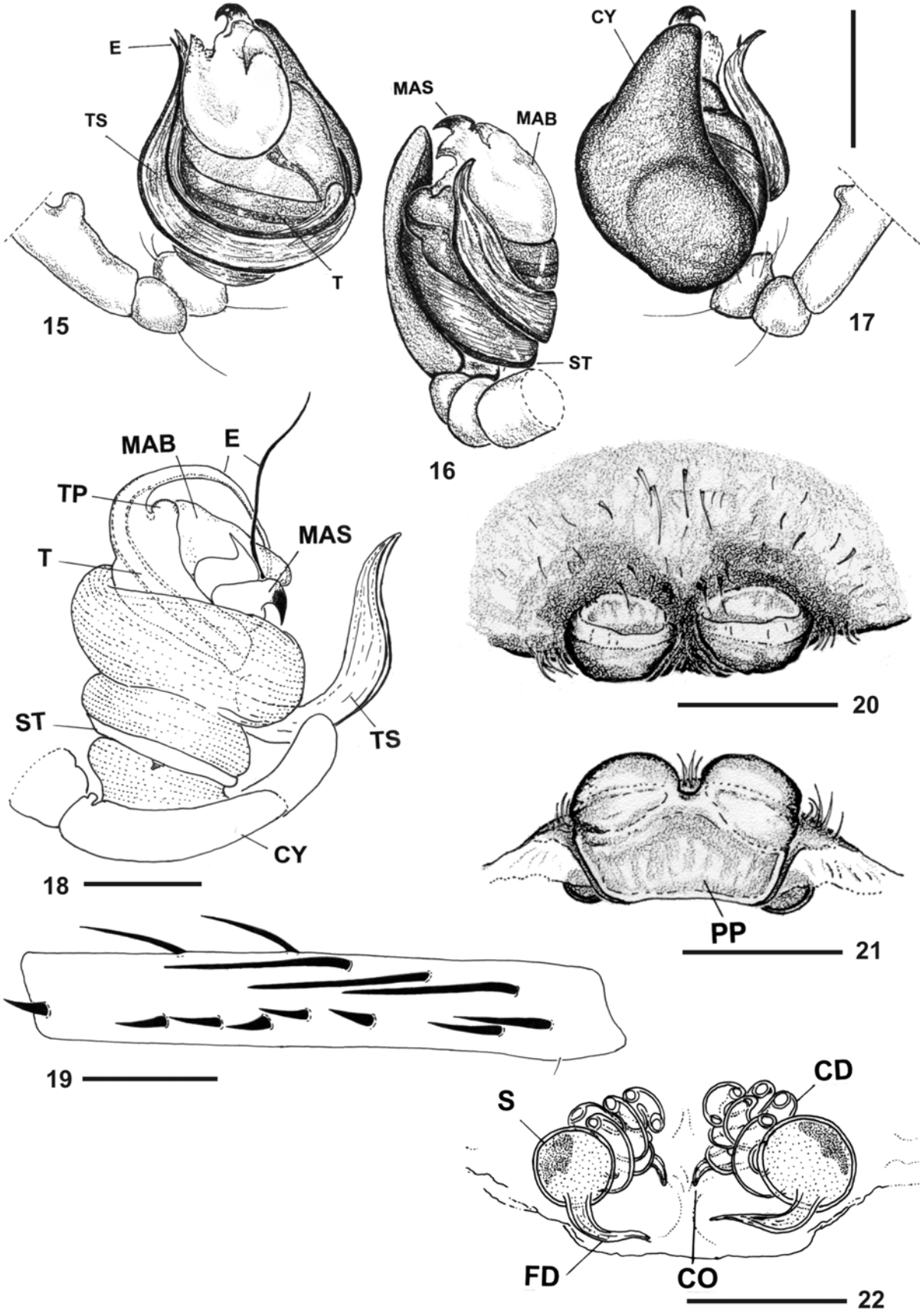

Fig. 15-22. *Conifaber guarani* new species. **15-19.** Male. **15.** left male palp, retrolateral view. **16.** same, ventral view. **17.** same, prolateral. **18.** expanded palp. **19.** male right tibia I, dorsal view. **20-22.** female genitalia. **20.** epigynum, ventral view. **21.** same, posterior view. **22.** same, cleared, dorsal view. Scale bars= 0.2 mm.

