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A new species of *Dysdercus*: *Dysdercus stehliki* sp.nov. (Hemiptera: Heteroptera: Pyrrhocoridae) from Brazil

Carl W. Schaefer

Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, Connecticut 06269-3043, U.S.A.; e-mail: carl.schaefer@uconn.edu

Schaefer C. W. 2013: A new species of *Dysdercus*: *Dysdercus stehliki* sp.nov. (Hemiptera: Heteroptera: Pyrrhocoridae) from Brazil. In: Kment P., Malenovský I. & Kolibáč J. (eds.): Studies in Hemiptera in honour of Pavel Lauterer and Jaroslav L. Stehlík. *Acta Musei Moraviae, Scientiae biologicae* (Brno) **98(2):** 381–390. – A new species of the genus *Dysdercus* Guérin-Méneville, 1831, *Dysdercus stehliki* sp.nov., is named for Jaroslav L. Stehlík, the pre-eminent student of the superfamily Pyrrhocoroidea. *Dysdercus stehliki* sp.nov. is very close to *D. longirostris* Stål, 1861, with important similarities but also important differences. *Dysdercus longirostris* occurs near the coast of Brazil, and *D. stehliki* sp.nov. occurs inland, so far only from Viçosa, in the State of Minas Gerais, Brazil. The new species feeds on fallen fruit, especially *Sterculia chicha* A. St. Hil. (Malvaceae: Sterculioideae).

Keywords. Hemiptera, Heteroptera, Pyrrhocoridae, *Dysdercus*, *Sterculia*, new species, host plant, Neotropical Region, Brazil

Introduction

A year or so ago, colleagues at the Universidad Federal de Viçosa (Viçosa, State of Minas Gerais, Brazil) sent me some adults and nymphs of what I believed to be *Dysdercus longirostris* Stål, 1861. The bugs feed on fallen fruit of *Sterculia chicha* A. St. Hil. (Malvaceae: Sterculioideae), and we shall describe the immatures and their biology. But, looking more closely at the adults, I realized they were a new species and – in delight – I also learned that there would be a Festschrift for J. L. Stehlík.

And so, '*Nunc est bibendum, nunc pede libero pulsanda tellus…*' (Horace, *Ode 37*).

Material and methods

The following abbreviations are used for type collections:

CWS . . . . . Carl W. Schaefer personal collection, University of Connecticut, Storrs, USA;
IOC . . . . . Instituto Oswaldo Cruz, Rio de Janeiro, Brazil;
MMBC . . . . . Moravian Museum, Brno, Czech Republic;
NMPC . . . . . National Museum, Prague, Czech Republic;
USNM . . . . . National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.

A slash (/) is used to divide rows of a single type label, a double slash (//) indicates different labels.

Taxonomy

***Dysdercus* (*Dysdercus*) *stehliki* sp.nov.** (Figs 1–4)

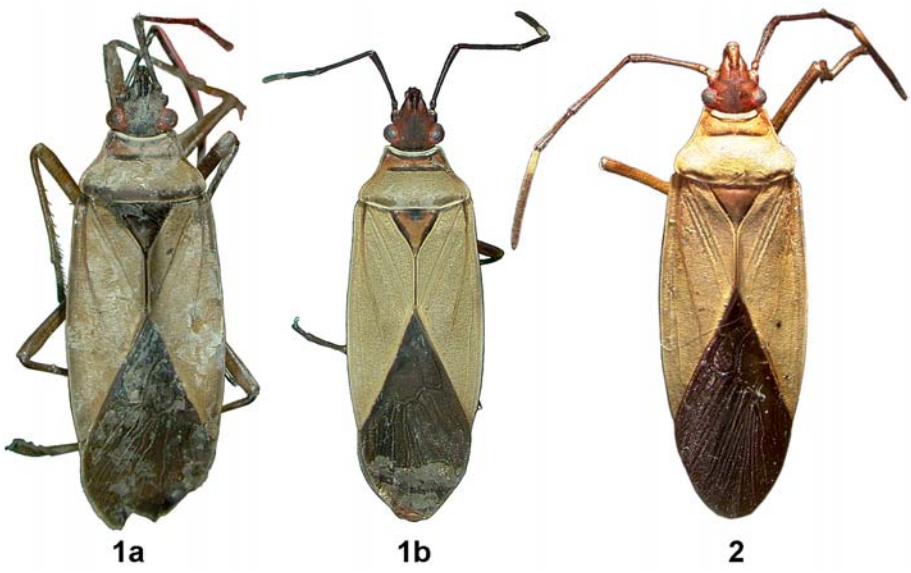
Type material. Holotype: ♂, 'BRAZIL: Minas Gerais / State, Vicosa, June / 2011 / on Sterculia' // 'Coll. / Wagner de Souza Tavares' (MMBC). Allotype ♀ (MMBC) and paratypes 7 ♂♂ and 1 ♀ (CWS, 1 ♂ 1 ♀; IOC, 2 ♂♂; MMBC, 1 ♂; NMPC, 1 ♂; USNM, 2 ♂♂), all with same labels.

