New species of Szelenyiopria Fabritius and description of the male of Szelenyiopria distinguenda (Loiácono) (Hymenoptera: Diapriidae)

Abstract. Here are described and illustrated Szelenyiopria loiaconae sp. nov., Szelenyiopria jataiensis sp. nov., and the male of Szelenyiopria distinguishing (Loiácono) (Hymenoptera, Diapriidae).

Keywords: Atlantic Rainforest; Brazilian savannah; Diapriini; parasitoid.

D iapriini is the only tribe of Diapriinae that includes truly symphilic species, some of them are adapted morphologically to life with ants. These adaptations include extensive mimicry of the host ants and may include convergences in sculpture, pilosity, color, behavior and biology (Masner & Garcia 2002; Lachaud & Pérez-Lachaud 2012; Loiácono et al. 2013a).

The 11 described Neotropical Szelenyiopria Fabritius species are distributed from Argentina to Guatemala (Masner & García 2002; Fabritius 1974; Loiácono 1987; Loiácono & Margaría, 2000; Loiácono et al. 2000; Loiácono & Margaría 2009; Loiácono et al. 2013b).

Species of Szelenyiopria share the presence of straight setae with truncate apex on the body which might be used as an outlet of possible exocrine gland products (Masner & García 2002). Szelenyiopria species are solitary or gregarious primary endoparasitoids of Formicidae larvae (Loiácono 1987; Loiácono & Margaría 2000; Loiácono & Margaría 2009; Loiácono et al. 2013b).

Here we describe and illustrate two new species of Szelenyiopria from southeast of Brazil, Szelenyiopria loiaconae sp. nov. and Szelenyiopria jataiensis sp. nov., and we provide a description and images of diagnostic characters for the male of Szelenyiopria distinguishing (Loiácono), previously known only by females.

MATERIAL AND METHODS

The hymenopterans were collected in one area of Atlantic Rainforest at Parque Estadual da Serra do Mar, Núcleo Santa Virgínia, São Luiz do Paraitinga municipality, using five Malaise traps (Townes 1972), and in areas of Brazilian savannah, including areas of riparian and savannah woodland vegetations, at Estação Ecológica de Jataí, Luiz Antonio municipality, using five yellow pan traps and Malaise traps (Townes 1972), all of them at São Paulo State, Brazil.

Specimens for the present study were dried using a Critical Point Drier (Leica EM CPD30). Morphological structures were visualized and studied using a Leica MZ 9.5 stereomicroscope with a fluorescent light source. Bright field images were taken with a Leica DFC295 digital camera attached to a Leica M205C APO stereomicroscope equipped with LED5000 HDI light source. Image stacking was performed with Helicon Focus software (version 5.3). Scanning electronic micrographs (SEMs) were taken with a FEI Quanta TM 250 SEM, using low vacuum conditions.

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mode. Images were further enhanced with Adobe Photoshop (version 11.0).

Morphological terminology follows MASNER & GARCIA (2002) and EADY (1967). The following abbreviations are in the descriptions: A (antennomere); POL (posterior-ocellar line): distance between the inner margins of lateral ocelli; LOL (lateral-ocellar line): shortest distance between the median ocellus and lateral ocellus; OOL (ocular-ocellar line): shortest distance between the lateral ocellus and the compound eye.

Szelenyiopria distinguenda was described based only on female specimens. Herein, the male of this species is described from specimens collected at Domingos Martins and Santa Tereza municipalities, Espírito Santo State, Brazil, and deposited in the collection of Hymenoptera of the Universidade Federal do Espírito Santo.

Primary specimens were deposited in the following institutions: MZUSP - Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (C.R.F. Brandão, curator); LRRP - Coleção Entomológica do Laboratório de Sistemática e Bioecologia dePredadores e Parasitóides do Instituto Biológico, Ribeirão Preto, Ribeirão Preto, SP, Brazil (N.W. Perioto, curator); UFES - Universidade Federal do Espírito Santo (M.T. Tavares, curator).

TAXONOMY

Szelenyiopria loiaconae Comério, Oliveira, Perioto & Lara sp. nov.

urn:lsid:zoobank.org:act:AA03DB47-887C-4079-A437-0CB6DD2F7FE0 (Figures 1-9)

Diagnosis. Szelenyiopria loiaconae sp. nov. and S. jataiensis sp. nov. differs from all other Szelenyiopria species by the presence of 12 antennomeres. The other 11 species have 11 antennomeres. S. loiaconae sp. nov. differs from S. jataiensis sp. nov. in having a pronounced clava, presence of glabrous median keel of propodeum that is not produced anteriorly in dorsal view, weakly developed dorsellum without carinae, and by the presence of rare pilosity on gena, pronotal collar, metapleuron and petiolo.