(fixed with Dubosq-Brasil, MACN-Ar 9863); 1 & (fixed with Dubosq-Brasil, with 1 eggsac, MACN-Ar 9864); 1 % (MACN-Ar 9865); 1 & (with 2 eggsacs, MACN-Ar 9866); 1 & (MACN-Ar 9867); 1 & (MACN-Ar 9869); 1 & (MACN-Ar 9870); 1 & (MACN-Ar 9871); 1 & (MACN-Ar 9872); 1 subadult & (MACN-Ar 9873); 1 & (MACN-Ar 9874); 4 %%, 1 & (MACN-Ar 9875); 1 & (with 1 eggsac, MACN-Ar 9877); 1 &, 1 % (MACN-Ar 9878); 1 juv. (MACN-Ar 9879); 1 & (MACN-Ar 9880); 1 % (MACN-Ar 9881); Parque Nacional Iguazú, VIII.1985, M. Ramírez, 1 & (MACN-Ar 9882); CORRIENTES: Departamento Capital, bosque Laguna Brava, 19.XII.2001, G. Avalos and G. Rubio, 2 %%, 1 juv. (UNNE); same locality and collectors, 01.VI.2001, 1 &, 1 juv. (UNNE); FORMOSA: Parque Nacional Pilcomayo, XI.1990, M. Ramírez, 1 &, (MACN-Ar 9883); SALTA: Campamento Vespucio, V.1983, P. Goloboff , 1 & (MACN-Ar 9884); Santa María, VII.1947, A. G. Giai, 1 & (MACN-Ar 2248); PARAGUAY: Apa, I.II.1909, (no collector data), 4 && (one with three chained eggsacs), 3 %% immatures (Ac 3721 AMNH); Taquarazapa, Alto Paraná, no date, 14 && , 2 juvs (together with a male of *Philoponella fasciata*, Ac 3721 AMNH).

DISTRIBUTION: Known from Northern Argentina (Misiones, Corrientes, Formosa and Salta provinces) and Paraguay. In Argentina (following the scheme proposed by Morrone, 1999), the localities are situated in different biogeographic areas of the Neotropical Region: Parana Subregion, Forest province (Misiones) and Chacoan Subregion, Chacoan province (Corrientes, Formosa and Salta).These biogeographic regions are characterized in Cabrera & Willink (1973) and Morrone (1999, 2000).

Conifaber yasi new species

Figs. 23-36; 40.

TYPE MATERIAL: Male holotype, female paratype, one male and 17 females paratypes from Argentina, Misiones province, Parque Provincial Cruce Caballero, NE of San Pedro, 27-29/X/1995, M. Ramírez (MACN-Ar 9829, 9830, 9831 respectively).

ETYMOLOGY: Yasí (or Yacy) is a Guarani word that means "moon" and refers to the spherical shape of the female abdomen, in contrast to the elongate abdomen of *C. guarani.* Substantive in apposition.

DIAGNOSIS: The females resemble those of *C. parvus* by their small size and rounded abdomen, but differ by having abdominal tubercles (Figs. 23, 25) and by the shape of the epigynum (Figs. 33-34). The male palps are similar to those of *C. guarani,* but differ by the shape of the median apophysis (Fig. 27), tegular process (Fig. 31), and tegular spur (Figs. 27, 31-32); males are also distinguished from the two remaining species by lacking retrolateral macrosetae on tibia I (Fig. 30).

DESCRIPTION: Male holotype: Total length: 1.80, carapace length: 0.70, maximum carapace width: 0.60, sternum length: 0.42, femur I length: 0.92. Carapace yellowish, with two slightly darker paraxial bands (with very small dots); legs yellowish (except tibiae, metatarsi and tarsi I, pale orange); sternum, endites and coxae grayish yellow. Abdomen oval, yellowish, with dorsal and lateral white guanine deposits; ventrally grayish yellow; a big gray spot on caudal area. Palp as in Figs. 27-29.

Female paratype: Total length: 3.12, carapace length: 0.80, maximum carapace width: 0.70, sternum length: 0.62, femur I length: 1.06. Carapace color as in male, but with some diffuse radial lines. Legs yellowish (with diffuse darker bands in other specimens), sternum and endites as in males. Abdomen globose, with two conspicuous humps, light brown, also with dorsal and lateral white guanine deposits (except in cardiac area); ventrally brown, caudal area with a big gray spot as in males. Epigynum as in Figs. 33-35

NATURAL HISTORY: One female specimen from Yacuy (MACN-Ar 9836) was collected in an orb web with a more or less cone-shaped structure below (M. Ramírez and L. Lopardo, personal comm.). Another female, from Cruce Caballero, was taken with two chained eggsacs, very similar to those of *C. guarani*, but slightly more elongate (Fig. 36).

OTHER MATERIAL EXAMINED: Same data as the types, 1 & (MACN-Ar 9832); 1 & (with two chained eggsacs, MACN-Ar 9833); 2&&, 1 juvs. (MACN-Ar 9834); Arroyo Uruzú, Parque Provincial Islas Malvinas, 2/II/1988, P. Goloboff and C. Szumik, 1 & (MACN-Ar 9835); Santa María, X.1956, M. J. Viana, 3 && (MACN-Ar 4880); Parque Nacional Iguazú, RN 101, 6 km E Seccional Yacuy, 14.16/XII/1999, M. Ramírez and L. Lopardo, 1 & (MACN-Ar 9836).