Description. Length (in mm): Holotype 9.75, allotype 14.43, paratypes (7 ♂♂) 9.62–13.13 (mean 11.53), paratype (1 ♀) 15.21.

Head. Color: Deep brownish-red, but red around eyes, gula, and eyes themselves. Below, yellow or yellowish-red medially, red laterally; black or dark brown splotches laterally basally. In two specimens (2 ♂♂), head below yellow medially and sharply divided from red laterally; in another (allotype), yellow extending laterally, becoming fused with red. Antennae dark brown, often segment IV darker; proximal two-fifths of IV with white annulus. Rostrum light brown, segment IV darker or partly darker. Structure: Antennal segment I slightly curved, thicker than others, slight bulge distally, with a graduated dilation apically; II and III straight, narrower, no dilation; IV with a slight curvature, very slightly thicker; 4>2=1>3 (see Measurements, Table 1); all antennal segments with slight obscure pubescence, proximal part of III and all of IV with greater pubescence. First rostral segment slightly thickened, tapering apically; rostrum extending onto 6S (♂♂) or 7S (♀♀); 3≥2>1≥4 (see Measurements, Table 1).

Thorax. Color: Corium and disc of pronotum light grayish-yellow, with gray fascia at base, and posteriorly with small strip of yellow at disc's posterior edge; pronotal collar white; callus orange or orange-yellow; pre- and postcallar regions black or deep brown; raised lateral margin orange or orange-yellow. Scutellum orange, often with markings of gray, black, or dark brown midbasally and with a very thin line of black or dark brown laterally; sometimes apex somewhat more yellow. Membrane of wings deep brown, nearly black; with a very thin white or very pale brown line around corium. Prothoracic venter, anteriorly, white continuing with dorsal collar; all segments posteriorly and laterally white, with some pale yellow anteriorly; lateral to legs, orange, with a dark brown fascia anteriorly, and often with very small black spots laterally. Metathoracic scent gland paler yellow than surrounding areas, anterior region even sometimes paler. Legs (trochanter-tibia) brown, with dark brown spots; tarsus deeper brown, claws even deeper brown. Structure: Scutellum: slightly raised, sloping down laterally, basally, and apically; median depression mid-basally; sometimes more narrow than its width. Measurements of scutellum (in mm): holotype: length 1.58, width 1.58; allotype: length 1.75, width 1.72; paratypes (6 ♂♂ [one male obscured], 1 ♀): mean length 1.34, mean width 1.38 (range of lengths 0.99–1.55, of widths 0.97–1.65); length and width varying slightly, but in general of same length. Mesothoracic pleuron with some slight horizontal groovings (perhaps for metathoracic scent gland evaporatorium, whose base is quite close). Scent gland peritreme slightly less rough than surrounding metathorax.

