

**DESCRIPTION OF A NEW SPECIES AND NEW COUNTRY
RECORDS OF TILLINAE FROM THE AFROTROPICAL REGION
(COLEOPTERA: CLERIDAE: TILLINAE)**

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ABSTRACT: *Paradoxocerus massaronei* n. sp. from Gabon is described and figured. New country records from the Afrotropical region for the genera *Diplocladus* Fairmaire, 1885, *Isocymatodera* Hintz, 1902, *Magnotillus* Pic, 1936, *Paradoxocerus* Kraatz, 1899, *Strotocera* Schenkling, 1902, *Teloclerus* Schenkling, 1903 and *Tillodenops* Hintz, 1905 are reported for the first time.

KEY WORDS: Coleoptera, Cleridae, Tillinae, *Diplocladus*, *Isocymatodera*, *Magnotillus*, *Paradoxocerus*, *Strotocera*, *Teloclerus*, *Tillodenops*, new species, country records, afrotropical

The subfamily Tillinae Leach, 1815 includes approximately 700 described species in 70 genera (Burke & Zolnerowich, 2017), mainly distributed in the Afrotropical, Malagasy, Oriental regions and North America. 57 species are found in the Palaearctic (Löbl & Smetana, 2007) and only a few species are present in the Australian region and South America. Another eight species are known as fossils from Baltic amber (Eocene) and two species from Copal (Kolibáč, 1997).

The Tillinae are most reliably distinguished from those of other Cleridae by protarsomeres not consolidated into an oval ventral cluster, tarsal formula 5-5-5 with fourth tarsomere not reduced, the labrum not particularly large and usually deeply incised, the antennae long, the procryptosternum complete, which renders the procoxal cavities closed internally and externally, and lastly, the tarsal unguis is often tripartite or bipartite.

Most members of this subfamily are predaceous, both as larvae and as adults, on other arthropods (mainly insects). The adults can be found on or under bark, in the galleries of wood-boring insects in trunks or branches of trees, or on foliage and dead or live twigs.

Much confusion exists regarding the systematic position of some genera of this subfamily and extensive revisions are needed. At the same time, the number of species described in recent decades suggests numerous more yet undescribed species.

This paper describes and figures a new species of Tillinae *Paradoxocerus massaronei* n. sp. from Gabon and reports new country records for another fifteen species from the Afrotropical region.

MATERIALS AND METHODS

Morphological observations were undertaken using Meiji EMZ 13 stereo microscope, with an ocular micrometer for measurements. Length to width ratios were calculated from the longest and widest possible measurements of the pronotum and elytra. Total body length is the distance measured from the apical clypeal margin to the elytral apices.

The micrographs were taken with a Canon MP-E 65mm f/2.8 1-5x Macro Photo lens on a Canon EOS 600D (18.0 MP) digital camera. CombineZM was used to create the stacked images.

Male and female genitalia were macerated in a cold solution of 10% potassium hydroxide for several hours and examined in glycerol.

Author's comments are placed in square brackets []. Historical or geographic regions, river basins are in inverted commas.

The following abbreviations are used in the text:

IZCI = Iuri Zappi Collection, Casalecchio di Reno, Bologna, Italy

coll. = collection

dep. = department

env. = environs

MSNG = Civic Museum of Natural History "G. Doria", Genova, Italy

pref. = prefecture

prov. = province

sdiv. = subdivision

***Paradoxocerus massaronei* n. sp.**

(Figs. 1-8)

Material examined. Holotype ♂: **Gabon**, Ogooue' Ivindo, P. N. Ivindo, Station de Recherche d'Ipassa, 0°30'43"N 12°48'12"E, 500 m, 3-14.XII.2013, C. Massarone leg. (IZCI) {Pre-printed labels}; **Paratype**: 1 ♂, same data as holotype (IZCI) {Pre-printed labels}.

Description of the Holotype.

Size – Length 9.3 mm.