DISTRIBUTION: Known only from a few localities in Misiones province (northeastern Argentina). The habitat in Cruce Caballero is an *Araucaria* forest with arboreal brackens, typical of the Araucarian ("de los Pinares") biogeographic province, Paraná Subregion (Morrone 1999).

Genus *Philoponella* Mello-Leitão, 1917

Philoponella Mello-Leitão, 1917: 8 (type species: *Uloborus republicanus* Simon, 1891, 60: 8).

Ponella Opell, 1979: 515-518 (type species: *Uloborus lactescens* Mello-Leitão, 1947: 4). **New synonymy**

Philoponella fasciata (Mello-Leitão, 1917)

Figs. 37-38.

Uloborus fasciatus Mello-Leitão, 1917: 4 (female holotype from Nova Iguaçu, Rio de Janeiro, Brazil, Blanc de Freitas col., in MNRJ, not examined.

Philoponella fasciata: Opell, 1979: 542-544.

Uloborus lactescens Mello-Leitão, 1947: 4 (one male lectotype and a juvenile paralectotype, here designated, in MNRJ, examined) **New synonymy**

Ponella lactescena: Opell, 1979: 515-518 (in part, only males).

OTHER MATERIAL EXAMINED*:* BRAZIL: RIO DE JANEIRO: Teresópolis, 900-1000 m. elev., March 1946, H. Sick, 10 %%, 27 &&, 8 juvs. (AMNH), 7.11.1945, H. Sick, 1 & (AMNH); Ilha Grande, Enseada das Palmas, 16-22.II.1996, 1&, M. Ramírez (MACN-Ar 10021); 2-12.II.1997, 1 %, 5 &&,1 % subadult, 1 & subadult, 7 juv., 2 eggsacs (MACN-Ar 10022); SÃO PAULO: Salesópolis, Est. Biol. Boracêia, 26-

