Three new species of *Mesabolivar* (Aranea, Pholcidae) from leaf litter in urban environments in the city of São Paulo, São Paulo, Brazil

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ABSTRACT. In this study we describe three new litter inhabiting species of *Mesabolivar* González-Sponga, 1998 from nine urban forest remnants in the metropolitan region of the city of São Paulo, Brazil: *M. forceps*, *M. mairyara* and *M. cavicelatus*. In three of these remnants, we conduced a three year sampling using pitfall traps. *Mesabolivar forceps* sp. nov. was the most abundant pholcid (n=273 adults), always present in the samples, but with highest numbers in spring and summer. *Mesabolivar mairyara* sp. nov. was the second most abundant species (n=32), but the majority of individuals were collected in March 2001. Only three individuals of *M. cavicelatus* sp. nov. were collected.

KEYWORDS. *Mesabolivar*, spiders, Neotropical region, temporal variation, taxonomy.

RESUMO. Três espécies novas de *Mesabolivar* (Araneae, Pholcidae) da serapilheira de ambiente urbano da cidade de São Paulo, São Paulo, Brasil. Neste trabalho são descritas três espécies novas de *Mesabolivar* González-Sponga, 1998 coletadas na serapilheira de nove remanescentes florestais urbanos da região metropolitana da cidade de São Paulo: *M. forceps*, *M. mairyara* e *M. cavicelatus*. Foram realizadas amostragens com armadilhas de solo, durante três anos, em três remanescentes urbanos da cidade de São Paulo, onde *M. forceps* sp. nov. foi a espécie mais abundante (n=273), apresentando maior abundância na primavera e verão, mas sempre presente nas coletas. *Mesabolivar mairyara* sp. nov. foi a segunda espécie mais abundante (n=32), com a maioria dos indivíduos coletados em março/2001. Foram coletados somente três indivíduos de *M. cavicelatus* sp. nov.

PALAVRAS-CHAVE. *Mesabolivar*, aranhas, região Neotropical, variação temporal, taxonomia.

The genus *Mesabolivar* González-Sponga, 1998 currently includes 36 nominal species (Platnick, 2005; Huber *et al.*, 2005). The genus is widespread in the Neotropical region and was revised by Huber (2000). However, many species remain undescribed, and few of the known species were collected using specific methods, especially targeting soil and leaf-litter communities. The microhabitats of best known diversity suspiciously coincide with the levels most easily accessible to humans, i.e., the shady areas near the ground and between buttresses, and the low vegetation (Huber, 2000), suggesting an influence of the sampling method, i.e., visual search. Some habitats, such as the canopy and the leaf litter, remain poorly known. Only three species of *Mesabolivar* are known to live in the litter layer, having been captured with pitfall traps, namely *M. cuarassu* and *M. samatiaguassu* (Huber *et al.*, 2005), and *M. difficilis* (Mello-Leitão, 1918) (Álvares *et al*., 2004). There are probably many more undescribed litter dwelling species, and the morphology of some other known species (relatively short and strong legs), such as *M. banksi* (Moenkhaus, 1898) and *M. simoni* (Moenkhaus), suggests that they may also have been collected in this habitat. Despite the great number of Brazilian species described by Mello-Leitão, the new species herein described are not similar to any of them. Of the Brazilian species, only *M. aurantius* (Mello-Leitão), *M. azureus* (Badcock), *M. fluminensis* (Mello-Leitão) and *M. nigridentis* (Mello-Leitão), were not examined by Huber (2000) and the original descriptions do not present the diagnostic chacteres of the species herein described.

In general, there is limited information on habitat or temporal variation in Neotropical pholcids. For *Mesabolivar*, the biology of most species is poorly known. Only *M. eberhardi* Huber, 2000 has been studied in some detail (Eberhard & Briceño, 1983; 1985). All this results in a poor knowledge on pholcids of ground or low vegetation habitats. Besides, only now studies on DNA sequences of *Mesabolivar* species are being conduced (Astrin *et al.*, 2006), including *M. mairyara* sp. nov. and species related to the new species here presented.

This paper is a result of a three year sampling using pitfall traps in urban forests in the city of São Paulo, Brazil, in a subproject named "Soil spiders of the city of São Paulo" (Candiani *et al.*, 2005) of the project "Biodiversity of Arachnida and Myriapoda from the state of São Paulo" within the BIOTA/FAPESP program. The main objective was to evaluate the Atlantic forests remnants in urban areas of the city of São Paulo. The Atlantic forest is one of the most important hotspots, due to the high diversity and high concentration of endemic species of fauna and flora and is one of the most endangered ones (Myers *et al.*, 2000). In fact, the deforestation and fragmentation of this biome heavily threaten both fauna and flora (Brooks & Balmford, 1996;

SILVA & TABARELLI, 2000). The project has collected a lot of information in this respect, and we expect that more undescribed species will be discovered. Here we describe three new species of *Mesabolivar*, and give some information on the temporal variation of two of them.

MATERIAL AND METHODS

The specimens used to access ecological data were sampled in the following urban forested areas: Horto Oswaldo Cruz, Instituto Butantan; Mata da Cidade Universitária Armando Salles (C.U.A.S.O.), campus of the Universidade de São Paulo and Parque da Previdência, all described in details in CANDIANI *et al*. (2005). All three localities are in the municipality of São Paulo, state of São Paulo, Brazil. Sampling was done using pitfall traps (BRENNAN *et al*., 1999) with 70% alcohol. Fifty pitfall traps were placed in each area and kept open for seven days, every 3 months. This resulted in a total of twelve sampling periods between April 1999 and March 2002, totalling 1800 samples. Additional material from other seven soil spider fauna sub-projects of the Instituto Butantan was examined.