Head – Brownish yellow, glossy; frons with small punctures, distances of punctures distinctly larger than their diameter, and with slight wrinkles on sides near the ocular suture; vertex with irregular rugosity and denser punctation; surface covered with yellowish setae of different length; clypeus brownish yellow, glossy and smooth; labrum anteriorly bilobed, amber-colored, glossy with dense and long setae near the anterior margin; mandibles stout, amber color with teeth black; terminal maxillary palpomeres cylindrical; terminal labial palpomeres triangular, twice longer than the width of apical margin of terminal palpomeres; head, including eyes, broader than pronotum; eyes large, protruding laterally, coarsely faceted, emarginated anteriorly at antennal base and with scattered erect setae among ommatidia, inter-ocular distance 4/5 of the ocular width; gula short, length : width ratio 3:5; gular sutures parallel.

Antennae – 11-segmented, as long as head and pronotum combined; scape and pedicel brown, A3 to A10 black, A11 black basally and brown apically; scape swollen, twice as long as pedicel; pedicel very short, apex externally lobate; A3 to A10 subequal in length, strongly bipectinate and the branches from A4 to A9 longest, more or about twice as long as the joints; A11 almost twice as long as A10, flattened and deeply hollowed; all antennomeres with setae, the branches densely clothed with long setae.

Pronotum – Brownish yellow, glossy; widest in apical third, thence narrowed anteriorly, strongly constricted in basal fourth, only a little longer than wide, length : width ratio 1.1:1; densely punctate and wrinkled with only a little area in the centre of the disc with fine and rather sparsely distributed setigerous punctures; vestiture consisting of yellowish hairs directed towards apex; procoxal

cavities thinly closed behind; pro-intercoxal process short and narrow, gradually expanded apically.

Scutellum – Brownish yellow, glossy; ovoid in shape; punctate, with yellowish pubescence.

Elytra – Brownish yellow, glossy; a little wider than head, compact, subparallel-sided, length : width ratio 2.42:1; apex rounded; each elytron with 5 costae including the sutural one, distance decreasing from the 1st to the 5th, the 5th is separated from lateral margin by 2 rows of punctures, costae not reaching the extreme apex of elytra (length of costae about 7/8 of the length of the elytra); punctuation between costae small, dense, irregular, not arranged into striae, apex with punctuation less deep; vestiture consisting of yellowish hairs directed backwards.

Legs – Stout and short; covered with yellowish setae of variable length; coxae, pro- and mesotrochanter brownish yellow, metatrochanter anteriorly brownish yellow and posteriorly darker; pro- and mesofemora black, only basally brownish yellow; metafemora completely black; profemora slightly swollen, straight and only apically slightly curved; meso- and metafemora straight; tibiae straight, all black and without longitudinal carina; tarsi pentamerous and black; tarsal pulvillar formula 4-4-4; tibial spur formula 2-2-2; claw with a basal broad tooth.

Metasternum – Black, becoming castaneous near the discriminial line, glossy, with fine and sparse setigerous punctation; setae yellowish directed backwards.

Abdomen – Black, bordered laterally with brownish yellow, glossy, moderately convex, with 6 visible sternites, finely and sparsely punctate, covered with fine, scattered, posteriorly oriented, yellowish setae. Aedeagus, pygidium, sternite VIII, spicular fork (Figs. 3-8).

Variability. Length 9.3-9.6 mm (2 specimens; male).

Etymology. This new species is dedicated to my friend Carlo Massarone (San Godenzo, Italy) who collected the type material.

Comparative notes. The monotypic genus *Paradoxocerus* Kraatz, 1899 originally contained only one species, *Paradoxocerus fulvus* Kraatz, 1899 described from Cameroon, which is recorded for the first time from Central African Republic, Mozambique and Senegal in this paper.

Paradoxocerus massaronei n. sp. is easily distinguishable from *Paradoxocerus fulvus* Kraatz, 1899.

Paradoxocerus massaronei n. sp. has body brownish yellow; antennae with scape and pedicel brown, A₃ to A₁₀ black, A₁₁ black basally and brown apically; pronotum more compact (maximum width : minimum width ratio 1.36:1); elytra more compact (length : width ratio 2.42:1) with 5 costae including the sutural one and with punctuation between costae small, dense, irregular, not arranged into striae; pro- and mesofemora black only basally brownish yellow, metafemora completely black; tarsomeres all black; metasternum black, becoming castaneous near the discriminial line; abdomen black, bordered laterally with brownish yellow; male pygidium with apical margin slightly concave; male abdominal sternite VIII with apical margin slightly more concave.