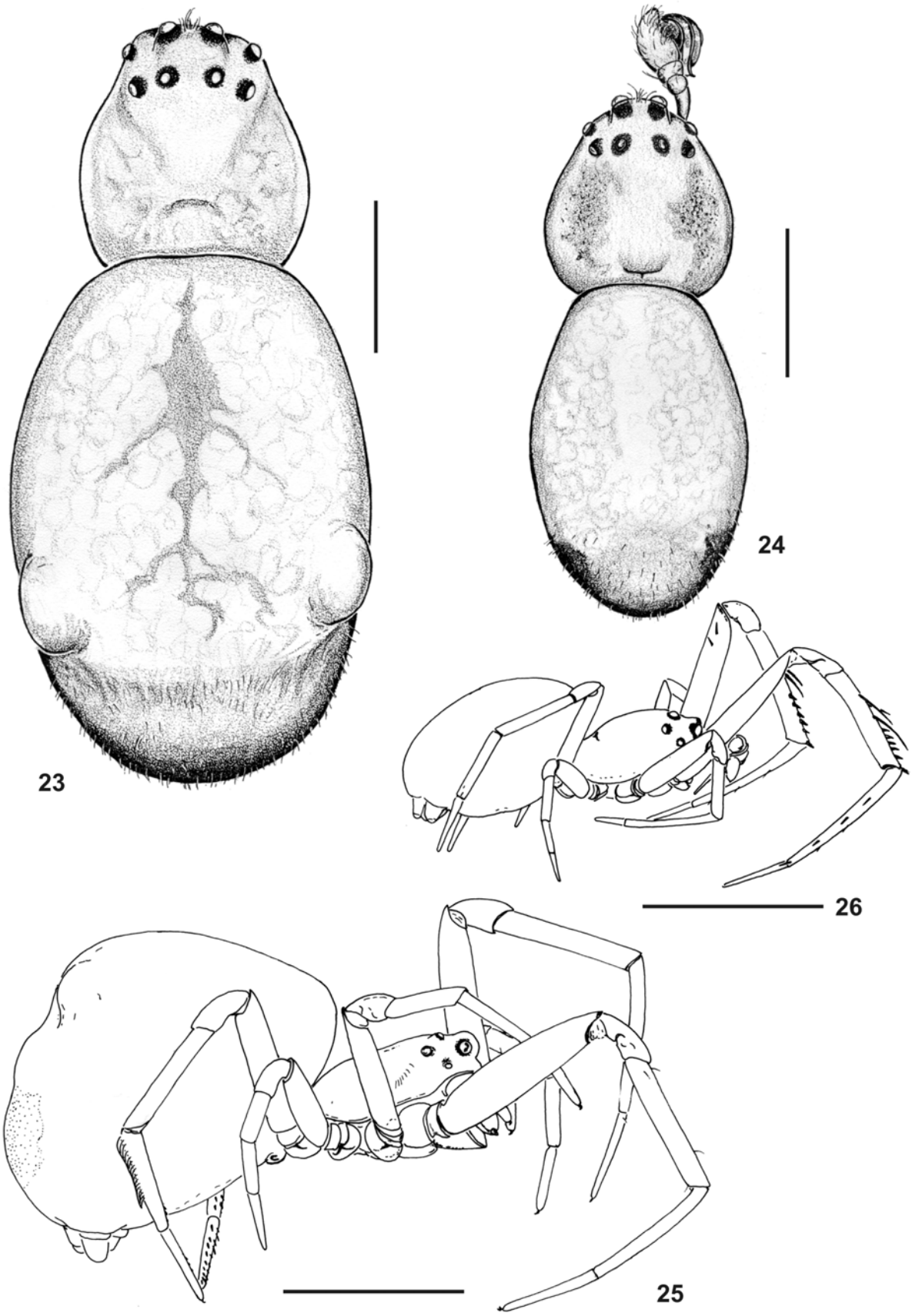

Fig. 23-26. *Conifaber yasi* new species. **23.** female, dorsal view. **24.** male, dorsal view. **25.** female, lateral view. **26.** male, lateral view. Scale bars = 23-24: 0.5 mm; 25-26: 1 mm.