The material examined is deposited in the collections of Instituto Butantan, São Paulo (IBSP, A. D. Brescovit), Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP, R. Pinto da Rocha) and Zoological Research Institute and Museum Alexander Koenig, Bonn (ZFMK, B. A. Huber). Descriptions and measurements follow HUBER (2000). Measurements are given in millimeters. The ratio tibia I length/diameter (L/d) is a measure of the robustness of the legs (HUBER, 2000). The epigynum was dissected and immersed in clove oil for visualization of internal structures following LEVI (1965). All drawings were done with a camera lucida. Chi-squared tests were performed at 0.05 levels to verify the sex ratio (ZAR, 1996).

Mesabolivar forceps sp. nov.

(Figs. 1-12)

Types. Male holotype from Horto Oswaldo Cruz (46º43'W, 23º33'S), campus of the Instituto Butantan, Butantã, São Paulo, state of São Paulo, Brazil, 11-18.VIII.2000, D. Candiani *et al*. col., with pitfall traps, deposited in IBSP 52648. Paratypes: female, same data as holotype, 16-23.XI.1999 (IBSP 52649) and male and female, same data as holotype, 11-18.XII.2001 (MZSP 25563, 25561).

Etymology. The specific name is a Latin noun in apposition and refers to the peculiar shape of the tip of the procursus.

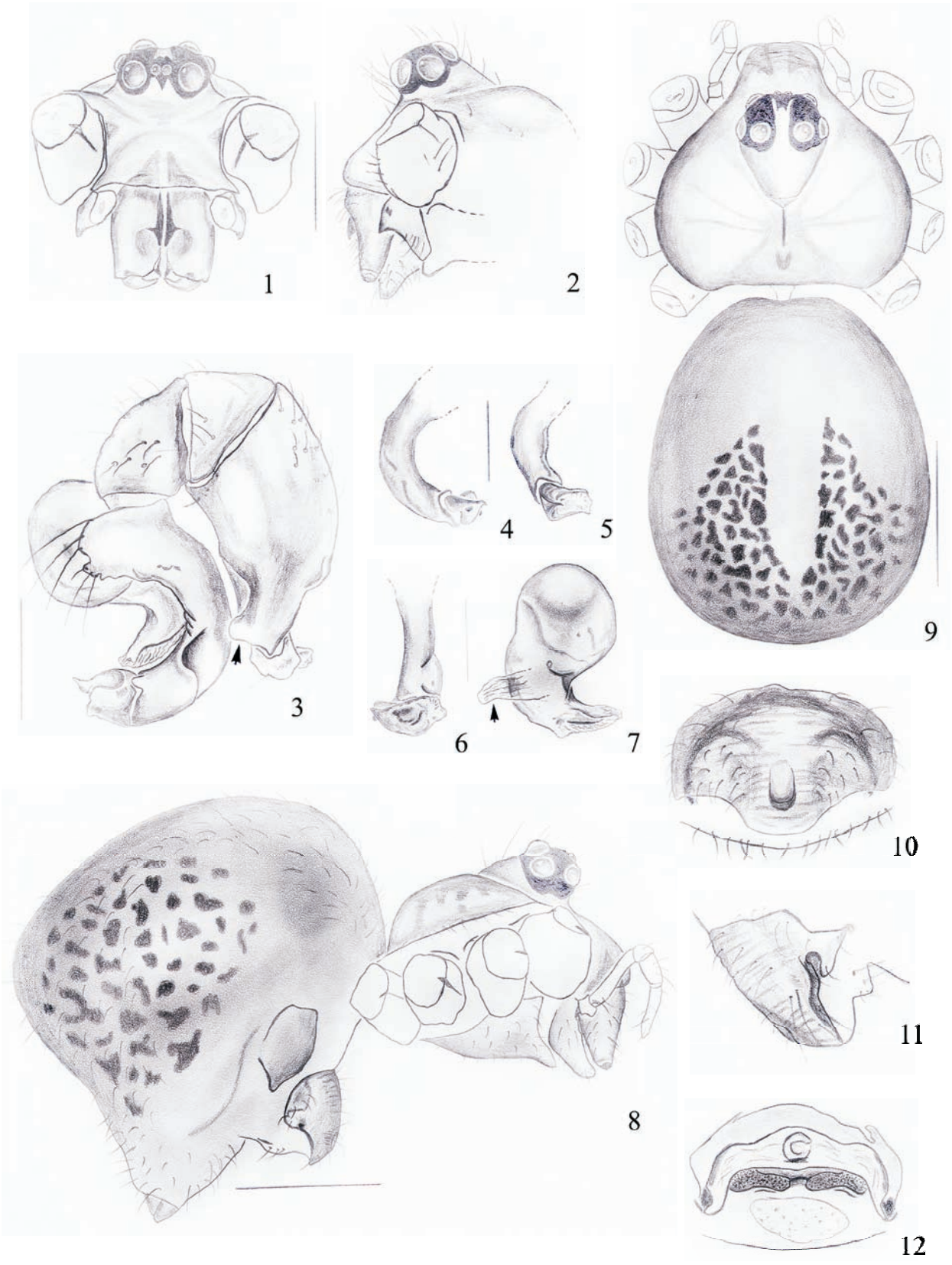
Diagnosis. *Mesabolivar forceps* is easily distinguished from congeners by the large and strongly curved procursus (Figs. 3-6), with enlarged tip and distal concavity (Figs. 4-6). The female is distinguished from most species by the absence of apophyses or humps combined with the medium-sized median pocket in the epigynum (Fig. 10).