Paradoxocerus fulvus Kraatz, 1899 has body orange; antennae yellow; pronotum more restricted at base (maximum width : minimum width ratio 1.95:1); elytra longer (length : width ratio 2.89:1) with elytral punctuation arranged more or less into striae; pro-, meso- and metafemora orange with only the apex black; first three tarsomeres black, the fourth and the fifth lighter (generally orange); metasternum and abdomen completely orange; male pygidium with apical margin rounded; male abdominal sternite VIII with apical margin deeply emarginate.

The aedeagi of these two species are very different, in particular in dorsal view.

Geographic distribution and ecological notes. The specimens of the new species were collected by Carlo Massarone during an expedition to the National Park of Ivindo, Gabon, organized by the Museo di Storia Naturale del Salento, Calimera, Italy in collaboration with CENAREST (Centre National de la Recherche Scientifique et Technologique, Gabon). The park is located in the northeastern part of Gabon at an altitude of about 500 m. Both specimens were collected with light traps, close to the Ipassa Research Station, in a somewhat degraded forest location (but surrounded by well-preserved primary forest) in the northern part of the park. The species has probably nocturnal behaviour.

New country records

1) *Diplocladus ebureofasciatus* Gerstmeier & Weiss, 2009

Material examined. CW Africa, Cameroon, NW [region], Tubah sdiv., Big Babanki env., 6°06'09,7"N 10°16'34,9"E, 1362 m, III-2008, M. Häckel leg. (1 ex. ♂) IZCI.

Distribution: Ivory Coast (Gerstmeier & Weiss, 2009).

New record for Cameroon.

2) *Diplocladus louvelii* (Spinola, 1844)

Material examined. Central African Rep., Lobaye pref., 20 km NNE Mbaiki, 400 m, 3-4.V.2010, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Central African Rep., Bamingui-Bangoran pref., 75 km SSW Ndélé, 450 m, 28-30.VI.2011, A. Kudrna jr. leg. (1 ex. ♂) IZCI.

Distribution: Burkina Faso, Cameroon, Congo, Ghana, Guinea, Ivory Coast, Kenya, Malawi, Mozambique, Namibia, Nigeria, Senegal, Somalia, South Africa, Sudan, Tanzania, Togo, Zimbabwe (Gerstmeier & Weiss, 2009), Botswana and Ethiopia (Leavengood, 2015).

New record for Central African Republic.

3) *Diplocladus oculicollis* (Fairmaire, 1885)

Material examined. Angola, Huíla prov., 17 km NW Dongue, 15°21'31"S 13°55'10"E, 09.XII.2012, P. Schüle leg. (2 exx. ♂♂) IZCI; idem, G. Werner leg. (1 ex. ♂) IZCI; Central African Rep., Ombella-Mpoko prov., Damara-Bouca road, 95 km SW Sibut (GPS), 600 m, 24-25.V.2009, A. Kudrna jr. leg. (2 exx. ♂♂) IZCI.

Distribution: Somalia, South Africa, Tanzania, Togo, Transvaal (Gerstmeier & Weiss, 2009), Botswana and Kenya (Leavengood, 2015).

New records for Angola and Central African Republic.

Note: Two out of three specimens from Angola have the elytra all black with the broad yellow transverse fascia beyond middle spanning from lateral to sutural margins. The third specimen of the same locality has the basal third of the elytra dark red as the typical form. All the other morphological characters including the aedeagus are the same.