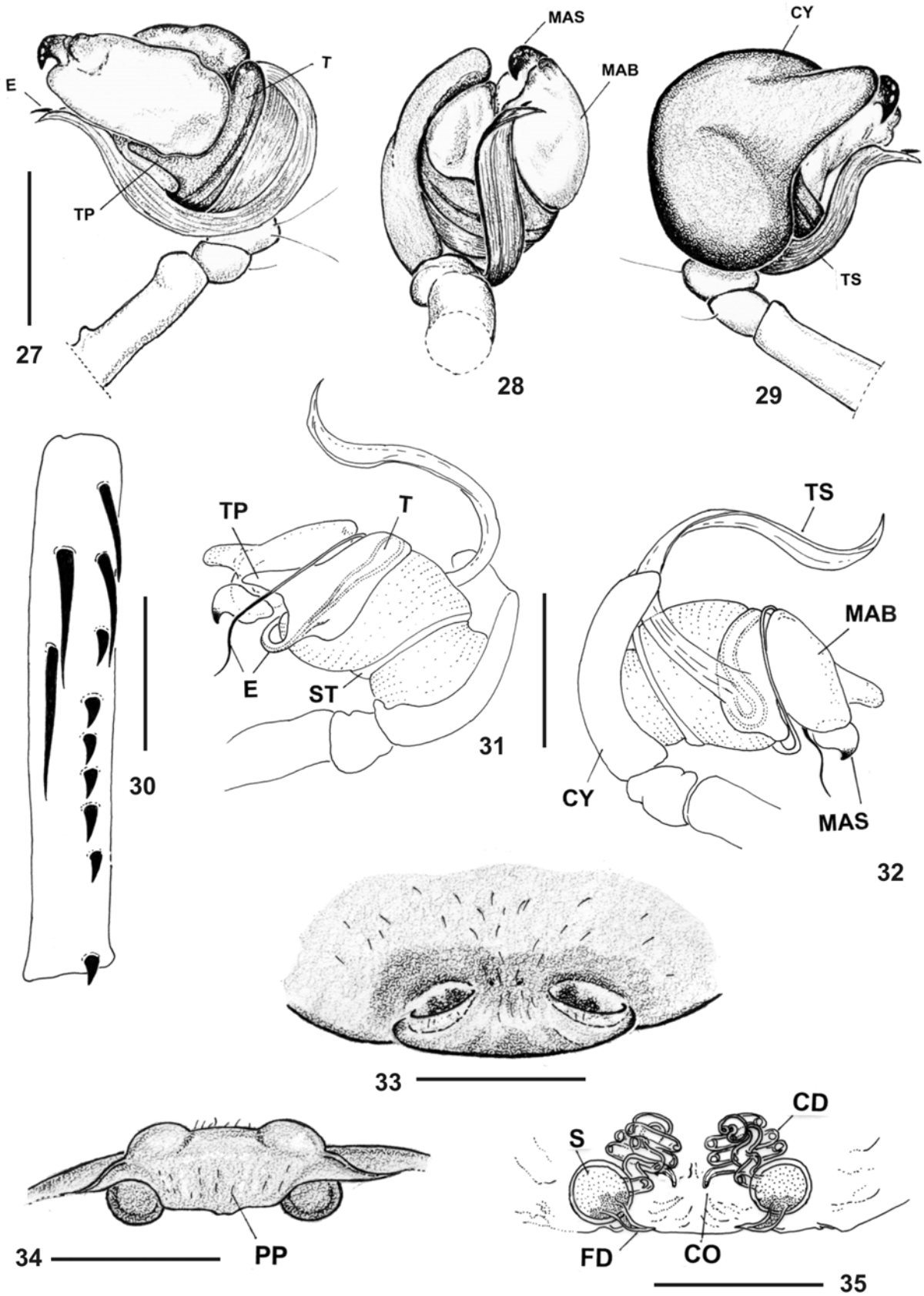

Fig. 27-35. *Conifaber yasi* new species. **27-32.** Male. **27.** left male palp, retrolateral view. **28.** same, ventral view. **29.** same, prolateral view. **30.** male right tibia I, dorsal view. **31.** expanded male palp, retrolateral view. **32.** same, prolateral view. **33-35.** female genitalia. **33.** epigynum, ventral view. **34.** same, posterior view. **35.** same, cleared, dorsal view. **36.** female with two chained eggsacs. Scale bars= 0.2 mm.

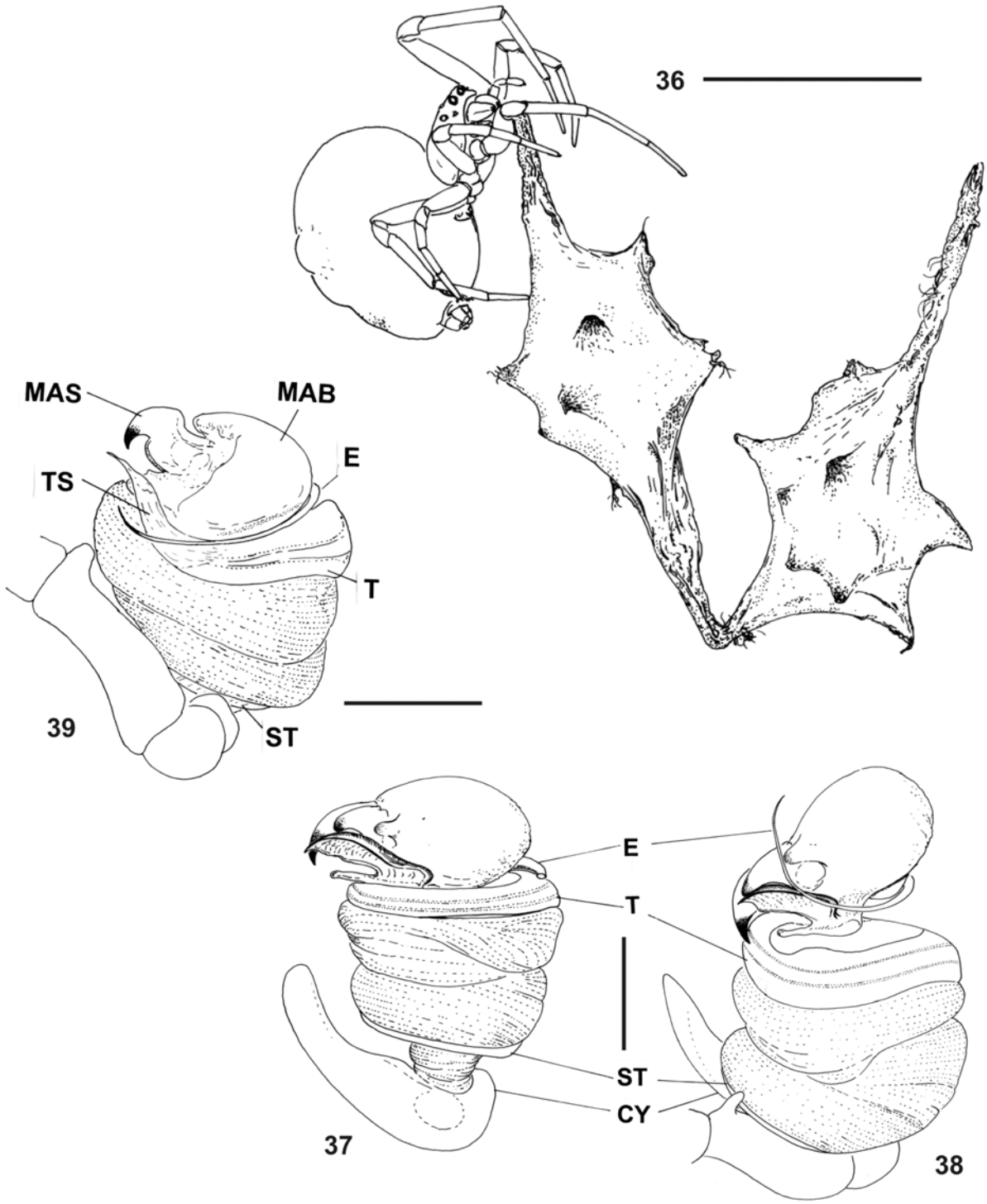

Fig. 36. *Conifaber yasi* new species. Female with two chained eggsacs. Scale bars= 2 mm. **Fig. 37-39.** Uloborid expanded palpi. **37-38**. *Philoponella fasciata* (Mello-Leitão). **37.** holotype of *Uloborus lactescens* (embolus broken). **38.** specimen from Parque Prov. Cruce Caballero. **39.** *Zosis peruanus* (Keyserling), retrolateral view (specimen from Parque Prov. Cruce Caballero). Scale bars = 0.2 mm.