Holotype female. (Figure 1). Length 2.3 mm; body mostly dark brown; antenna, tegula, ocelli and legs light brown; body smooth and shiny, with sparse specialized setae.

Head. subrectangular in dorsal view (Figure 2) 1.5 × wider than long, with sparse pilosity; frons unarmored, antennal shelf protruding; temple in lateral view 1.4 × wider than compound eye, POL:LOL:OOL = 8.0:7.3:14.7. In lateral view (Figure 3), antennae inserted at the level of the upper half of the compound eye; compound eye small, ovoid, 1.5 × higher than wide in lateral view, with sparse pilosity; ocelli diameter 3.7 × longer than an ommatidium diameter; malar space as long as the compound eye height in lateral view; gena with sparse pilosity. Occipital flange rudimentary, mandible bidentate, lower tooth longer than the upper tooth; palp formula 5:2; antenna with 12 antennomeres. A1 long and cylindrical, A1–A5 and A12 2.8, 1.8, 1.6, 1.3, 1.3 and 1.2 × longer than wide respectively, A6–A11 0.9, 0.9, 0.5, 0.5, 0.5 and 0.5 × wider than long respectively; clava distinct, with F8–F11 rectangular and flattened ventrally, and a subconical F12.

Mesosoma (Figures 5-7). Subequal to width of head at level of tegulae; pronotal collar with rare and sparse pilosity; mesoscutum convex with sparse long pilosity; anterior scutellar pit rectangular, deep, transverse, without median carina; mesoscutellum disc convex; axilla wider than scutellar pit; dorsellum underdeveloped, without carinae; propodeum rugulose and pilose (Figure 7), with posterolateral corners triangular and posterior margin deeply concave medially, median keel of propodeum not sculptured and not produced anteriorly in dorsal view; mesopleuron convex with shallow medial depression (Figure 6); metapleuron with sparse pilosity; fore wing 2.6 × longer than wide, submarginal vein reaching proximal third of wing length, stigmal vein moderately developed; hind wing narrow, 7.1 × as long as wide; legs with dense and long pilosity.

Figure 1. Szelenyiopria loiaconae sp. nov. Female. Habitus.
Figure 2. *Szelenyiopria loiaconoae* sp. nov. Head, dorsal view.
Figure 3. *Szelenyiopria loiaconoae* sp. nov. Head, lateral view.
Figure 4. *Szelenyiopria loiaconoae* sp. nov. Antenna, female.
Figure 5. *Szelenyiopria loiaconoae* sp. nov. Mesosoma, dorsal view.
Figure 6. *Szelenyiopria loiaconoae* sp. nov. Mesosoma, lateral view.
Figure 7. *Szelenyiopria loiaconoae* sp. nov. Propodeum, dorsal view.
Figure 8. *Szelenyiopria loiaconoae* sp. nov. Metasoma, dorsal view.
Figure 9. *Szelenyiopria loiaconoae* sp. nov. Metasoma, lateral view.
Metasoma. Petiole as long as wide, rugulose, covered anteriorly by long whitish hairs; gaster about 1.9 × longer than wide (Figure 8), with many long bristles ventrally (Figure 9).

Variations. N=5 specimens. Variation in measures: body length (2.1–2.4 mm); POL (7.7–8.2); OOL (6.9–7.3); LOL (14.7–14.9); malar space (8.2–9.0); A1 (7.2–7.4); A2 (6.7–7.2); A3 (7.4–7.8); petiole length (1.7–1.9); and gaster length (9.9–10.5).

Material examined: (n=5): HOLOTYPE female. BRAZIL / S[ão] P[aulo], São Luiz do Paraitinga, [Estado/ da] S[erra] M[ar] – Núcleo Santa Virgínia, 23º19’24.8” S/45º05’40.1” W, Malaise trap, 21.XII.2010. N.W. Perioto and team, legs. (MZUSP). PARATYPES: 4 females. Same data as holotype, except 23.XI.2009, 22.I.2010 (LRRP) and 22.VII.2010 and 22.X.2010. (MZUSP).

Male. Unknown.

Distribution. São Paulo State, Brazil.

Biology: Unknown.

Etymology. This species is named in honor of Dra. Marta Susana Loiácono, entomologist at the División Entomología, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, La Plata, Argentina, by her dedication towards Neotropical Diapriidae taxonomy and bionomy.

**Szelenyiopria jataiensis** Comério, Oliveira, Perioto & Lara sp. nov.

urn:lsid:zoobank.org:act:31D63324-05A4-4832-BD81-4A021DF72E38

(Figures 10-18)

**Diagnosis.** *S. jataiensis* sp. nov. differs from all other species in the genus by the combination of the following characters: antennae with 12 antennomeres clava strongly abrupt of 3 antennomeres not flattened ventrally, median keel of propodeum sculptured posteriorly in dorsal view and submarginal vein reaching proximal fourth of wing length.