4) *Isocymatodera kolbei* Hintz, 1902

Material examined. Botswana, Kasane, XI.1998, (1 ex. ♂) IZCI; R.S.A., Mpumalanga prov., 45 km SW Komatipoort, 31.XII.2003-2.I.2004, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Tanzania, Dodoma prov., 70 km N Dodoma, 1300 m, 16-18.XII.2006, A. Kudrna jr. leg. (1 ex. ♀) IZCI; Tanzania, Rufiji river, 7-15 km W Nyamwage, 4-7.XII.2014, S. Prepsl leg. (1 ex. ♀) IZCI; Tanzania, near Ruaha N. P., 35 km NW Iringa, 11-12.XII.2014, S. Prepsl leg. (1 ex. ♀) IZCI; Zambia, Southern prov., 30 Km NW Kazungula, 22-23.XII.2002, A. Kudrna jr. leg. (1 ex. ♂) IZCI.

Distribution: "East Africa" (Corporaal, 1950), Kenya and Zimbabwe (Gerstmeier, 1993).

New records for Botswana, South Africa, Tanzania and Zambia.

5) *Magnotillus qforientalis* Menier, 1991

Material examined. Mozambique, Tete prov., 15 km SE Manje, 4-5.XII.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Mozambik - C, [Sofala prov.], 50 km S Inchope, 19°36'S 33°55'E, 160 m, 27.XI.2005, M. Kadleková leg. (1 ex. ♀) IZCI; Tanzania, Udzungwa [Mountains] Nat. Park, 391 m, 29.XI.2005, R. Minetti leg. (3 exx. ♂♂) IZCI.

Distribution: Kenya, Mozambique (?) and Zimbabwe (Menier, 1991).

New record for Tanzania and confirmed for Mozambique.

6) *Paradoxocerus fulvus* Kraatz, 1899

Material examined. Central African Rep., 70 km NNE Bangui, 04°57'N 18°46'E, 430 m, 8.IV.2010, J. Halada leg. (1 ex. ♂) IZCI; Central African Rep., Ombella-Mpoko prov., 75 km NNE Bangui, 26-29.IV.2010, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Central African Rep., Mambere-Kadei prov., 90 km NE Nola (GPS), 550 m, 10-12.VI.2009, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Mozambik - C, [Sofala prov.], 50 km S Inchope, 19°36'S 33°55'E, 160 m, 27.XI.2005, M. Kadleková leg. (2 exx. ♀♀) IZCI; Mozambique, Inhambane prov., 15 km SE Save, 18-21.XII.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Senegal, Niokolo-Koba N. P., 13-17.VII.2004, A. Kudrna jr. leg. (2 exx. ♂♂) IZCI.

Distribution: Cameroon (Corporaal, 1950).

New records for Central African Republic, Mozambique and Senegal.

7) *Strotocera brevfasciata* Gerstmeier & Weiss, 2009

Material examined. Somalia, Benadir, Mogadiscio 7° km, 2-19.V.1986, ex larva, R. Mourglia leg. (1 ex. ♂) IZCI.

Distribution: Mozambique, South Africa, Tanzania (Gerstmeier & Weiss, 2009), Kenya and Zimbabwe (Leavengood, 2015).

New record for Somalia.

8) *Strotocera convexa* (Hintz, 1905)

Material examined. Ethiopia, Sidamo province, near Negele Borana, 25-27.IV.1998, K. Werner leg. (1 ex. ♂) IZCI; Mozambique, Manica prov., 50 km S Inchope, 27-28.XI.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Mozambique, Tete prov., 20 km SE Manje, 5-6.XII.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Mozambique, Sofala prov., 50 km S Inchope, 17-18.XII.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Mozambique, Inhambane prov., 15 km SE Save, 18-21.XII.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI.

Distribution: Cameroon, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Zimbabwe (Gerstmeier & Weiss, 2009).

New records for Ethiopia and Mozambique.

9) *Strotocera fulvoplagiata* (Fairmaire, 1887)

Material examined. Ethiopia, Sidamo province, 55 km S Negele, 900 m, 25-26.IV.2007, A. Kudrna jr. leg. (2 exx. ♀♀) IZCI; Ethiopia, near Turmi [Southern Nations, Nationalities, and Peoples' Region, Debub Omo zone], 4°58'31"N 36°30'53"E, 950 m, 9-11.IV.2016, V. Major leg. (1 ex. ♂) IZCI.