28.I.1999, 900 m 2 &&, Pinto-da-Rocha, Casari, Ramírez, Bernils leg. (MACN-Ar 10020) ; PARAGUAY: Taquarazapa, Alto Paraná, no date, 2 %% (Ac 3721 AMNH); ARGENTINA: MISIONES: Parque Nac. Iguazú: VII.1983, P. Goloboff , 1 %, 2 && (MACN-Ar 9909), VII.1985, M. Ramírez, 1 & (MACN-Ar 9908), 4 %%, 7 &&, 3 juv. (MACN-Ar 9910), 22-30.VIII. 1986, M. Ramírez, 1 % (MACN-Ar 9916), XI.1989, M. Ramírez, 1 & (MACN-Ar 9911); Ruta Nac. 101, 6 km E Seccional Yacuy, 14-16.XII.1999, M. Ramírez and L. Lopardo : 12 %%, 16 &&, 13 juv. (MACN-Ar 9885), 1 & (with 1 eggsac, MACN-Ar 9886), 1 & (with 1 eggsac, MACN-Ar 9887), 1 %, 1 & (in the same web, MACN-Ar 9888), 1 & (MACN-Ar 9889), 1 % (MACN-Ar 9892), 1 & (MACN-Ar 9893), 1 % (MACN-Ar 9894), 1 & (MACN-Ar 9895); Catara-

tas: 24-30.VII.1992, M. Ramírez, 1 % (MACN-Ar 9903), 1 %, 7 &&, 1 juv (MACN-Ar 9904); Area Cataratas: 11-16. XII.1999, M. Ramírez and L. Lopardo, 2 &&, 1 %, 5 juv. (MACN-Ar 9905), 1 %, 1 & (in the same web, MACN-Ar 9907); Zona de saltos e islas, 8-15.II.1995, M. Ramírez, 1 & (MACN-Ar 9906); Saltos del Urugua-í, 10 km N Puerto Libertad, 23-25.II.1997, M. Ramírez, 1 %, 5 &&, 2 eggsacs (MACN-Ar 9912); Puerto Libertad, 1.II.1988, P. Goloboff and C. Szumik, 1 & (MACN-Ar 9917); Parque Prov. Cruce Caballero, NE San Pedro, 27-29.X.1995, M. Ramírez, 3 %% (MACN-Ar 9913), 1 & (MACN-Ar 9914), 19.IX.1992, P. Goloboff, (1 %, 1 &, 1 juv. (MACN-Ar 9915); INTA San Vicente, 10 km N San Vicente, 26.I.1997, M. Ramírez, 1 & (MACN-Ar 9918); Santa Pía, 16.VII.1985, M. Ramírez, 1 % (MACN-Ar 9919); Santa María, XI-XII.1958, J. Viana, 1 % (MACN-Ar 9921).

This list included the specimens studied by Opell and the first records for Argentina.

NOTES: The examination of the male lectotype of *Uloborus lactescens* leaves no doubt that it is a *Philoponella fasciata* specimen (Figs. 37-38; Opell, 1979, fig. 280).). The designation of the adult male as lectotype is justified because the only other syntype (now paralectotype) is a juvenile, not confidently identifiable. The females described by Opell (1979, figs. 192, 194-200) are not conspecific with any of these specimens, and belong to *Conifaber guarani* (see above).

In Parque Nacional Iguazú, many orb-webs of this species were found attached to the funnel webs of *Aglaoctenus* sp. (Lycosidae, M. Ramírez, pers. comm.)