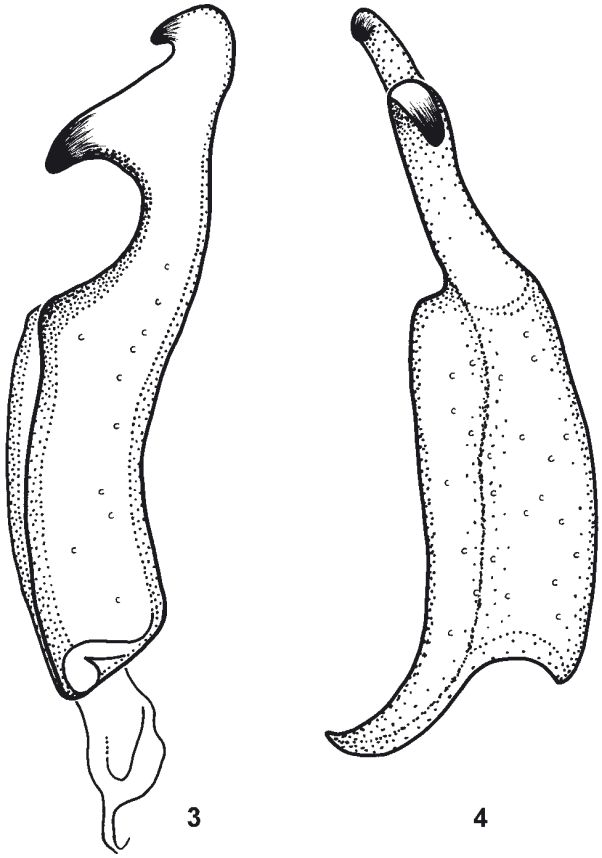
Abdomen. Color: Second sternum (2S) (1S not visible) to 5S, most of 3S, small area of 6S, 8S, and posterior half of 7S, yellow or slightly yellowish white; in darker specimens, dirty yellow (i.e., overtones of gray); rest of abdominal sterna orange-brown,



Figs 1–2. *Dysdercus* spp., habitus, dorsal view. 1 – *D. stehliki* sp.nov.: a – holotype, male; b – allotype, female. 2 – *D. longirostris* Stål, 1861, female.

or in darker specimens brown-black. In all specimens a thin, very dark brown stripe (from 3S to 7S) anteriorly. Exposed male and female genitalia orange-brown (if overall color darker, then much deeper brown). Structure: Laterally, very small dark brown pits, arranged in a series of concentric half-circles or half-triangles with slightly different texture; these pits of same color as abdominal sterna, behind and medial to spiracles and, on 5S–7S, anterior to the trichobothria (on 3S and 4S, trichobothria medial); pits of 2S–5S half-triangular (triangle pointing medially), 6S and 7S half-circular. Margins of 3rd to 5th sternites in females, and 3rd to 6th sternites in males, slightly explanate. Genital capsule (♂) with long hairs of same color as genital capsule itself, profusely on edge of ventral rim and edge of exposed cuplike sclerite (see terminology of SCHAEFER 1977, Table 1). Paramere laterally with large subapical spur and a smaller apical one twisted about 20° internally; between spurs, 0–4 very small teeth, these sometimes varying on parameres of same specimen (holotype lacks the teeth); paramere with sparse and short hairs on inner sides, especially its shank. Note: The hairs of the genital capsule occur in all *Dysdercus* males, but in *Dysdercus stehliki* sp.nov. they are longer and more profuse than I have seen in other males of other species.

Differential diagnosis. The shorter length of this species, color differences, and the paucity of the paramere's pilosity mark this species from its most closely related species, *Dysdercus longirostris* Stål, 1861. Additional differences are in the Discussion and Table 3.



Figs 3–4. *Dysdercus stehliki* sp.nov., left paramere (small spots = bases of hairs): 3 – lateral view; 4 – medial view.

Etymology. I am wonderfully happy to name this species in honor of Jaroslav L. Stehlík, *the* pre-eminent student of Pyrrhocoroidea, who has done more to work out the speciation and the higher classification of this group than has any other person. From the 1960s, with studies on the Pyrrhocoroidea from E. S. Brown, and those from P. Basilewsky & N. Leleup, up until 2013 (and, we hope, later), he has worked on this group indefatigably, describing and analyzing both families (Largidae and Pyrrhocoridae) of the superfamily in all continents.

Distribution. Brazil: Minas Gerais State.

Table 1. Adult antennal and rostral segment lengths of *Dysdercus stehliki* sp.nov.; range in parentheses (in mm).
[1)] Antennal segments of male paratypes: 1 specimen lacked antennae, 2 others were missing the fourth segment, and 1 other was missing the third.