Distribution: Kenya, Somalia (Gerstmeier & Weiss, 2009).

New record for Ethiopia.

10) *Strotocera nitida* Schenkling, 1908

Material examined. Central African Rep., Mambéré-Kadéï pref., 90 km NE Nola (GPS), 550-600 m, 10-12.VI.2009, A. Kudrna jr. leg. (1 ex. ♀) IZCI.

Distribution: Cameroon (Gerstmeier & Weiss, 2009).

New record for Central African Republic.

Note: This specimen does not exhibit the yellow lateral spot on the basal third of each elytron. All other characters well correspond to the description of *Strotocera nitida* Schenkling, 1908. I think that the light lateral spot on the elytral basal third can be present

or not in this species as it occurs in *Strotocera rufoapicalis* Gerstmeier & Weiss, 2009 and *Strotocera vaneyeni* Pic, 1950.

11) *Strotocera roberti* Gerstmeier & Weiss, 2009

Material examined. E Kenya, E of Mwingi, W of Nguni, 1.XII.2010, M. Snížek leg. (1 ex. ♀) IZCI.

Distribution: Ethiopia, Ivory Coast, Mozambique, Namibia, South Africa, Tanzania, Zimbabwe (Gerstmeier & Weiss, 2009).

New record for Kenya.

12) *Strotocera rufoapicalis* Gerstmeier & Weiss, 2009

Material examined. Gabon, Ogooue'-Ivindo, Parc National de l'Ivindo, Station de Ipassa, 0°30'45"N 12°48'10"E, 20-29.II.2012, M. Pavesi leg. (1 ex. ♂) IZCI; Gabon, Ogooue' Ivindo, P. N. Ivindo, Station de Recherche d'Ipassa, 0°30'44,4"N 12°48'09,2"E, 500 m, 14-24.III.2015, C. Massarone leg. (1 ex. ♂) IZCI.

Distribution: Ivory Coast, Nigeria (Gerstmeier & Weiss, 2009).

New record for Gabon.

13) *Strotocera vaneyeni* Pic, 1950

Material examined. South Cameroon, Ebolowa, dep. Mvila, Mkoemvone, IV.2009, ex coll. S. D. Etoga (1 ex. ♀) MSNG; Gabon, Ogooue' Ivindo, P. N. Ivindo, Station de Recherche d'Ipassa, 0°30'43"N 12°48'12"E, 500 m, 16-29.II.2012, C. Massarone leg. (4 ex. ♂♂ 2 ex. ♀♀) IZCI; idem, 25.II.2012, C. Deiaco leg. (2 ex. ♂♂ 1 ex. ♀) IZCI; idem, 3-14.XII.2013, C. Massarone leg. (1 ex. ♂ 1 ex. ♀) IZCI; Gabon, Ogooue' Ivindo, P. N. Ivindo, Station de Recherche d'Ipassa, 0°30'44,4"N 12°48'09,2"E, 500 m, 14-24.III.2015, C. Massarone leg. (1 ex. ♂ 3 ex. ♀♀) IZCI; NE Gabon, Makokou, Parc. Nat. Ivindo, Ipassa, 400 m, 16.II-1.III.2012, S. Biondi leg. (1 ex. ♂) IZCI; idem, XII.2013, S. Biondi leg. (1 ex. ♀) IZCI.

Distribution: Congo, Ivory Coast, Uganda (Gerstmeier & Weiss, 2009).

New records for Cameroon and Gabon.

Note: Two specimens do not exhibit the yellow lateral spot on the basal third of each elytron. All the other sixteen specimens examined show it. For this species, as for *Strotocera rufoapicalis* Gerstmeier & Weiss, 2009 and for *Strotocera nitida* Schenkling, 1908, the light lateral spot on the basal third of the elytra can be present or not.