Discussion

Opell (in Lubin *et al*., 1982) suggested a grouping of *Conifaber*, *Zosis*, *Octonoba* and *Purumitra* based on the apomorphic presence of the male palpal "tegular spur". This sclerite is, however, of doubtful homology. Coddington (1990), in his study of palpal features of Araneoidea and Deinopoidea, considered that it seems simpler to interpret the tegular spur as a modified median apophysis (conductor *sensu* Opell), rather than supposing the loss of the median apophysis and the gain of a novel sclerite. Nevertheless, he included this character in his dataset (*Conifaber* was not scored). From published illustrations (Opell, 1979; Yoshida, 1980, 1981, 1982, 1983a, 1983b), it seems to me that the large, flattened and grooved tegular spur is a synapomorphy only of *Conifaber* and *Zosis* (Fig. 39, Opell, 1979: fig. 7C, 173; 1981: figs. 2-3); It is not clear that the tegular spur of *Conifaber* and *Zosis* is homologous to those of *Purumitra* and *Octonoba*. The "tegular spur" of *Purumitra* is smaller and different in shape, while in *Octonoba*, only *O. sinensis* (Simon, 1880) and another undescribed Chinese species (sp. A in Yoshida, 1983b, sp. 1 in Opell, 1979) have a "tegular spur", but also differing in size and shape. *Zosis* and *Conifaber* have a claw-like median apophysis spur (*sensu* Opell), while *Octonoba* and *Purumitra* have a concave or rolled inward median apophysis spur. There are other important differences: females of both *Zosis* and *Conifaber* share coiled copulatory ducts and paired, rounded epigynal projections (shallow in *C. parvus*) (Figs. 20-22, 33-35; Opell, 1979: figs.169-171, 1981: 12-13, Lubin *et al*., 1982: figs.24-27); *Purumitra* species have an epigynum with eight ventral atria (Opell, 1979: fig.160) and *Octonoba* species have an undivided atrium with an anteroventral edge which, in some species, could extended posteroventrally as two projections of variable shape (Opell, 1979; Yoshida, 1980, 1981, 1982, 1983 a-b). On the other hand, the epigynum of *C. guarani* and *Zosis peruanus* (Keyserling) are very similar (Opell, 1981: figs. 12-13). All these genital features seems to suggest a sister relationship between *Conifaber* and *Zosis* rather than any other uloborid genus.

The resting posture of *C. parvus* (Lubin *et al*., 1982) and *C. guarani* is, however, more similar to those of *Philoponella* rather than *Zosis* species (Opell & Eberhard, 1984). It apparently differs from *Philoponella* only by the greater angle between femur I and carapace (Fig. 47). Lubin *et al*. (1982) noted these similarities and, considering previous phylogenetic hypotheses, suggested that this "crouched" posture could have evolved convergently in *Conifaber, Philoponella,* and some *Uloborus* species. Nevertheless, my observations on *Conifaber guarani* were not so detailed as to affirm that the posture of this species coincides with that of *Philoponella* in all details.

The three known species of *Conifaber* build three-dimensional structures below the orb´s plane; similar structures have apparently evolved convergently in some *Uloborus* species (see discussion in Lubin *et al*., 1982).

I observed several differences within the three species of *Conifaber: C. guarani* and *C. yasi* have a proximal femoral tubercle in the male palpi (as in *Zosis* and some *Philoponella*), while *C. parvus* lacks it. The median apophysis of *C. parvus* is plate-shaped, but in *C. guarani* and *C. yasi* it is a more or less hemispheric dome (slightly elongated in *C. yasi*), similar to that of *Zosis* and *Philoponella*. Females of the two new species have abdominal tubercles, while *C. parvus* lack them. The eggsacs are also distinctive within the genus: *C. guarani* and *C. yasi* make concave stellate eggsacs similar to those of other uloborid orb-weaving genera, whereas *C. parvus* constructs "head mace" type eggsacs (Lubin *et al*. 1982: figs. 13 A-B). The orb-web of *C. guarani* (probably also that of *C. yasi*) has a normal sticky spiral, while that of *C. parvus* lacks a sticky spiral, and instead has a mat of very fine threads (Lubin *et al*., 1982: figs. 12 A-B) as those built by the second-instar spiderlings and mature males of other uloborids. All these suggests that *C. parvus* is the most apomorphic species of the genus, both in morphological and behavioral characters, because *C. guarani* and *C. yasi* share several plesiomorphic features with the presumed sister genus, *Zosis*.

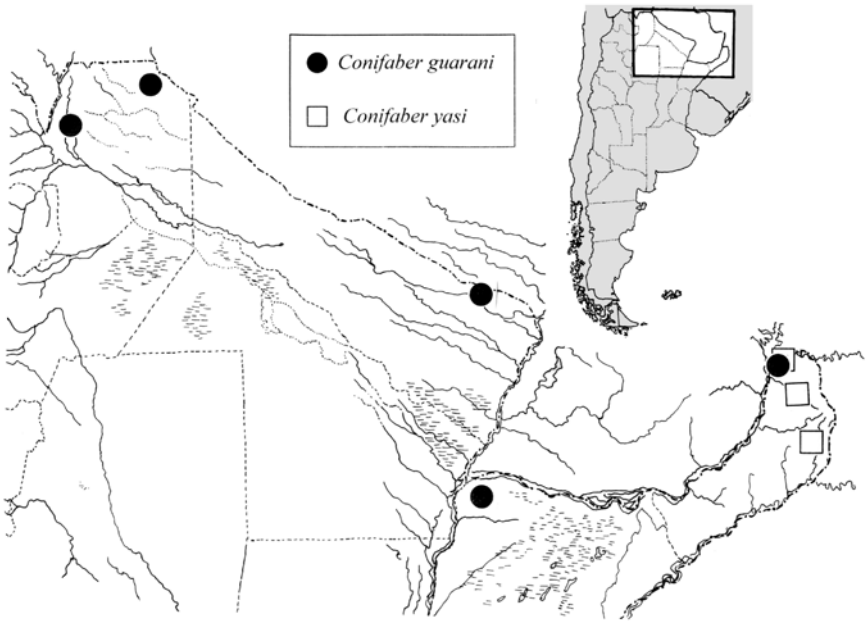

Fig. 40. Distribution in Argentina of *Conifaber guarani* new species (●) and *Conifaber yasi* new species (□) (for localities in Paraguay -under *Ponella*- see Opell, 1979, Map 1)

Fig. 41. Web of female *Conifaber guarani* new species, upper view.