Description. Male (Holotype). Total length 2.2, carapace width 1.0; leg I: 15.9 (3.8 + 0.4 + 4.2 + 6.3 + 1.3), tibia II: 2.5, tibia III: 1.8, tibia IV: 3.0, tibia I L/d 35. Habitus as in female (Figs. 8-9). Carapace light brown, very similar in shape to *M. difficilis* (Mello-Leitão, 1918) and *M. banksi* (Moenkhaus, 1898) (see HUBER, 2000, figs. 924, 932, 943); sternum light ochre. Thoracic groove distinct. Eight eyes on slightly elevated ocular area (Figs. 1,2); distance PME-ALE about 80% of PME diameter. Chelicerae light brown with pair of black, frontal apophyses medially (Figs. 1,2). Palps as in Figs. 3-7. Coxa with distinct retrolateral apophysis. Femur proximally with distinct round retrolateral apophysis and small proximal dorsal hump (Fig. 3). Procursus dark brown, strongly curved; enlarged tip with dorsal concavity. Bulb with very small and barely visible transparent projection (Fig. 7), embolar division of bulb dorsally curved. Legs light brown; without spines. Tarsus I with approximately 28 pseudosegments, difficult to count. Opisthosoma globular, pale green, with several bluish-green-spots (Figs. 8,9).

Female (Paratype IBSP 52649). Total length 2.4, carapace width 0.9; leg I 11.3 (2.5 + 0.3 + 3.0 + 4.3 + 1.1), tibia II 1.9, tibia III 1.5, tibia IV 2.5, tibia I L/d 28. Habitus as in Figs. 8-9. In general very similar to male. Tarsus I with approximately 26 pseudosegments. Epigynum dark brown, slightly elevated, with medium-sized median pocket, without apophyses or humps (Figs. 10,11). Internal genitalia with two transversal pore plates (Fig. 12).

Variation. Eleven males: carapace width 0.82-1.02 (mean = 0.93); tibia I 3.36-4.80 (mean = 4.11). Eleven females: carapace width 0.74-0.94 (mean = 0.87); tibia I 2.64-3.48 (mean = 2.68).

Other material examined. BRAZIL, **São Paulo**: São Paulo (Cidade Universitária, campus of the Universidade de São Paulo, Mata da Cidade Universitária Armando Salles, 46º 43'W, 23º 33'S), 2♂, 16-23.IV.1999 (IBSP 52819-52820); 9♂, 2♀, 16-23.VIII.1999 (IBSP 52821-52829, 52961); 3♂, ♀, 16-23.XI.1999 (IBSP 52830-52833); 10♂, 4♀, 16-23.II.2000 (IBSP 52834, 52839, 52869-52877, 52962, 52963); 2♂, 2♀, 15-22.VI.2000 (IBSP 52835-52838); 8♂, 12-19.VIII.2000 (IBSP 52878-52883, 52964); 2♂, ♀, 13-20.XII.2000 (IBSP 52884, 52885, 52965); 4♂, 12-19.III.2001 (IBSP 52886-52889); 2♂, ♀, 12-19.VI.2001 (IBSP 52890-52892); 7♂, ♀, 22.VIII.2001 (IBSP 52893-52898); 12♂, 3♀, 12-19.XII.2001 (IBSP 52899-52911); 3♂, ♀, 12-19.III.2002 (IBSP 52912-52914) and ♂, ♀, (ZFMK); ♂, no date (IBSP 52966), all collected by D. Candiani *et al*. col.; (Butantã, campus of the Instituto Butantan, Horto Oswaldo Cruz, 46º43'W, 23º33'S), 2♂, 16-23.IV.1999 (IBSP 52812-52813); 2♂, ♀, 16-23.VIII.1999 (IBSP 52650-52652); 7♂, 8♀, 16-23.XI.1999 (IBSP 52653-52664, 52814); 4♂, 9♀, 16-23.II.2000 (IBSP 52665-52676); 4♂, 3♀, 14-21.VI.2000 (IBSP 52667-52682); 6♂, 4♀, 11-18.VIII.2000 (IBSP 52683-52688); 12♂, 21♀, 12-19.XII.2000 (IBSP 52689, 52690, 52754-52772, 52815, 52816) and ♂, ♀ (MZSP 25562, 25564); 2♂, 3♀, 11-18.III.2001 (IBSP 52773-52776, 52817); 2♂, 2♀, 11-18.VI.2001 (IBSP 52777-52779); 8♂, 6♀, 14-21.VIII.2001 (IBSP 52780-52790, 52818); 20♂, 8♀, 11-18.XII.2001 (IBSP 52791-52807); 2♂, 2♀, 11-18.III.2002 (IBSP 52808-52811), all collected by D. Candiani *et al*. col.; ♀, X-2005 (IBSP 57648), collector not given; (Jardim Ademar, Parque da Previdência, 46º43'W, 23º34'S), ♂, 2♀, 16-23.IV.1999 (IBSP 52915-52917); 4♂, 4♀, 16-23.VIII.1999 (IBSP 52918-52925); ♂, 3♀, 16-23.XI.1999 (IBSP 52926-52928); 11♂, 2♀, 16-23.II.2000 (IBSP 52929-52940); 2♂, 2♀, 16-23.VI.2000 (IBSP 52941-52944); 2♀, 13-20.VIII.2000 (IBSP 52945, 52946); 4♂, 5♀, 13-20.III.2001 (IBSP 52947-52955); 2♂, 16-23.VIII.2001 (IBSP 52956, 52957); ♂, 13-20.III.2002 (IBSP 52958), all collected by D. Candiani *et al*. col.; (Cidade Jardim, Parque Alfredo Volpi, 46º42'09"W, 23º35'16"S), ♀, 04-10.VI.2004 (IBSP 53011), A. Bagio col.; (Vila Andrade, Parque Burle Marx), 5♂, 2♀, 27.V-02.VI.2005 (IBSP 52998-53004), A. Bagio col.; (Água Funda, Parque do Estado), 2♂, 13-20.V.2005 (IBSP 52996-52997), J. Valvassori col.; (Jardim Ângela, Represa



