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## New genus and new species of the subfamily Pharsalinae (Hemiptera: Ricaniidae) from Eastern Brazil

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### ABSTRACT

*Ricamela lata* gen. et sp. nov. is described from the state of Bahia in Brazil based on a single female from L. Melichar's collection in the Moravian Museum, Brno, Czech Republic. The new genus belongs to the subfamily Pharsalinae Gnezdilov of the family Ricaniidae Amyot et Serville and represents the third genus of this group. The systematic position of the American Ricaniidae are discussed. A key to genera of Pharsalinae is given.

**Key words:** Neotropics, new genus, new species, morphology, Ricaniidae, systematics

## Новый род и вид подсемейства Pharsalinae (Hemiptera: Ricaniidae) из восточной Бразилии

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### РЕЗЮМЕ

*Ricamela lata* gen. et sp. nov. описан из штата Баия в Бразилии по самке из коллекции Л. Мелихара в Моравском музее, Брно, Чехия. Новый род принадлежит к подсемейству Pharsalinae Gnezdilov семейства Ricaniidae Amyot et Serville и представляет собой третий по счёту род в этой группе. Обсуждаются американские представители семейства Ricaniidae. Дан определительный ключ к родам подсемейства Pharsalinae.

**Ключевые слова:** Неотропика, новый род, новый вид, морфология, Ricaniidae, систематика

## INTRODUCTION

The subfamily Pharsalinae Gnezdilov, 2009 was erected in the family Ricaniidae Amyot et Serville, 1843, based on the characters of head, fore wing venation, and male and female genitalia structure (Gnezdilov 2009), for two Neotropical monotypical genera, *Pharsalus* Melichar, 1906 and *Silvanana* Metcalf, 1947, treated before as belonging to the families Issidae Spinola, 1839 and Lophopidae Stål,

1866 accordingly (Melichar 1906; Metcalf 1947; O'Brien 1987).

During my visit to the Moravian Museum in Brno (Czech Republic) a female representing a new species and a new genus of the subfamily Pharsalinae was discovered within undescribed materials in the collection of Dr. Leopold Melichar (1856–1924). This new species was already recognized and labeled as a type by L. Melichar, however it was never published. Below I describe this new genus and new species.

## MATERIAL AND METHODS

The photographs of the specimen were taken using the microscope Leica MZ9.5 and a Leica DFC 490 camera. Images were produced using Helicon Focus V. 6.7.1 and Adobe Photoshop software. The drawings were produced using the same microscope with camera lucida attached.

Morphological terminology following Anufriev and Emeljanov (1988) and Gnezdilov (2003). Label information is quoted, with “/” indicating new line and “//” indicating next label.

The holotype of the species described below is deposited in the Moravian Museum, Brno, Czech Republic.

## SYSTEMATICS

### Family Ricaniidae Amyot et Serville, 1843

#### Subfamily Pharsalinae Gnezdilov, 2009

#### Genus *Ricamela* gen. nov.

**Type species:** *Ricamela lata* sp. nov., by monotypy.

**Etymology.** The generic name is derived from combination of “Ricania” and “Melichar” referring to the family Ricaniidae and to Dr. L. Melichar – the eminent Czech hemipterologist who first recognized in the collection the new genus and the new species described below.

**Diagnosis.** Metope wide, with weak incomplete median carina only; lateral margins diverging and triangularly produced below the eyes. Coryphe nearly square, with straight anterior margin and with smooth median carina. Pronotum with median and lateral carinae. Paradiscal fields of pronotum wide behind the eyes, each with triangular process of the margin in front of scapus. Mesonotum 5 times as long as pronotum, with median and lateral carinae. Forewings enlarged apically, with simple radius and cubitus anterior and multibranching median. Hind wings well developed, almost as long as fore wings. Hind tibia with single lateral spine. First metatarsomere twice as long as second one, with 6 spines apically. Second metatarsomere without spines.