		Holotype ♂	Allotype ♀	Paratypes ♂♂	Paratypes ♀♀
ANTENNAL SEGMENT[1)]	I	2.01	2.45	2.29 (1.82–2.48)	2.74
	II	2.15	2.45	2.34 (1.98–2.61)	2.67
	III	1.45	1.65	1.45 (1.22–1.65)	1.82
	IV	3.04	3.47	3.23 (2.94–3.50)	3.47
ROSTRAL SEGMENTS	I	2.21	3.14	2.14 (2.01–2.24)	3.14
	II	2.38	3.66	2.59 (2.18–2.84)	3.93
	III	2.90	4.42	2.83 (2.51–3.14)	4.62
	IV	1.95	2.48	2.08 (1.85–2.31)	3.14

Discussion

The closest relative of *Dysdercus stehliki* sp.nov. is *D. longirostris* Stål, 1861. The latter occurs near the coast of central Brazil, from the states of Pernambuco through Espirito Santo to Rio de Janeiro and São Paulo. However, there may be some collecting bias, because many of the sites are near – or in – the city of Rio de Janeiro (see map, Fig. 74, of VAN DOESBURG (1968); and collecting sites, p. 126). The site of *D. stehliki* sp.nov. consists, now, only Viçosa, in Minas Gerais State; the city is inland, 300 km north of Rio de Janeiro and west of the coast by 150 km. I have looked at several other Brazilian sites, in my own collection and those borrowed; I have not seen *D. stehliki* sp.nov. elsewhere, but I have not made a major search.

A significant feature of *Dysdercus stehliki* sp.nov. is the prolongation of the rostrum, which reaches to the sixth or slightly beyond (males) and well onto the seventh (females) abdominal sternum. In the great majority of New World *Dysdercus*, the rostrum reaches up to, or just beyond, the third abdominal sternum (3S). There appear to be only three other species of New World *Dysdercus* which also have a long rostrum: *Dysdercus chiriquinus* Distant, 1883, *D. rusticus* Stål, 1870, and *D. longirostris*.

Dysdercus chiriquinus occurs in Central America and northern South America (northern Venezuela and northern Colombia). Its rostrum reaches 6S in the male and "end of abdomen in the female" (VAN DOESBURG 1968: 80). *Dysdercus chiriquinus* has a black spot on each corium, *D. stehliki* sp.nov. lacks the spot; *D. chiriquinus* also has a single spur on each paramere, *D. stehliki* sp.nov. has two.

Dysdercus rusticus is distributed in east-central South America (including eastern Brazil) to Colombia (VAN DOESBURG 1968: 85). Like *D. stehliki* sp.nov., this species lacks

any black on its corium; but its rostrum reaches onto 5S (male) or 6S (female), not to 6S and 7S. It also has a double spur on each paramere, but the spurs are of the same size; in *D. stehliki* sp.nov. the apical spur is smaller. The paramere's shank of *D. rusticus* is also much more pilose.

Neither species, *Dysdercus chiriquinus* nor *D. rusticus*, has a white annulus on the fourth antennal segment; both are different in color.

Dysdercus stehliki sp.nov. is smaller than the other three species (Table 2), particularly so in *D. longirostris* and *D. chiriquinus*.

Table 2. Body lengths (in mm) of certain *Dysdercus* species with longer rostra.

N o t e . The body widths of these species are, for *Dysdercus longirostris*, 4.5 mm (♂♂), and 6.0 mm (♀♀); for *Dysdercus stehliki* sp.nov., 4.1 mm (holotype ♂), and 5.2 mm (allotype ♀), measured at widest point of abdomen. The width measurements of *D. longirostris* were made by Dr. Luiz A. A. Costa (unpublished). The length measurements of the last three species were made by VAN DOESBURG (1968).

	Males	**Females**
Dysdercus stehliki sp.nov. (all 10 types)	9.62–13.13	14.43–15.21
Dysdercus longirostris	13.0–15.0	15.0–19.0
Dysdercus chiriquinus	13.3–16.2	17.5–19.0
Dysdercus rusticus	12.0–15.0	13.0–18.0

Key to New World *Dysdercus* whose rostra extend at least to the fifth abdominal sternite

1 No white annulus on antennal segment IV. ..... 2.
– With white annulus on antennal segment IV. ..... 3.
2 Black spot on each corium. ... ***Dysdercus chiriquinus* Distant, 1883**
– Without black spot on each corium. ..... ***Dysdercus rusticus* Stål, 1870**
3 Without scutellar depression; with very little pilosity on antennal segments III–IV. ..... ***Dysdercus longirostris* Stål, 1861**
– With scutellar depression; with abundant antennal pilosity. .... ***Dysdercus stehliki* sp.nov.**

Similarities between *Dysdercus stehliki* sp.nov. and *D. longirostris.* I have received 3 female specimens of *Dysdercus longirostris*, identified by van Doesburg, from the Instituto Oswaldo Cruz (Rio de Janeiro) (see VAN DOESBURG 1968: 126). The three specimens were collected from two different places and in different years: two in 1935, in the State of Rio de Janeiro; and another in the State of Espirito Santo, collected in 1944. The two sites are about 350–400 km apart.