Figs. 1-12. *Mesabolivar forceps* sp. nov. Male prosoma: 1, frontal; 2, lateral; 3, Left male palp, retrolateral, arrow indicates the femoral retrolateral apophysis; Tip of left procursus: 4, prolateral; 5, prolateral, slightly dorsal; 6, dorsal; 7, left bulb, prolateral, arrow indicates the transparent projection; Female habitus: 8, lateral; 9, dorsal; Epigynum: 10, ventral; 11, lateral; 12, dorsal. Scales: figs. 1-3, 0.5 mm; figs. 4-7, 0.25 mm; figs. 8-12, 0.5 mm.

Guarapiranga, 46º44'23"W, 23º44'14"S), ♂, 9-15.X.1999 (IBSP 53017); ♂, 06-12.VI.2000 (IBSP 53018); 12♂, 3♀, 13-19.XI.2000 (IBSP 53012-53016, 53019-53025), R. P. Indicatti *et al*. col.; (Jardim Ângela, Ilha Parque dos Eucaliptos, 46º43'51"W, 23º43'51"S), 3♂, V.2005 (IBSP 53005-53007), I. Cizaukas col.; Itapevi, ♂, 29.I.1999 (IBSP 57048), ♂, 28.V.1999 (IBSP 57049); ♂, ♀, 24.VI.1999 (IBSP 52989); ♂, 26.XI.1999 (IBSP 52984), V. C. Onofrio col.; all collected with pitfall traps.

Distribution. Known only from the cities of São Paulo and Itapevi, State of São Paulo, Brazil.

Mesabolivar mairyara sp. nov.

(Figs. 13-23)

Types. Male holotype from Parque da Previdência (45º43'W, 23º34'S), Jardim Ademar, São Paulo, State of São Paulo, Brazil, 13-20.XII.2001, D. Candiani *et al*. col. with pitfall traps, deposited in IBSP 52967. Paratypes: female, same data as holotype, 13-20.III.2001 (IBSP 52968); male with same data as holotype, 16-23.VIII.2001 and female with same data as holotype (MZSP 25565, 25567).

Etymology. The specific name is a Tupi noun given to the European people inhabiting Brazil.

Diagnosis. Males of *Mesabolivar mairyara* are distinguished from known congeners by the broad procursus with conspicuous tip, slightly bent dorsally (Figs. 15,16) and chelicerae with median pair of apophyses and small pair of proximal protrusions (Figs 13,14). The female is distinguished by the epigynum with pair of prominent humps, anterior position of small pocket (Fig. 20) and two pairs of strong smooth hairs on posterior plate behind gonopore (Fig. 21).

Description. Male (Holotype). Total length 2.2, carapace width 1.14; leg I 27.7 (7.1 + 0.4 + 7.3 + 11.4 + 1.6), tibia II 4.6, tibia III 3.0, tibia IV 4.7, tibia I 1/d 66. Habitus as in female (Fig. 19), very similar to *M. forceps*. Carapace light brown, darker medially and in ocular area, sternum light ochre. Thoracic groove distinct. Eight eyes on moderately elevated ocular area (Figs. 13,14); distance PME-ALE about 85% of PME diameter. Chelicerae light brown with pair of black frontal apophyses medially and pair of proximal protrusions. Palps as in figs. 15-18. Coxa with distinct retrolateral apophysis. Femur proximally with small round retrolateral apophysis. Procursus dark brown, broad and almost straight, with ventral prolateral hairs in middle (Figs. 15,16); tip relatively simple, slightly bent dorsally (Figs. 15,16). Bulb globular with short transparent projection (Figs. 17,18). Legs uniformly ochre-brown, without spines. Tarsus I with approximately 22 pseudosegments. Opisthosoma globular, pale green with several lateral bluish spots.

Female (Paratype IBSP 52968). Total length 2.0, carapace width 1.0; leg I 17.6 (4.4 + 0.3 + 4.6 + 7.0 + 1.3), tibia II 2.8, tibia III 2.0, tibia IV 3.2, tibia I L/d 57. Habitus as in Fig. 19. Prosoma and legs pale yellow. In general very similar to male. Tarsus I with approximately 24 pseudosegments. Epigynum dark brown, slightly elevated with medium-sized median pocket, without apophyses or humps (Figs. 20-22). Two pairs of strong smooth hairs on posterior plate behind gonopore (Fig. 21). Internal genitalia with two diagonal curved pore plates (Fig. 23).

Variation. Seven males: carapace width 0.94-1.16 (mean = 1.07); tibia I 3.95-7.37 (mean = 5.86). Ten females: carapace width 0.76-1.04 (mean = 0.94); tibia I 4.08-7.96 (mean = 4.95).