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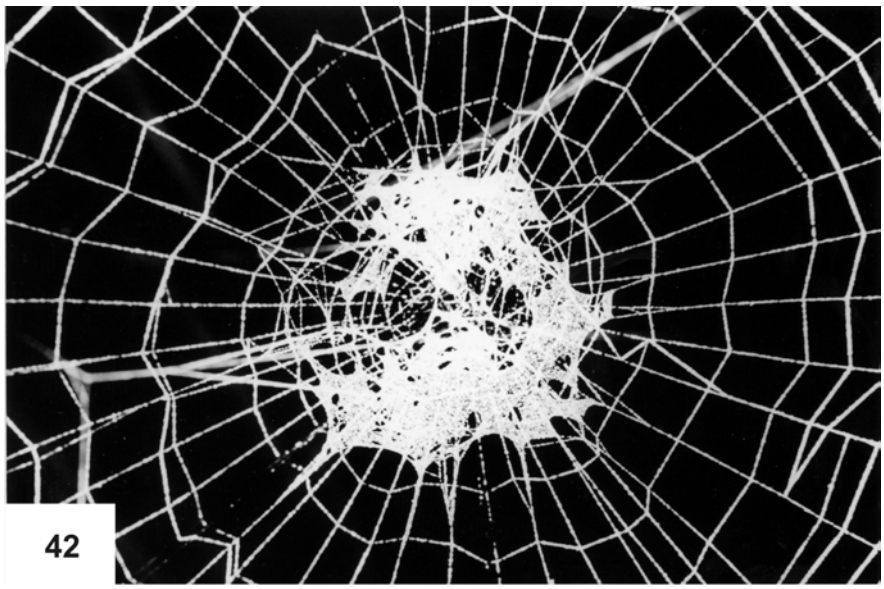

Fig. 42-44. Webs of *Conifaber guarani*, new species. **42-43.** details of the web showed in fig. 41. **42.** hub, upper view. **43.** three-dimensional mesh below the orb, lateral view. **44.** web of other specimens; irregular mesh with spaced threads.

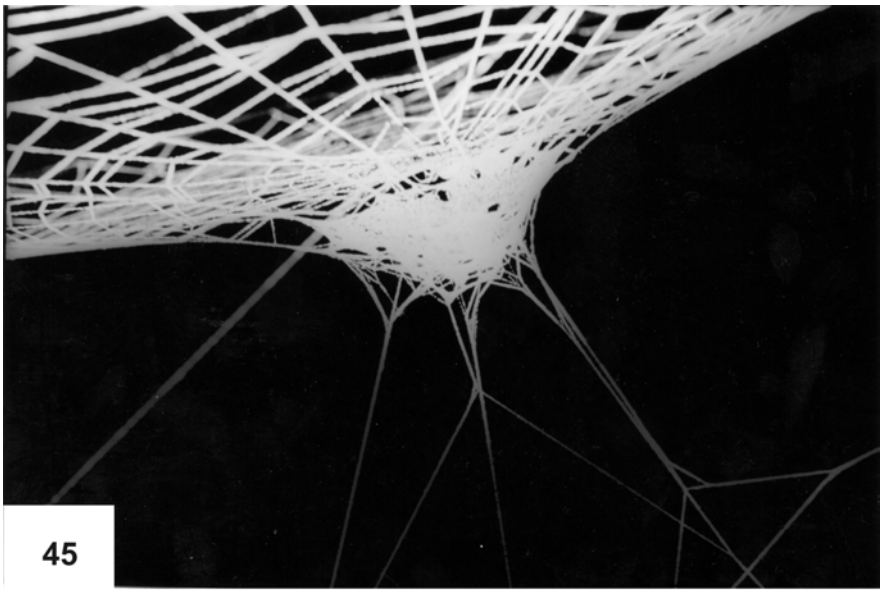

Fig. 45. Webs of *Conifaber guarani*, new species. **45.** webs of other specimens; web with dense mesh.

Fig. 46-47. *Conifaber guarani* new species. female web with prey remains included in the mesh. **46.** lateral view. **47.** closer view with the spider resting in the hub.

Fig. 48. Webs of *Conifaber guarani* new species. Two male webs (without sticky spiral) attached to the female orb web.

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