**Holotype female.** (Figure 10). Length 2.4 mm, body predominantly dark brown; antenna, tegula, ocelli and legs light brown; body smooth and shiny, with sparse specialized setae. Head. In dorsal view (Figure 11), subrectangular, 1.3 × wider than long, with sparse pilosity; frons unarmad, antennal shelf protruding; temple 1.3 × wider than eye; POL:LOL:OOL = 11.1:7.7:15.9. In lateral view (Figure 12), antennae inserted at the level of the upper half of compound eye; compound eye conspicuous, glabrous, ovoid, 1.4 × higher than wider; ocellus 3.5 × larger than omatidium; compound eye 2.1 × malar space; gena with dense pilosity; occipital flange rudimentary. In frontal view, with mandible bidentate, lower tooth slightly longer than the upper; palpal formula 5:2. Antenna (Figure 13) with 12 antennomeres; A1 elongate and cylindrical, A1–A9 and A12 4.6, 1.8, 2.0, 2.1, 1.7, 1.9, 1.5, 1.1, 1.3 and 1.2 × longer than wide respectively, A10 and A11 0.8 × wider than long respectively; clava strongly abrupt, with two subrectangular clavomeres, and one apical segment subconical, not flattened ventrally.

Mesosoma. In dorsal view (Figure 14), subequal to width of head at level of tegulae; pronotal collar with dense pilosity; mesoscutum convex with long setae; anterior scutellar pit subcircular, deep, transverse, without median carina; scutellar disc convex, axilla wider than scutellar pit; dorsellum well developed, with three keels; propodeum developed with dense pilosity (Figure 16); median keel of propodeum sculptured posteriorly in dorsal view; posterolateral corners of propodeum strongly produced, posterior margin deeply excavated medially; mesopleuron convex with a shallow medial depression (Figure 15); metapleuron with dense pilosity; forewing 3.0 × longer than wide, submarginal vein reaching proximal fourth of wing length, stigmal vein developed; hind wing narrow, 7.0 × longer than wide; legs with distinct long pilosity.

Figure 10. *Szelenyiopria jataiensis* sp. nov. Female. Habitus.
Figure 11. Szelemyiopria jataiensis sp. nov. Head, dorsal view.
Figure 12. Szelemyiopria jataiensis sp. nov. Head, lateral view.
Figure 13. Szelemyiopria jataiensis sp. nov. Antenna, female.
Figure 14. Szelemyiopria jataiensis sp. nov. Mesosoma, dorsal view.
Figure 15. Szelemyiopria jataiensis sp. nov. Mesosoma, lateral view.
Figure 16. Szelemyiopria jataiensis sp. nov. Propodeum, dorsal view.
Figure 17. Szelemyiopria jataiensis sp. nov. Metasoma, dorsal view.
Figure 18. Szelemyiopria jataiensis sp. nov. Antennal segments, male.
Metasoma. Petiole almost as long as wide (18.0:19.2), covered by long whitish hairs; metasoma post petiole, in dorsal view (Figure 17), about 1.6 × longer than wide, with sparse specialized setae; ovipositor partially exposed.

Variations. N= 4 exemplars. Variation in measures: body length (2.3–2.4 mm); POL (10.6–11.6); OOL (6.9–7.7); LOL (14.3–17.7); malar space (6.5–11.2); A1(36.9–40.3 / 8.7–9.3); A2 (10.7–11.8 / 6.1–6.6), A3 (8.4–10.1 / 4.2–4.9), A4 (8.5–8.8 / 4.1–5.1), A5 (7.3–8.0 / 4.4–6.4), A6 (7.5–8.2 / 4.4–6.0), A7 (7.8–10.0 / 5.2–5.4), A8 (5.7–7.0 / 5.3–6.1), A9 (7.0–9.2 / 6.6–7.1), A10 (8.4–9.5 / 11.0–11.5), A11 (9.5–10.0/ 12.5–13.1) and A12 (12.7–12.9 / 10.9–11.1); forewing (2.3–2.4 / 0.8–0.9); submarginal vein length (0.7–0.9); petiole (1.7–1.8 / 1.8–1.9), and metasoma post petiole (9.4–9.7 / 5.2–5.5).

Male. Antenna (Figure 18) 14-segmented, A3–A13 distally knotted, with row of verticillate bristles; antennomeres in proportions: A1 (40:10), A2 (12:9), A3 (20:8), A4 (19:9), A5 (18:9), A6 (16:9), A7 (16:9), A8 (15:8), A9 (15:8), A10 (14:9), A11 (14:8), A12 (12:8), A13 (12:9) and (16:9).