Other material examined. BRAZIL, **São Paulo**: São Paulo (Cidade Universitária, campus of the Universidade de São Paulo, Mata da Cidade Universitária Armando Salles, 46º43'W, 23º33'S), ♂, ♀, 12-19.VI.2001 (IBSP 52991, 52992); 1♂, 15-22.VIII.2001 (IBSP 52993), D. Candiani *et al*. col.; (Butantã, campus of the Instituto Butantan, Horto Oswaldo Cruz, 46º43'W, 23º33'S), ♀, 16-23.VIII.1999 (IBSP 52988) and ♀ (ZFMK); ♀, 14-21.VIII.2001 (IBSP 52990), D. Candiani *et al*. col.; (Jardim Ademar, Parque da Previdência, 46º43'W, 23º34'S), ♂, 16-23.VI.2000 (IBSP 52969); 2♂, ♀, 13-20.VIII.2000 (IBSP 52970-52972); 2♂, 14-21.XII.2000 (IBSP 52973, 52974); 4♂, 4♀, 13-20.III.2001 (IBSP 52975-52981) and ♂, ♀ (MZSP 25566, 25568); ♂, ♀, 13-20.VI.2001 (IBSP 52982-52983) and ♂ (ZFMK); ♂, 16-23.VIII.2001 (IBSP 52985); 2♂, 13-20.XII.2001 (IBSP 52986, 52987), D. Candiani *et al*. col.; all collected with pitfall traps. São Paulo (Jardim Zoológico de São Paulo), 13.XII.2003, 6♂, 8♀ in 100% ETOH, B. A. Huber col. (ZFMK); São Pedro (Cachoeira do Saltão near Hotel Fazenda Colina Verde, 20°23.5'S, 47°53'W), ~800m a.s.l., 12.XII.2003, 8♂, 13♀ in 100% ETOH, B. A. Huber col. (ZFMK).

Distribution. Known from the city of São Paulo and from São Pedro, State of São Paulo, Brazil.

Mesabolivar cavicelatus sp. nov.

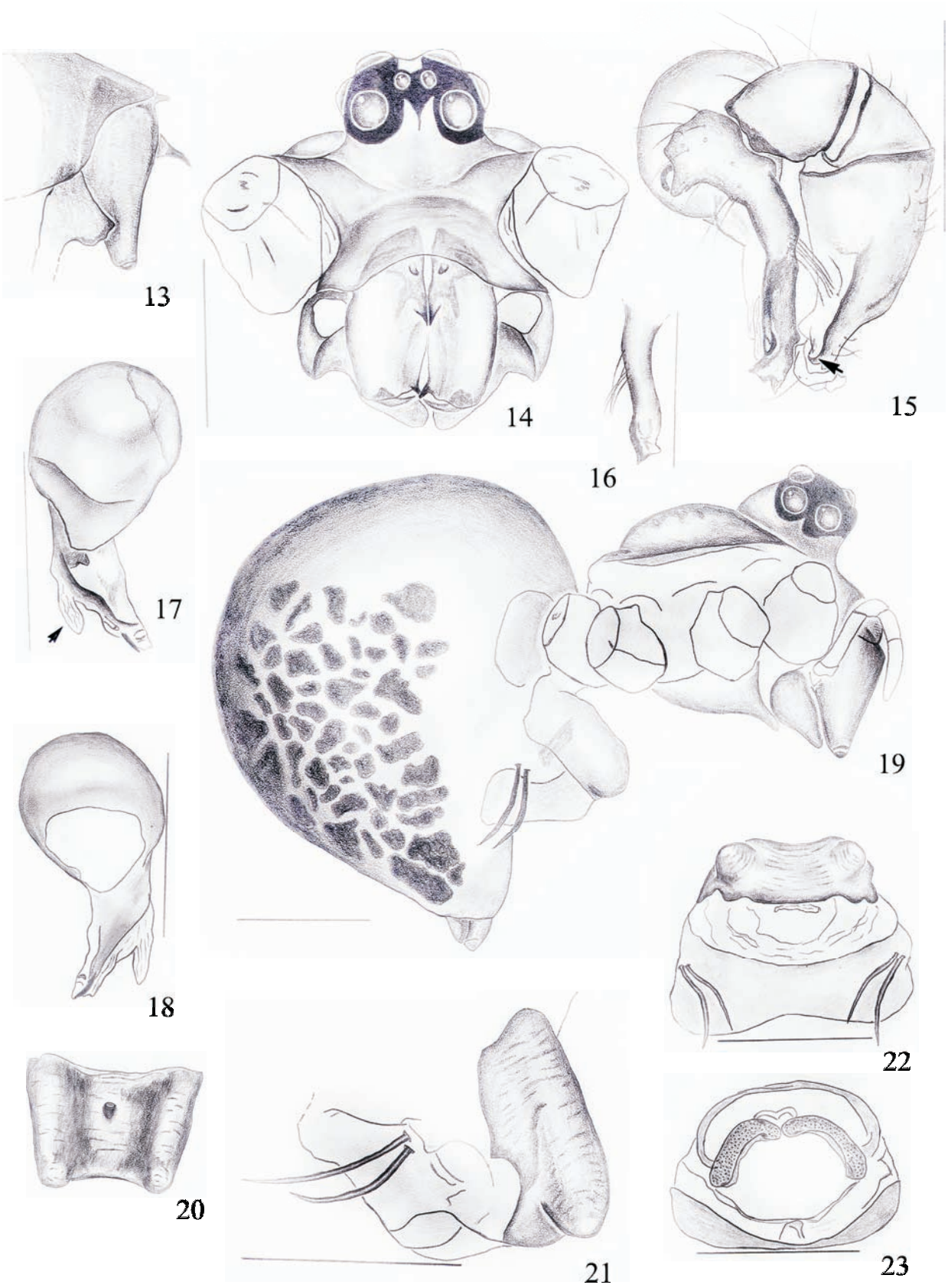
(Figs. 24-33)

Types. Male holotype from Parque Estadual da Cantareira (46º37'W, 23º25'S), Horto Florestal, São Paulo, State of São Paulo, Brazil, 02-07.V.2005, F. Yamamoto col. with pitfall traps (IBSP 53009). Female paratype, same data as holotype, 13-20.XII.2001 (IBSP 53010).