Dysdercus longirostris is much closer in geography and phylogeny to *D. stehliki* sp.nov. than to *D. chiriquinus* or *D. rusticus*. *Dysdercus longirostris*, in the coastal areas

of Brazil, "occupies only a very restricted area […] and its long rostrum suggests adaptation to some special host plant," which may be *Sterculia excelsa* (VAN DOESBURG 1968: 180) – the same genus on which we have found *D. stehliki* sp.nov. *Dysdercus stehliki* sp.nov. is found beyond the coast of Brazil, and does not feed (as far as we know) on the same species of *Sterculia.*

In both, the rostrum extends onto 6S in males and 7S in females, there is a white annulus on the fourth segment of the antenna, and there are no spots on the corium. FREEMAN's (1947) account of the Old World species of *Dysdercus*, notes that in nearly all the species, the rostrum reaches onto 2S or occasionally 3S (22 of 25 species). In two Old World species, *D.* (*Paradysdercus) sidae* Montrouzier, 1861 and *D.* (*Paradysdercus*) *longiceps* Breddin, 1901, the rostrum reaches to 4S or sometimes 5S; in *D.* (*Leptophthalmus*) *fuscomaculatus* Stål, 1863 (= *D. mesiostigma* Distant, 1888), it reaches to 5S or 6S, apparently in both sexes (FREEMAN 1947).

Thus the extension of the rostrum in all *Dysdercus* to 6S or 7S is unusual. Nevertheless, the origin of the New World species does not reflect this trend. *Dysdercus* originally was Old World, with subgenera in the Ethiopian and Oriental Regions. The Old World *Dysdercus* which entered the Neotropics (see STEHLÍK 1965a, b, and VAN DOESBURG 1968) originated in Ethiopian Region (the subgenus *Dysdercus* (*Dysdercus*)); but these *Dysdercus* do not have long rostra. A few Oriental *Dysdercus* do have long rostra (see above), but these are not the subgenera from which the New World *Dysdercus* originated. Because all of the Ethiopian Region *Dysdercus* have short rostra, the longer rostra must have arisen in the New World, and the occasional New World and the occasional Oriental longer rostra must have occurred separately.

The white annulus on the fourth antennal segment occurs in all instars of *Dysdercus stehliki* sp.nov., from the first to the adult (unpublished). With one exception, Old World *Dysdercus* do not have this annulus: one African species has an annulus in the nymphal stages but not the adult (FREEMAN 1947). Van Doesburg suggests that this occurrence "may be a much older nymphal feature in the genus, becoming manifest in the adults in the New World" (VAN DOESBURG 1968: 173). It would be very interesting to discover if, in other *Dysdercus*, a nymphal white annulus occurs.

In my borrowed specimens, the fourth antennal segments of *Dysdercus longirostris* are light to dark brown, as are the rest of the segments (sometimes a little more dark), but not "dark grey to blackish" as in the description of *D. longirostris* (VAN DOESBURG 1968: 124). This is true also of *D. stehliki* sp.nov.

The "[u]pper surface of head, antennae, corners of pronotum, sterna, and sides of abdomen [are] minutely pilose" (VAN DOESBURG 1968: 126, of *Dysdercus longirostris*). This pilosity does not occur in *D. stehliki* sp.nov. and, moreover, I have not seen it in my specimens of *D. longirostris.*

Differences between *Dysdercus stehliki* sp.nov. and *D. longirostris.* In all three specimens of *Dysdercus longirostris* the color is very much the same. In *D. stehliki* sp.nov. the dorsum of the head is red suffused broadly with black; the *D. longirostris* specimens are brownish red, but mostly brown. The predominant color of the prothoracic tergum and the corium is yellow-brown, but considerably paler than in *Dysdercus stehliki*

Table 3. Differences between *Dysdercus stehliki* sp.nov. and *D. longirostris* Stål, 1861.

