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## ***Duroides* Melichar, 1906 – first New World genus of the tribe Parahiraciini (Hemiptera: Issidae)**

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### **ABSTRACT**

*Duroides globosus* Melichar, 1906, type species of the genus *Duroides* Melichar, 1906, known after a single female from Brazil, is redescribed and placed in the tribe Parahiraciini Cheng et Yang, 1991 according to well developed bilobed hind wings, with deep cubital cleft. This is the first record of the tribe Parahiraciini from the New World treated before mostly as Oriental endemic.

**Key words:** Issidae, Issinae, morphology, Neotropics, systematics

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## ***Duroides* Melichar, 1906 – первый новосветский род трибы Parahiraciini (Hemiptera: Issidae)**

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### **РЕЗЮМЕ**

*Duroides globosus* Melichar, 1906, типовой вид рода *Duroides* Melichar, 1906, известный по самке из Бразилии, переописан и помещен в трибу Parahiraciini Cheng et Yang, 1991 в соответствии с хорошо развитыми двуплощными задними крыльями, имеющими глубокую кубитальную выемку. Это первое указание трибы Parahiraciini из Нового Света, считавшейся до сих пор практически эндемиком Ориентальной области.

**Ключевые слова:** Issidae, Issinae, морфология, Неотропика, систематика

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## **INTRODUCTION**

The genus *Duroides* Melichar, 1906 was erected in the family Issidae for three species known from Brazil and Chile (Melichar 1906) – *Duroides globosus* Melichar, 1906 (type species), *D. costatus* Melichar, 1906, and *D. planifrons* (Spinola, 1852). The last species later was transferred to the family Dictyopharidae as the type species of the genus *Myrophenges* Fennah, 1965 (Fennah 1965) which was finally placed in the family Achilidae (Emeljanov 1993).

Despite that Melichar (1906) in the key to species of the genus *Duroides*, separated the type species of the genus, *D. globosus*, by its foliately flattened fore legs (in fact femora and tibiae), *D. costatus*, which does not show this character according to Melichar (1906: 241), apparently congeneric as the photos of the holotype of this species, deposited in the Hungarian Natural History Museum (Budapest, Hungary), examined by me, demonstrate the same structure of the head (metope and coryphe) and forewing venation, with peculiar lobe-shaped caudo-dorsal angle of clavus. Probably different structure of fore legs

in *D. globosus* and *D. costatus* (fore legs not visible on the photos) is due to sexual dimorphism as these species were described after female and male accordingly.

Hitherto the genus *Duroides* Melichar was listed in the tribe Issini Spinola, 1839 (Metcalf 1958; Gnezdilov 2013) or in the tribe Thioniini Melichar, 1906 (Bourgoin 2019) of the family Issidae, however, my examination of the holotype of *D. globosus* Melichar, deposited in the Naturhistorisches Museum of Wien (Austria), showed that this species has well developed bilobed hind wings, with a deep cubital cleft which is a character of the tribe Parahiraciini Cheng et Yang, 1991 (Gnezdilov and Wilson 2007; Gnezdilov 2017a). This tribe, erected for a single genus (Cheng and Yang 1991) and currently comprising 24 genera with around 80 species (Gnezdilov 2013, 2015, 2017a; Bourgoin 2019) was never recorded before from New World, but was treated as limited in its distribution by the Oriental and Eastern Palaearctic Regions (Gnezdilov 2013, 2016). Below *Duroides globosus* Melichar is redescribed and its characters are compared with other Parahiraciini.

## 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 follows Anufriev and Emeljanov (1988) and Gnezdilov (2003) and taxonomy of the family Issidae follows Gnezdilov (2013, 2017b). Label information is quoted, with “/” indicating new line and “//” indicating next label.

## SYSTEMATICS

Family Issidae Spinola, 1839

Subfamily Issinae Spinola, 1839

Tribe Parahiraciini Cheng et Yang, 1991

Genus *Duroides* Melichar, 1906

*Duroides* Melichar 1906: 241.

**Type species:** *Duroides globosus* Melichar, 1906, by subsequent designation (Metcalf 1958).

## *Duroides globosus* Melichar, 1906 (Figs 1–13)

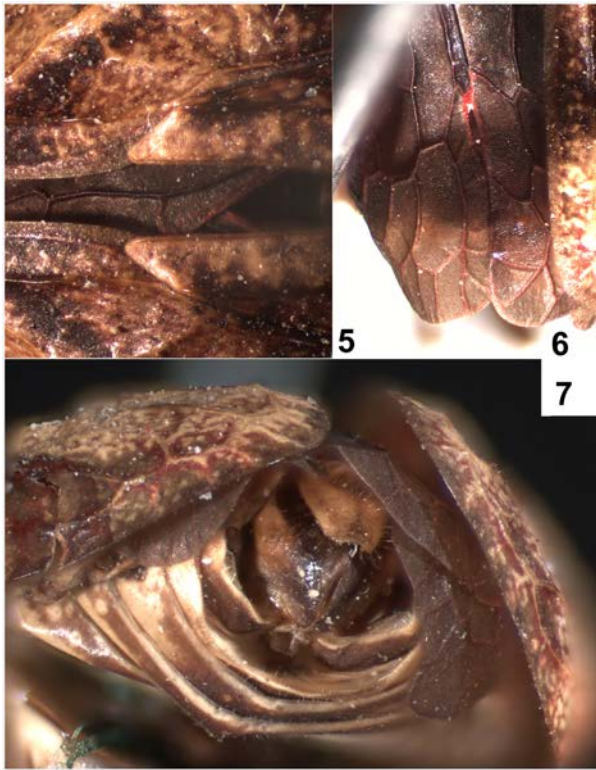
*Duroides globosus* Melichar 1906: 242, fig. 59.