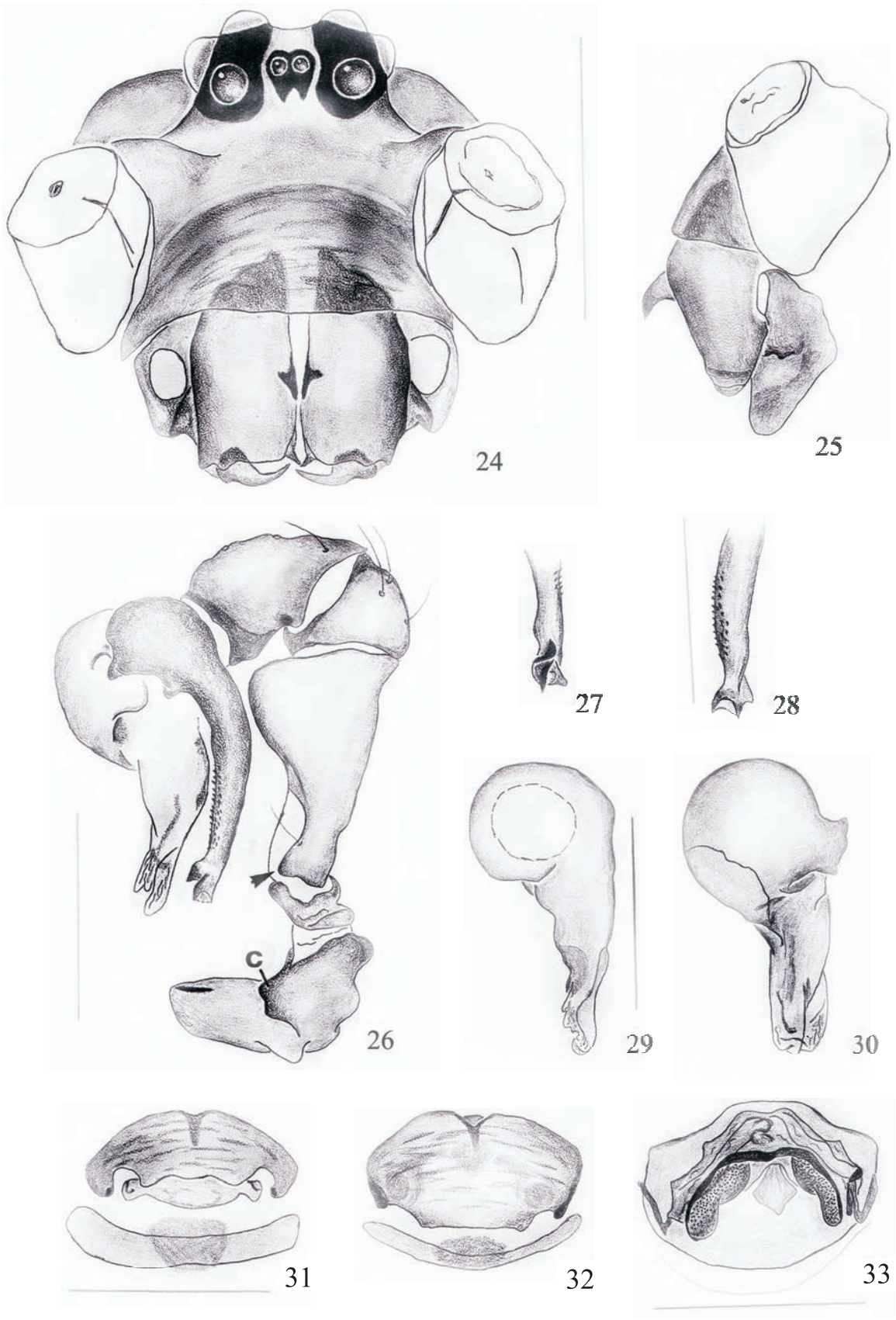
Etymology. The specific name is a Latin adjective (*cavus*=cavity, *celatus*=hidden) and refers to the position of the epigynal pocket.

Diagnosis. The male of *M. cavicelatus* is similar to *M. botocudo* Huber, 2000 (see figs. 876-879 in HUBER, 2000), sharing a prolateral apophysis on the tip of the procursus (Figs. 27,28) and the single, small pair of median apophyses on the male chelicerae (Figs. 24,25), but is distinguished by the shape of the prolateral apophysis at the tip of the procursus (Figs. 26,28). The female is distinguished from the congeners by the very anterior position of the small epigynal pocket and by the absence of apophyses or humps on the epigynum (Figs. 31,32).

Description. Male (Holotype). Total length 2.3, carapace width 1.12; leg I 15.0 (3.8 + 0.4 + 3.3 + 6.3 + 1.2), tibia II 2.6, tibia III 1.8, tibia IV 2.8, tibia I L/d 26. Habitus as in *M. forceps* (Figs. 11-12). Carapace uniformly light brown with some darker radial lines, very similar in shape to *M. forceps*; sternum light brown. Distinct thoracic groove. Eight eyes on slightly elevated ocular area (Fig. 24); distance PME-ALE about 90% of PME diameter. Chelicerae light brown with pair of black frontal apophyses medially. Palps as in Figs. 26-30. Coxa with distinct retrolateral apophysis (Fig. 26). Femur proximally with small round retrolateral apophysis (Fig. 26). Procursus brown, slightly curved (Fig. 26); distal region of procursus dorsally sculptured with small spines (Figs. 26,28). Tip of procursus very distinctive (Figs. 27,28) with prolateral apophysis. Bulb globular, relatively simple,



Figs. 13-23. *Mesabolivar mairyara* sp. nov. Male prosoma: 13, lateral; 14, frontal; 15, Left male palp, retrolateral, arrow indicates the femoral retrolateral apophysis; 16, Tip of left procursus, prolateral; Left bulb: 17, prolateral, arrow indicates the transparent projection; 18, retrolateral; 19, Female habitus, lateral; Epigynum: 20, anterior; 21, lateral; 22, ventral; 23, dorsal. Scale, 0.5 mm.