**Description.** Metope wide, flat, 1.2 times longer than the greatest width, with straight upper margin and weak median carina running from its upper margin to its middle (Figs 3, 8). Lateral margins of metope

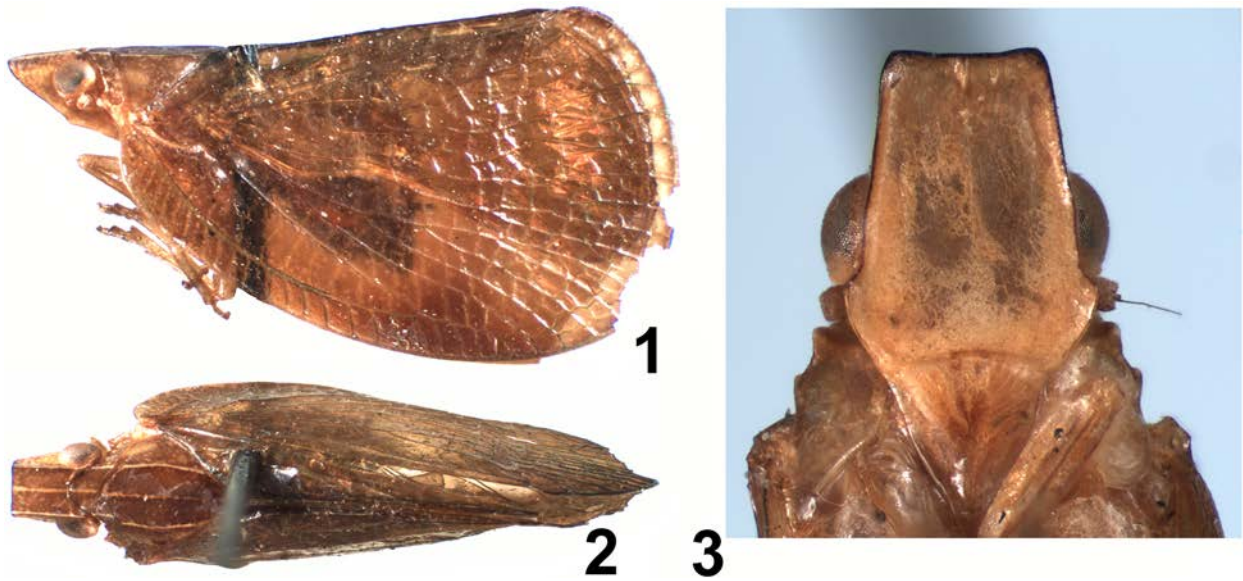
diverging and triangularly produced below the eyes. Metopoclypeal suture deep, weakly convex. Postclypeus large, flattened frontally, without carinae. Ocelli present. Pedicel elongately cylindrical. Metope and coryphe joint at acute angle, with long preocular fields (in lateral view) (Figs 1, 6). Coryphe nearly square, slightly longer than wide, parallel-sided, with smooth median carina, anterior margin straight, posterior margin weakly concave (Figs 2, 5). Pronotum 0.5 times as long as coryphe at midline, with median and lateral carinae; anterior margin strongly convex; posterior margin deeply concave. Paradiscal fields of pronotum wide behind the eyes, each with large triangular process of the margin in front of scapus (in lateral view) (Fig. 6). Paranotal lobes long and wide, oval-shaped, without carinae (Fig. 7). Mesonotum large, 5 times as long as pronotum, with median and lateral carinae; scutellum is separated by the groove (Figs 2, 5). Tegulae small. Forewings wide, enlarged apically, surpassing abdomen apex by half of its length, without hypocostal plate (Figs 1, 4). Precostal area wide, with numerous transverse veins. Basal cell large, teardrop-shaped. Costa joint radius after wing middle. Forewing vein sequence: *R* 1, running across convex “knee protrusion” (dotted circle on Fig. 4); *M* 16, mainly furcating in basal half of the wing; *CuA* 1; many transverse veins. Clavus nearly as long as whole wing, with posteroapical angle of the wing situated immediately behind its apex; *Pcu* joint *A*<sub>1</sub> at wing middle and running into apex of clavus. Hind wings well developed, reaching peripheral vein of forewings. Hind tibia with single lateral spine in its apical third and with 6 apical spines. First metatarsomere twice as long as second one, with 2 latero-apical and 4 intermediate spines arranged in continuous row. Second metatarsomere without spines. Gonopods nearly rectangular, weakly convex (Fig. 10).

**Composition.** Only the type species.

#### *Ricamela lata* sp. nov.

(Figs 1–11)

**Type material.** Holotype, female, Brazil: “Salobro prov. de Bahia / Bresil / E. Gounelle, 6.7.1885” [white, printed] // “Collectio / Dr. L. Melichar / Moravské museum Brno” [white, printed] // “*Pharsalus / major* Mel. [handwritten in ink] / det. Melichar. [printed]” // “Typus” [red, printed] // “*Pharsaloides* n.g.” [handwritten in ink] // “Transcriptio [printed] / *Pharsalus* ♀ [handwritten in ink] / *major* Melichar



Figs 1–3. *Ricamela lata* gen. et sp. nov., holotype. 1 – lateral view; 2 – dorsal view; 3 – face.