**Type material examined.** Holotype, female, Brazil: “Helmr. / Brasil. [printed]” // “*globosus* M. [handwritten in ink] / det. Melichar. [printed]” // “*Duroides*. [handwritten in ink]”.

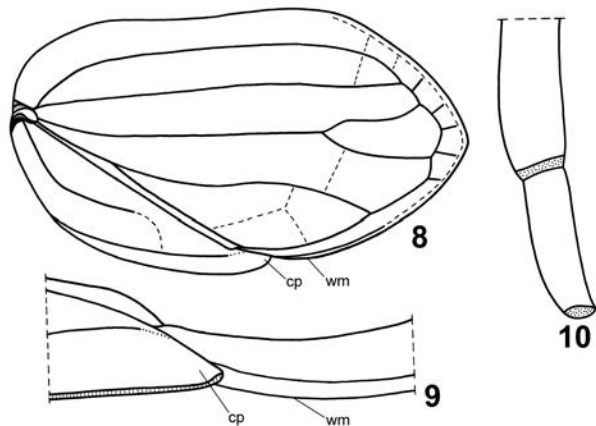
**Supplementary description.** Metope wide and long, nearly parallel-sided, weakly convex, densely covered with pustules, with very weak median carina running from its upper margin to its middle and with traces of sublateral carinae; upper margin concave (Figs 3, 11). Postclypeus slightly flattened frontally, without carinae. Metopoclypeal suture distinct, obtusely angulate. Pedicel spherical. Ocelli rudimentary. Coryphe transverse, nearly twice as wide as long; anterior margin almost straight; posterior margin concave, with median groove; lateral margins keel-shaped (Fig. 1). Coryphe and metope joint at obtuse angle (in lateral view) (Fig. 2). Rostrum short, nearly reaching hind coxae, with almost equal in length 2nd and 3rd segments, last one narrowing apically (Fig. 10). Pronotum slightly longer than coryphe at midline, without carinae; anterior margin convex; posterior margin weakly concave medially. Paradiscal fields of pronotum wide. Paranotal lobes wide, enlarged downwards, densely covered with pustules (Fig. 12). Mesonotum slightly longer than pronotum, with median groove and tiny lateral carinae. Tegulae large. Fore wings just covering ab-



**Figs 1–4.** *Duroides globosus* Melichar, 1906, holotype. 1 – dorsal view; 2 – lateral view; 3 – frontal view; 4 – labels.

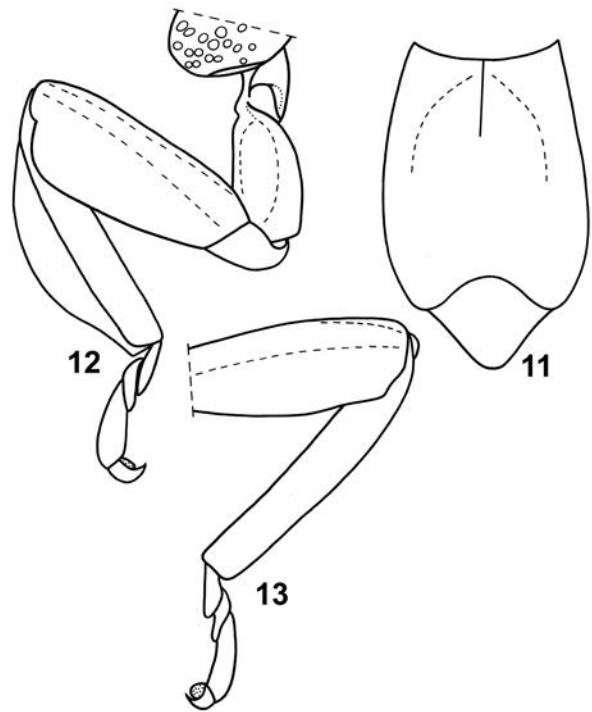


**Figs 5–7.** *Duroides globosus* Melichar, 1906, holotype. 5 – apex of fore wing clavus; 6 – apical part of left hind wing with cubital cleft visible; 7 – ovipositor ventrally.