Figs. 24-33. *Mesabolivar cavicelatus* sp. nov. 24, Male prosoma, frontal; 25, Male mouth area, lateral; 26, Left male palp, retrolateral, arrow indicates the femoral retrolateral apophysis and "c" indicates the coxal apophysis; Tip of left procursus: 27, prolateral; 28, retrolateral, slightly ventral; Left bulb: 29, retrolateral, sligthly ventral; 30, prolateral, slightly dorsal; Epigynum: 31, ventral; 32, ventral, slightly anterior; 33, dorsal. Scale, 0.5 mm.

without transparent projection (Figs. 29,30). Legs light brown, without spines or curved hairs. Tarsus I with approximately 26 pseudosegments, difficult to count. Opisthosoma globular, pale green with several lateral bluish spots.

Female (Paratype IBSP 53010). Total length 2.2, carapace width 0.95; leg I 11.3 (2.9+ 0.35 + 2.5 + 4.4 + 1.1), tibia II 1.9, tibia III 1.5, tibia IV 1.3, tibia I L/d 23. In general very similar to male. Tarsus I with approximately 28 pseudosegments. Epigynum brown, slightly elevated, with very small and very anterior epigynal pocket; without apophyses or humps (Figs. 31,32). Internal genitalia with pair of oblique pore plates and central squared structure (Fig. 33).

Variation. Three males: carapace width 0.94-1.12; tibia I 3.84-4.00. Two females: carapace width 0.95; tibia I 3.16.

Other material examined. BRAZIL, **São Paulo**: São Paulo (Horto Florestal, Parque Estadual da Cantareira, 46º37'W, 23º25'S), ♂, 02-07.V.2005 (IBSP 53008), F. Yamamoto col.; (Cidade Universitária, campus of the Universidade de São Paulo, Mata da Cidade Universitária Armando Salles, 46º43'W, 23º33'S), ♂, 16-23.XI.1999 (IBSP 52995); ♀, 12-19.XII.2001 (IBSP 52994), D. Candiani *et al*. col., all collected with pitfall traps.

Distribution. Known only from city of São Paulo, State of São Paulo, Brazil.

Ecological Data. In three year sampling in the three areas (CANDIANI *et al.*, 2005) were collected four pholcid species. Three of these species belonged to the genus *Mesabolivar*, represented by a total of 308 adult specimens, and one species of *Tupigea* Huber, 2000, represented by only one specimen. Among the three *Mesabolivar* species, *M. forceps* was collected in the largest numbers (n=273) with highest numbers in spring and summer, which are the rainy seasons. It was the most abundant among the pholcids collected (Tab. I) which enabled us to evaluate some aspects of the temporal variation. This species was always present in the samplings, showing a continuous distribution over time