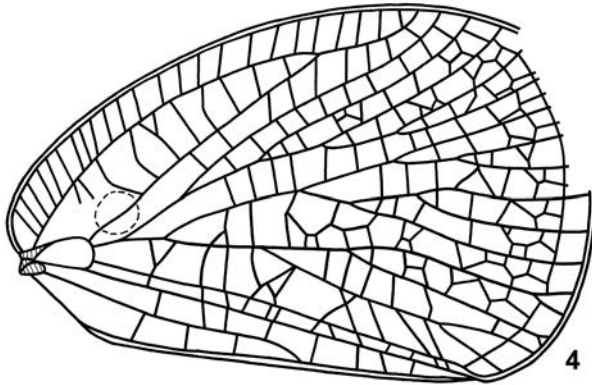
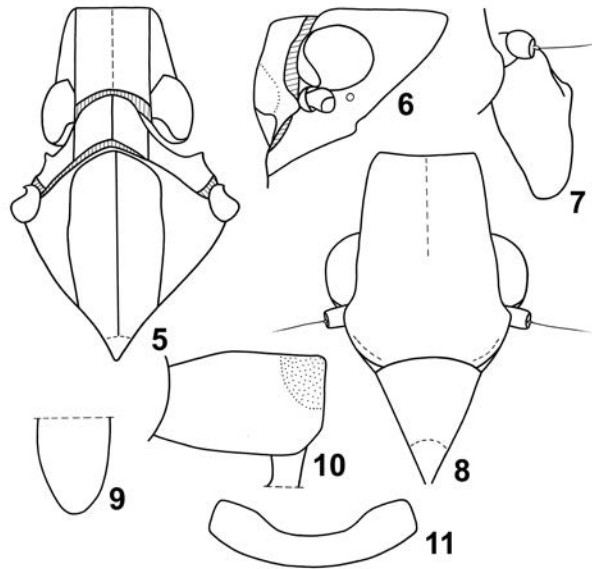


Fig. 4. *Ricamela lata* gen. et sp. nov., holotype, fore wing.



Figs 5–11. *Ricamela lata* gen. et sp. nov., holotype. 5 – head, pro- and mesonotum, dorsal view; 6 – head and pronotum, lateral view; 7 – paranotal lobe and antenna; 8 – face, frontal view; 9 – anal tube, ventral view; 10 – gonoplac, lateral view; 11 – sternite VII, ventral view.

[handwritten in ink] / nomen invalidum [handwritten in ink] / [?] / L. Melichar det. [printed]" [white].

**Etymology.** The species name is referring to the wide forewings.

**Description.** Structure as mentioned for the genus above.

**Coloration.** Coryphe, pro- and mesonotum, and forewings brown, except yellow median carina and lateral margins of coryphe and carinae of pro- and mesonotum (Figs 1–3). Preocular fields, metope, clypeus, thorax below, and legs light yellow. Pedicel brown. Claws and gonoplacs dark brown. Leg spines dark brown, with black apices.

**Female genitalia** (Figs 9–11). Sternite VII with deeply and widely concave posterior margin (Fig. 11). Anal tube narrowing apically (Fig. 9).

**Total length.** 9.0 mm.





**Figs. 12, 13.** Pharsalinae, lateral view. 12 – *Silvanana omani* Metcalf, 1947, paratype (after Gnezdilov 2009); 13 – *Pharsalus repandus* Melichar, 1906 (after Gnezdilov 2009).

#### Key to genera of Pharsalinae

1. Metope without transverse carina above metopoclypeal suture; lateral margins diverging and triangularly produced below the eyes (Figs 3, 8) . . . . . 2
- Metope with distinct transverse carina above metopoclypeal suture; lateral margins converging to clypeus (Melichar 1906, fig. 50). . . **Pharsalus** Melichar, 1906
2. Coryphe with obtusely angulated anterior margin (in dorsal view) and with irregularly pustulate surface, with pair of intermediate carinae (Metcalf 1947, fig. 2). Forewings slightly enlarged apically, with keel-shaped longitudinal veins and accordingly goffered posterior margins, median with 8 branches (Fig. 12) . . . . .  
. . . . . **Silvanana** Metcalf, 1947
- Coryphe with straight anterior margin (in dorsal view), without pustules or intermediate carinae (Figs 2, 5). Forewings distinctly enlarged apically, median with 16 branches (Figs 1, 4) . . . **Ricamela** gen. nov.