**Figs 8–10.** *Duroides globosus* Melichar, 1906, holotype. 8 – fore wing; 9 – apex of fore wing clavus; 10 – rostrum in lateral view. Abbreviations: cp – lobe-shaped cuspidal caudo-dorsal angle of clavus; wm – wing margin.

domen apex, narrowing apically, with concave costal margin, keel-shaped veins of corium and clavus and without hypocostal plate (Figs 1, 2, 8). Basal cell



**Figs 11–13.** *Duroides globosus* Melichar, 1906, holotype. 11 – metope and postclypeus; 12 – right paranotal lobe and fore leg; 13 – left middle leg.

small and narrow. Forewing vein sequence: *R* 2, furcating almost at basal cell; *M* 2, furcating in apical fourth of the wing; *CuA* 2, furcating in basal third of the wing; few transverse veins (Fig. 8). Clavus 0.5 as long as whole wing, its caudo-dorsal angle cuspidal, distinctly lobe-shaped (Figs 5, 8, 9, cp). *Pcu* joint *A*<sub>1</sub> after middle of clavus, *Pcu* weakened apically. *Pcu* + *A*<sub>1</sub> not running to the apex of caudo-dorsal angle of clavus (Fig. 9). Hind wings well developed, bilobed, as long as fore wings, with nearly equally wide remigium and vannus and deep cubital cleft (Fig. 6). Fore and middle femora and fore tibiae foliately flattened (Figs 12, 13). Hind tibia with two lateral spines in its apical half and with 7 apical spines. Claws protruding beyond hind margin of arolium (in dorsal view). First metatarsomere slightly longer than second one, both with two latero-apical spines. Intermediate spines of first metatarsomere not visible due to contamination.

**Coloration.** Metope and paranotal lobes brown reddish, with yellow pustules (Fig. 3). Postclypeus dark brown reddish except its light yellow basal part below metopoclypeal suture. Coryphe and anteclypeus dark brown reddish (Figs 1, 3). Genae light yellow, each with red brownish oblique stripe (Fig. 2).



Each preocular field with elongate brown spot. Scapus light yellow. Pedicel brown. Rostrum with its second segment brown reddish dorsally and light yellow ventrally and its third segment light yellow, with brown reddish apex (Fig. 3). Pro- and mesonotum light yellow (Fig. 1). Fore wings brown, with light yellow areas and spots (Figs 1, 2). Hind wings and claws dark brown (Fig. 6). Fore and middle coxae dark brown to black. Hind coxae light yellow. Fore and middle femora brown reddish, with light yellow carinae (Fig. 3). Fore and middle tibiae brown reddish, with light yellow apices (Fig. 3). Hind femora and tibiae red brown yellowish. Fore and middle tarsi brown yellowish. Hind tarsi light yellow. Apices of leg spines dark brown to black. Abdominal sternites brown, with light yellow lateral parts (Fig. 7). Gonopods dark brown, each with large light yellow spot basally. Anal tube light yellow.

**Female genitalia.** Sternite VII with widely concave hind margin (Fig. 7). Anal tube nearly twice as long as wide basally, narrowing apically (Fig. 7). Anal column short. Gonopods convex, rounded.

**Total length.** 5.0 mm.

## DISCUSSION

The genus *Duroides* Melichar is placed here in the tribe Parahiraciini according to well developed bilobed hind wings with nearly equally wide remigium and vannus and deep cubital cleft in *D. globosus* studied (Fig. 6). This species is similar to the members of the genus *Neodurium* Fennah, 1956 by fore wings with keel-shaped longitudinal veins and by lobe-shaped apex of clavus (cuspidal caudo-dorsal angle of clavus) (Figs 5, 9). The last character is also known for the species of the genus *Thabena* Stål, 1866 (Gnezdilov 2015, fig. 8). Foliated flattened fore legs of *D. globosus* make it similar to the species of the genera *Bardunia* Stål, 1863, *Folifemurum* Che, Zhang et Wang, 2013, *Nisoprincessa* Gnezdilov, 2017, and *Scantinius* Stål, 1866. On the other hand *D. globosus* is distinguished by almost flat metope, without distinct carinae (Figs 3, 11) and fore wings with very few transverse veins, radius furcating very closely to basal cell and median furcating apically (Fig. 8). Possibly future examination of male specimens of *D. globosus* will solve the question on relationships of this species within Parahiraciini according to genital structure characters.

The current placement of *Duroides* Melichar in the tribe Parahiraciini extremely extends the global distribution of this group – from the Oriental Region and Eastern Palaearctics to the Neotropics. Apparently in the Eocene the tribe Parahiraciini was widely distributed in the Palaearctics as confirmed by the fossil *Bolbossus bervoetsi* (Gnezdilov et Bourgoin, 2016) described from the Baltic Amber of Kaliningrad Province in Russia (Bervoets 1910; Gnezdilov and Bourgoin 2016) and started to disperse from the Oriental Region to America via the Beringian isthmus (Gnezdilov 2016) which is marked by the presence of *Rhombissus harimensis* (Matsumura, 1913) in the recent fauna of Japan (Gnezdilov and Hayashi 2016). A profound knowledge of the neotropical issid fauna, based on intensified collections in previously undersampled areas, is crucial to our understanding the evolution and biogeographical history of the Issidae.

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