	***D. stehliki* sp.nov.**	***D. longirostris***
Color of prothoracic tergum and corium	pale yellow-brown	darker, more brown
Head ventrally	yellow-brown	yellow
Antennal segments III–IV	more pubescence	much less pubescence
Antennal segment IV annulus	white	very pale yellow
Scutellum	some black markings	no black markings
Scutellar depression	yes	no
Scent gland peritreme	less rough than metasternum	same roughness
Explanate sternites	more	less
Abdominal pits	more developed	less developed
6S & 7S abdominal pits	circular	shape obscured

sp.nov., which has more brown. The protergum's posterior edge is white or pale yellow in both species; but just anterior to this margin is a light brown stripe (*D. longirostris*) or a black stripe (*D. stehliki* sp.nov.).

The antennal segments of *Dysdercus stehliki* sp.nov. are very minutely pilose, especially the proximal half of the third and all of the fourth (Table 3); this pilosity is much less so in *D. longirostris.*

The prothoracic disk of my *Dysdercus longirostris* specimens is not "livid to dirty yellow" (VAN DOESBURG 1968: 125), but light grayish yellow, like the corium. However, the scutellum of *D. stehliki* sp.nov. is darker (more orange) than the corium. In *D. stehliki* sp.nov., the scutellum has some black or grayish markings; these are absent in my borrowed specimens.

On the abdomen's sternites, laterally and often incorporating the spiracle (from 2S posteriorly), there is a small area, of the same color as the surrounding venter but of slightly different texture, slightly raised, and containing darker semi-circles surrounding it. These areas do not include the trichobothria, which are posterior to it, or the spiracles, which are anterior. These areas occur also in other *Dysdercus* as well. However, they differ in these two species (Table 3).

In males [note: I had no specimens of male *Dysdercus longirostris*], the margins of 6S and 7S of *Dysdercus stehliki* sp.nov. are not enlarged (VAN DOESBURG 1968: 126) writes that they are enlarged in *D. longirostris*). The array of long conspicuous hairs on the ventral rims and the cuplike sclerites of *D. stehliki* sp.nov. is not mentioned by VAN DOESBURG (1968), although it does occur in other males of species of *Dysdercus*; in *D. stehliki* sp.nov. these hairs are much longer and more abundant than in other species of *Dysdercus* that I have seen. The paramere of *D. stehliki* sp.nov. has much fewer hairs,

especially on its shank; and these hairs are smaller than in *D. longirostris*. VAN DOESBURG (1968) describes 2 small teeth on the head of the paramere of *D. longirostris*; in *D. stehliki* sp.nov. there may be 1–3 or even none (as in the holotype, Figs 3, 4). The spurs of the paramere of *D. stehliki* sp.nov. are also less sharply pointed (illustrations of *D. longirostris* by VAN DOESBURG (1968: figs. 177, 178) and another, unpublished, by Dr. Luiz A. A. Costa).

Notes on AHMAD & QADRI (2009). VAN DOESBURG (1968) listed four New World species that could not be grouped into his several species-categories: *Dysdercus andreae* (Linnaeus, 1758), *D. ruficollis* (Linnaeus, 1764), *D. lunulatus* Uhler, 1861, and *D. mimuloides* Blöte, 1933. AHMAD & QADRI (2009) have proposed a new subgenus – *Dysdercus* (*Andreae*) – for these three species (not including *D. mimuloides*), based exclusively on the species' male and female genitalia. They do not formally name the subgenus, but they write, "*D. andreae* is hereby designated as its type species" (p. 129). Ahmad and Qadri also include *D. mimulus* Hussey, 1929, because they believe this species is an out-group of their new subgenus. *Dysdercus mimuloides* is mentioned in the Introduction to Ahmad and Qadri's paper, but is not mentioned further (perhaps because they had no specimens to dissect?). VAN DOESBURG (1968) believes that *D. andreae* and *D. mimuloides* may be related, because the first is Caribbean and the second "occurs on the Pacific Coast near the border between Central and South America" (VAN DOESBURG 1968: 182) … . AHMAD & QADRI (2009) illustrate and describe the genitalia of these three species and *D. mimulus*; and I hope this new subgenus will promote further work on these four New World species, even though the original paper may be difficult to find. This is why I have included this discussion here.

Finally, and perhaps more important on Jaroslav Stehlík's birthday, I think we should sing (perhaps with Brahms' *Opus 80*):

Quis confluxus hodie / Academicorum
E longinquo convenerunt, / Protinusque successerunt
In commune forum.
Vivat nostra societas, / Vivant studiosi
Crescat una veritas, / Floreat fraternitas
Patriae prosperitas.

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Beyond all of that, I am deeply happy to dedicate this paper to Jaroslav L. Stehlík.

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