#### DISCUSSION

All currently known Pharsalinae are distributed in South America, while Ricaniinae are mostly known from the Old World (Metcalf 1955), except few species discussed below. Thus *Ricanula sollicita* Melichar, 1898, described from Rio de Janeiro, is “typical” Ricaniinae according to the drawing provided by Melichar (1898, pl. 11, fig. 15) – this species has

short and transverse coryphe and apically enlarged, triangular-shaped forewings, with radius and cubitus anterior multibranched. Monotypical genus *Cotrades* Walker, 1858, with the type species *Cotrades intricata* Walker, 1858, described from Vila Nova in the state of Santa Catarina in Brazil (Walker 1858) and according to Walker’s original description possessing forewings with broad precostal area bearing numerous transverse veins, was listed in the Ricaniidae by Fennah (1949) and China and Fennah (1952), but without analysis of morphological characters except first metatarsomere spinulation. According to my examination of the photos of the type specimen of *C. intricata*, kindly provided for my study by Mr. Michael Webb (London, United Kingdom), this species has forewings slightly apically enlarged, with numerous transverse veins, *M* multibranched and *CuA* with 4 branches, hind wings well developed with *CuA* with 5 or 6 branches, coryphe very transverse, and metope wide and flat without intermediate carinae visible. However, mentioned above features of fore and hind wings are characteristic also for some Nogodinidae, e.g. the tribe Epacriini Fennah of the subfamily Nogodininae (see Gnezdilov 2017, figs 3, 4, 17, 18). The placement of the genus *Semestra* Jacobi, 1915, with five South American species, in the Ricaniidae was confirmed by Fennah (1978), however, without convincing arguments, even Jacobi (1915) in his original description compared this genus with *Mindura* Stål, 1862, currently assigned to the tribe Varcini Fennah, 1978 of the family Nogodinidae (Fennah 1978). The drawings provided by Fowler (1905, Tab. 8, figs 7, 7a) for *Semestra bugabensis* (Fowler, 1905), type species of *Semestra*, do not allow making unambiguous decision about its taxonomic position. The same is true for the monotypical genus *Kruegeria* Schmidt, 1911 from Peru (San Antonio da Cumbasa), originally described in the family Issidae (Schmidt 1911) and later transferred to the Ricaniidae by Fennah (1982), again without giving any reasons. However, *Kruegeria clavispina* Schmidt, 1911 has coleopterous, domed folding forewings – a peculiar character within Ricaniidae known also for several Madagascan genera (Schmidt 1911; Stroiński et al. 2011), and accordingly, the taxonomic position of *Kruegeria* Schmidt is still controversial. Thus our knowledge of the New World ricaniid fauna is still in its initial stage when examination and redescription of types of all known American species are extremely necessary.

Within the Pharsalinae *Pharsalus repandus* Melichar, 1906 was described from the State of Rio Grande do Sul in Southern Brazil after long series of specimens (Melichar 1906) and later recorded from Uruguay (Gnezdilov 2009), while *Silvanana omani* Metcalf, 1947 is known only after the type serie of 22 specimens collected from a tree *Psidium acidum* (D.C.) Landrum of the family Myrtaceae in Agua Preta in State of Bahia in Eastern Brazil (Metcalf 1947). Recently unidentified Pharsalinae were mentioned among other planthopper species of the forest canopies collected in Ecuadorian Amazon (Barringer et al. 2019). Apparently collecting in other Neotropical regions will reveal more taxa of Pharsalinae allowing better understanding of evolution of the family Ricaniidae and its distribution from Old to New World.

*Ricamela* gen. nov. is placed in the subfamily Pharsalinae basing on elongate coryphe, simple radius and cubitus anterior of fore wings, single lateral spine of hind tibia, and rectangular gonoplas, without marginal teeth. This genus is less specialized in comparison to *Pharsalus* Melichar and *Silvanana* Metcalf (Figs 12, 13) as it has enlarged apically forewings more similar to the members of the subfamily Ricaniinae of Old World which may be treated as ancestral character within New World Pharsalinae. According to the shape of metope, with lateral margins steeply diverging below the eyes and absence of transverse carina above metopoclypeal suture *Ricamela* gen. nov. is closely related to *Silvanana* Metcalf.