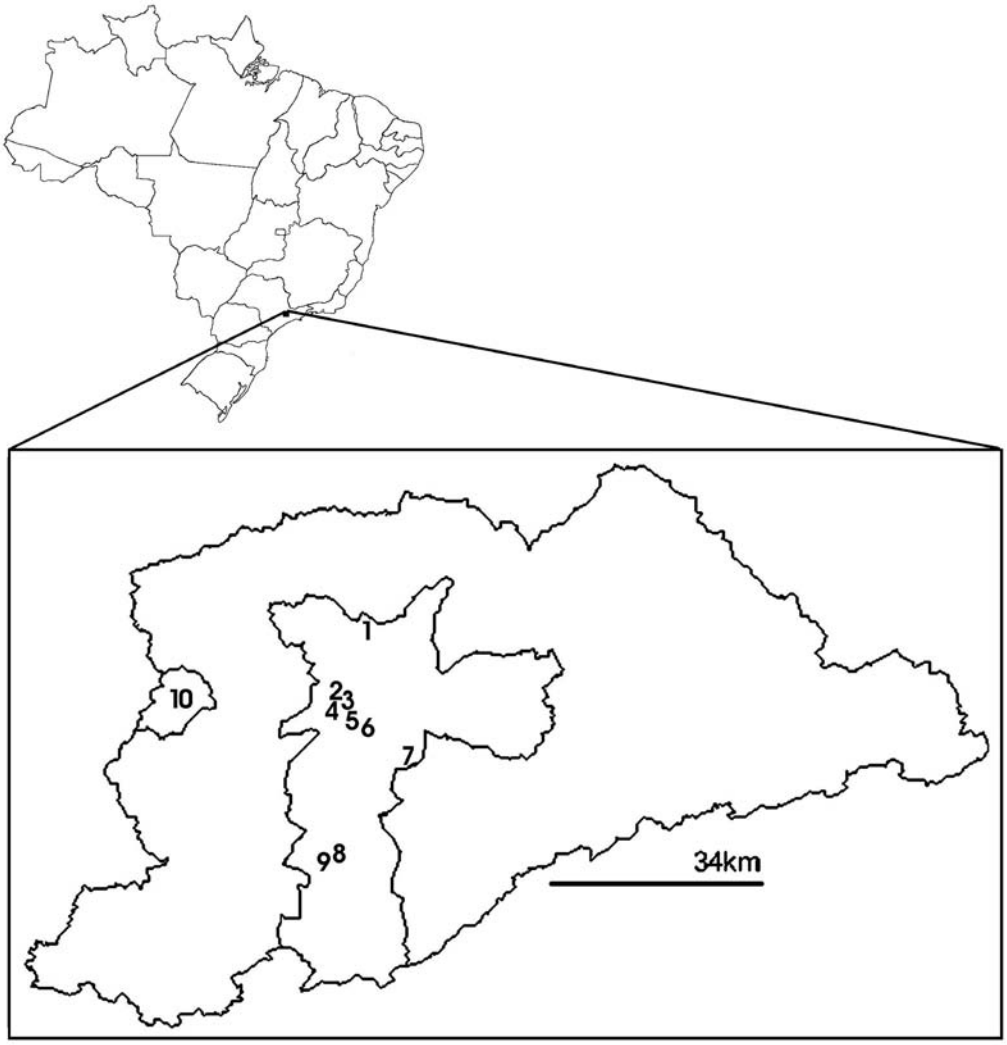


Fig. 34. Metropolitan region of São Paulo. 1-9, Localities in the City of São Paulo. 1, Parque Estadual da Cantareira; 2, C.U.A.S.O.; 3, Horto Oswaldo Cruz; 4, Parque da Previdência; 5, Parque Alfredo Volpi; 6, Parque Burle Marx; 7, Parque do Estado; 8, Ilha Parque dos Eucaliptos; 9, Represa Guarapiranga; 10, City of Itapevi.

Table I. Number of specimens by area.

	M. forceps			*M. mairyara*			*M. cavicelatus*			Juveniles
	Males	Females	Total	Males	Females	Total	Males	Females	Total	
Butantan	77	70	147	0	3	3	0	0	0	111
C.U.A.S.O.	64	16	80	2	1	3	2	1	3	64
Previdência	26	20	46	17	9	26	0	0	0	95
Total	167	106	273	19	13	32	2	1	3	270

(Fig. 35). The present study suggests that seasonal fluctuations do occur, but adult specimens can be collected throughout the year. This species seems to present some degree of tolerance to habitats influenced by human activity, although all localities showed a reasonable degree of preservation, even though surrounded by buildings. Among the sampled areas, *M. forceps* was more abundant in Horto Oswaldo Cruz, especially in the rainy months of the years 2000 and 2001, since 1999 presented a extended dry season and there was an unusually high abundance of ants. The greater abundance of this species in Horto Oswaldo Cruz maybe can be related to the human ecological impact and alteration of the original flora, more intense than other sampled areas. It's possible that *M. forceps* was favored by the reduction of the flora diversity and consequent availability of microhabitats. The ratio of males/females was 1.58, differing significantly from and homogeneous ratio ($\chi^2 = 13.63$; $p = 0.0002$), probably due to the male bias in pitfall traps, as observed in Costa (1998) and Álvares *et al.* (2004). Probably this is affected by a intense activity of the males in the reproductive period.

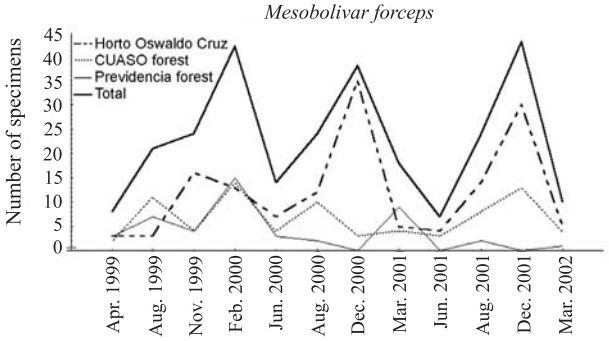


Fig. 35. Temporal variation of *Mesabolivar forceps* sp. nov.

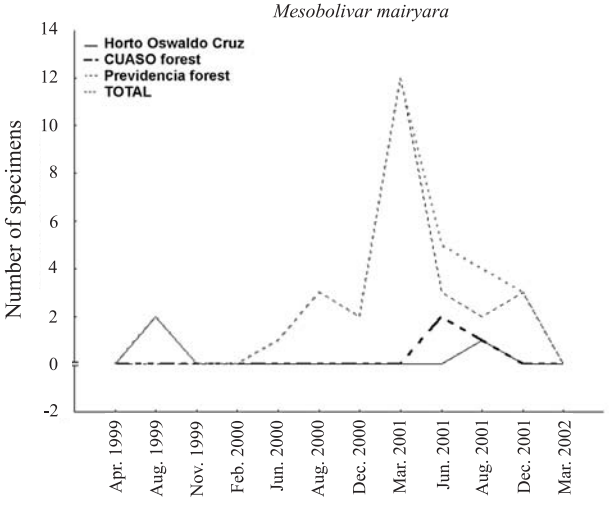


Fig. 36. Temporal variation of *Mesabolivar mairyara* sp. nov.

Mesabolivar mairyara was the second most abundant species (n=32) and was mostly collected in the Parque da Previdência (Tab. I), and the majority of the individuals (37.5%) were collected in a single season (March 2001) in the Parque da Previdência (Fig. 36). The ratio of males/females was 1.46 ($\chi^2 = 1.125$; $p = 0.2888$), showing that the ratio males/females of *M. mairyara* was 1:1. This ratio is not significant, problably due the low number of adult specimens collected.

In most *Mesabolivar* species, there is no information on sampling methodology, but most were probably collected manually. The species living in low vegetation and among buttresses are far more easily collected and the exploitation of the leaf litter with pitfall methodology is relatively recent. We expect, with the development of projects specifically targeting the leaf litter environment, a substantial increase in the number of known ground dwelling species in the areas of the city of São Paulo.

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