Material examined: (n=7): HOLOTYPE female. BRAZIL / S[ão] P[aulo], Luiz Antonio, E[stação] E[cológica] [do] J[falta] 21º37’23.0” S/47º48’33.9” W, yellow pan trap, riparian vegetation, 22.VIII.2008. N.W. Perioto and team. (MZUSP). PARATYPES: 1 female, same data as holotype, except Malaise trap, 16.VII.2007. (MZSP); 1 female, same data as holotype, except Malaise trap, sauvannah woodland vegetation, 30.IX.2008. (LSBPP); 1 male, same data as holotype, except Malaise trap, sauvannah woodland vegetation, 22.VIII.2008. (MZUSP); 3 males, same data as holotype, except Malaise trap, sauvannah woodland vegetation, 13.VIII.2008, 3.IX.2008 (MZSP). 3.IX.2008. (LRPP).

Distribution. São Paulo State, Brazil.

Etymology. The specific name refers to the type locality.

Comments. This species differs from other species of Szeleyiopria by number of antennomeres (12). This is species is similar to S. loiaconae sp. nov., both have antennae with 12 segments, but differs by the: form of the clava, form of median keel of propodeum, and of the dorsellum; pilosity, and ratio of the vein submarginal.

Szeleyiopria distinguenda (Loiácono)
(Figures 19–21)

Gymnopria distinguenda (Loiácono, 2000), Insect, Systematic & Evolution, 2, 187–2000.

Male description. (Figures 19–20). Length 3.0 mm; body dark brown; antenna, tegula, ocelli and legs mostly light brown; body smooth and shiny, with sparse specialized setae.

Head. In dorsal view, globular, 0.8 × wider than long, with sparse pilosity; frons unarmad, antennal shelf protruding; temple 1.8 × wider than compound eye, rounded, POL:LOL:OOL= 8.4:6.9:12.2. In lateral view, with torulus in the lower half of the compound eye; compound eye well developed, ovoid, glabrous, 1.2 × higher than wider; ocellus conspicuous, about 4.0 × the ommatidium diameter; compound eye 2.6 × malar space; gena with dense pilosity; occipital flange rudimentary. In frontal view, mandible bidentate, lower tooth slightly longer than upper tooth; palpal formula 5:2. Antenna with 14 antennomeres, A3–A13 knotted distally, with row of verticillate bristles; A1 elongate and cylindrical, A1–A4 4.6, 2.6, 2.8, 2.6, 2.4, 2.9, 2.5, 2.4, 2.6, 2.5, 2.2, 2.5, 2.6 and 4.5 × longer than wide.

Mesosoma. In dorsal view (Figure 21), subequal to width of head at level of tegulae; pronotal collar with dense pilosity; mesoscutum remarkably convex, with sparse setae; anterior scutellar pit subcircular, deep, transverse, laterally striate and with median carina; scutellar disc remarkably convex, axilla smaller than scutellar pit; dorsellum well developed, with three keels; propodeum developed with dense pilosity, median keel of propodeum ligulate, sculptured in dorsal view; posterolateral corners of propodeum developed; posterior margin deeply excavated medially; mesopleuron convex; metaepimeron with dense pilosity; fore wing 1.9 × longer than wide, submarginal vein reaching proximal third of wing length, stigmal vein developed; hind wing narrow, 8.5 × longer than wide; legs with many long setae.

Metasoma. Petiole as longer than wide; metasoma post petiole, in dorsal view, about 2.0 × longer than wide, with sparse specialized setae.

Material examined: 2 male. BRAZIL / S[ão] P[aulo], Domingos Martins, M[ata] P[ico] E[ldorado], 20º22’17”S/40º39’29”W, Malaise trap, 03.XII.2004. Tavares and team (UFES). 1 male, BRAZIL / S[ão] P[aulo], Santa Tereza, E[stação] E[cológica] S[anta] L[úcia], 19º58’25” S/40º31’44.6” W, Pitfall, 23.X.2007. Tavares and team. (UFES).

Comments. The association of male and female of S. distinguenda is based in combination of the following features, which distinguish the species: mesoscutum and scutellar disc...
Figure 20. *Szelenyiopria distinguenda* (Loiácono). Male. Habitus, dorsal view.

Figure 21. Mesosoma and propodeum of *Szelenyiopria distinguenda* (Loiácono), male.

remarkably convex, anterior half of median keel of propodeum ligulate and sculptured.

**Distribution.** Espírito Santo State, Brazil.

**Biology.** Unknown.

**DISCUSSION**

The following features are firstly reported to the genus *Szelenyiopria*: head subrectangular, clava with five clavomeres, clava strongly abrupt and not flattened ventrally and dorsellum weakly developed without median keels.

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