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#### REFERENCES

**Anufriev G.A. and Emeljanov A.F. 1988.** Suborder Cicadinea (Auchenorrhyncha). In: P.A. Ler (Ed.). Key to the insects of the Russian Far East. Leningrad, Nauka, 2: 12–495.

- Barringer L.E., Bartlett C.R. and Erwin T.L. 2019.** Canopy assemblages and species richness of planthoppers (Hemiptera: Fulgoroidea) in the Ecuadorian Amazon. *Insecta Mundi*, 726: 1–16.
- China W.E. and Fennah R.G. 1952.** A remarkable new genus and species of Fulgoroidea (Homoptera) representing a new family. *The Annals and Magazine of Natural History*, (12)5: 189–199. <https://doi.org/10.1080/00222935208654280>
- Fennah R.G. 1949.** A new genus of Fulgoroidea (Homoptera) from South Africa. *The Annals and Magazine of Natural History*, (12)2: 111–120. <https://doi.org/10.1080/00222934908653971>
- Fennah R.G. 1978.** The higher classification of the Nogodinidae (Homoptera, Fulgoroidea) with the description of a new genus and species. *Entomologist's Monthly Magazine*, 113: 113–119.
- Fennah R.G. 1982.** A tribal classification of the Tropiduchidae (Homoptera: Fulgoroidea), with the description of a new species on tea in Malaysia. *Bulletin of Entomological Research*, 72: 631–643. <https://doi.org/10.1017/s0007485300008658>
- Fowler W.W. 1905.** Flatidae. Insecta. Rhynchota. Hemiptera–Homoptera. *Biologia Centrali-Americana*, 1: 45–70.
- Gnezdilov V.M. 2003.** Review of the family Issidae (Homoptera, Cicadina) of the European fauna, with notes on the structure of ovipositor in planthoppers. *Chteniya pamyati N.A. Kholodkovskogo* [Meetings in memory of N.A. Choldkovsky], 56(1): 1–145. [In Russian with English summary].
- Gnezdilov V.M. 2009.** A new subfamily of the planthopper family Ricaniidae Amyot et Serville (Homoptera, Fulgoroidea). *Entomologicheskoe obozrenie*, 88(4): 807–812. English translation published in *Entomological Review* (2010), 89(9): 1082–1086.
- Gnezdilov V.M. 2017.** A new species of the genus *Philbyella* China (Hemiptera, Auchenorrhyncha, Fulgoroidea: Nogodinidae) from the United Arab Emirates. *Entomologicheskoe Obozrenie*, 96(2): 332–338. English translation published in *Entomological Review* (2017), 97(4): 493–501. <https://doi.org/10.1134/S001387381704011X>
- Jacobi A. 1915.** Kritische Bemerkungen über die Ricaniinae (Rhynchota Homoptera). *Deutsche Entomologische Zeitschrift*, 1915: 299–314. <https://doi.org/10.1002/mmnd.191519150311>
- Melichar L. 1898.** Monographie der Ricaniiden (Homoptera). *Annalen des K.K. Naturhistorischen Hofmuseums*, 13: 197–359, Taf. IX–XIV.
- Melichar L. 1906.** Monographie der Issiden (Homoptera). *Abhandlungen der K. K. Zoologisch-botanischen Gesellschaft in Wien*, 3(4): 1–327.
- Metcalf Z.P. 1947.** A new genus of Lophopidae from Brazil (Homoptera). *Proceedings of the Entomological Society of Washington*, 49(9): 238–240.

- Metcalf Z.P. 1955.** General catalogue of the Homoptera. Fasc. IV. Fulgoroidea. Part 16. Ricaniidae. Baltimore, Waverly Press, 199 p.
- O'Brien L.B. 1987.** A synopsis of New World Lophopidae (Homoptera, Fulgoroidea). *Florida Entomologist*, **70**(4): 493–498. <https://doi.org/10.2307/3494793>
- Schmidt E. 1911.** Beitrag zur Kenntnis der Homopteren (Neue Gattungen und Arten). *Entomologische Zeitung*, **72**: 238–307.
- Stroiński A., Gnezdilov V.M. and Bourgoïn T. 2011.** Sub-brachypterous Ricaniidae (Hemiptera: Fulgoromorpha) of Madagascar with morphological notes for these taxa. *Zootaxa*, **3145**: 1–70. <https://doi.org/10.11646/zootaxa.3145.1.1>
- Walker F. 1858.** List of the specimens of Homopterous insects in the collection of the British Museum. Supplement. London, Edward Newman, 369 p. <https://doi.org/10.5962/bhl.title.34441>

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