14) *Teloclerus compressicornis* (Klug, 1842)

Material examined. S Benin, 1 km E of Challa-Ogoyi, 20 km E of Ouesse, 20-21.VI.2001, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Ethiopia South, 20 km SE Konso, 5°15'N 37°32'E, 850 m, 11-13.V+18-20.V.2015, A. Kudrna jr. leg. (1 ex. ♂) IZCI; Kenya, Eastern prov., E of Thika, W of Mwingi, 6.IV.2007, M. Snížek leg. (1 ex. ♂) IZCI; Kenya, Eastern prov., E of Nguni, Ngomeni, 11.V.2007, M. Snížek leg. (1 ex. ♂) IZCI; Mozambique, Inhambane prov., 25 km N Massinga, 26-27.XI.2005, A. Kudrna jr. leg. (1 ex. ♂) IZCI; W Senegal, 4 km S Nianing, 2.VIII.2015, S. Prepsl leg. (1 ex. ♂) IZCI; NW Senegal, Bandia, 25 km SW Thiès, 19.VI.2004, A. Kudrna jr. leg. (1 ex. ♀) IZCI; Zambia, 15 km N Kazungula, 1-2.I.2003, J. Secký leg. (1 ex. ♀) IZCI; Zambia NE, 92 km NW Mpika, 27.XI.2005, M. Snížek leg. (1 ex. ♂) IZCI; Eritrea, Bogos, Sciotel, 1870, O. Beccari [leg.] (1 ex. ♀) MSNG; Eritrea, Ghinda, VII.1893, Ragazzi [leg.] (1 ex. ♀) [Holotype *Tillus rufopiceus* Schenkling, 1899 = *Teloclerus compressicornis* (Klug, 1842) (Gerstmeier, 1998)] MSNG; Somalia, Giuba, Margherita, Patrizi [leg.], I.[19]20, (1 ex. ♀) MSNG; Somalia, Somalia it., Belet Amin, Giuba, Apr. 1923 [Apr. = IV], Patrizi [leg.], (1 ex. ♂ 1 ex. ♀) MSNG.

Distribution in Palaearctic region: Algeria, Israel, Italy (Sardinia), Morocco, Portugal, Saudi Arabia, Spain, Tunisia (Löbl & Smetana, 2007), UAE and Yemen (Gerstmeier, 2010).

Distribution in Afrotropical region: Ciad (Mateu, 1972), Guinea (Corporaal, 1950), Madagascar (Corporaal, 1950), Mali [Bamako on the Niger River, not Republic of Niger] (Fairmaire, 1891), Mauritania (Mateu, 1972), Niger (Mateu, 1972), Somalia (Gerstmeier,

1998), South Africa (Corporaal, 1950), "Southern Africa" (Lesne, 1907), "Sudan Western and Southern" [probably French Sudan] (Lesne, 1907), "Whole Sahara (from Morocco to Somalia)" (Gerstmeier, 2010), "Zambezi River" (Lesne, 1907), Zimbabwe (Gorham, 1900).

New records for Benin, Ethiopia, Kenya, Mozambique, Senegal, Zambia and confirmed for Eritrea and Somalia.

15) *Tillodenops plagiatus* (Fairmaire, 1892)

Material examined. Ethiopia, Shoa prov., Metehara [now in Oromia region, East Shewa zone], 18.IV.1998, K. Werner leg. (1 ex. ♂ 1 ex. ♀) IZCI; S Ethiopia, 39 km SEE Goro [Oromia region, Bale zone], 2-3.V.2013, ex larva emerged IV.2016, S. Prepsl leg. (1 ex. ♀) IZCI; Ethiopia central, 23 km N Awash [Afar region], 27.IV.2016, S. Prepsl leg. (1 ex. ♀) IZCI; Ethiopia, near Turmi [Southern Nations, Nationalities, and Peoples' Region, Debub Omo zone], 4°58'31"N 36°30'53"E, 950 m, 27-30.XI.2016, V. Major leg. (2 ex. ♀♀) IZCI.

Distribution: Ciad (Ennedi), Iran, Israel, Kenya, Mauritania, Oman, Saudi Arabia, Senegal, Somalia, Sudan, Tanzania, UAE, Yemen (Gerstmeier et al., 1999; Gerstmeier, 2010).

New record for Ethiopia.

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Figures 1-2. *Paradoxocerus massaronei* n. sp., male, holotype (length = 9.3 mm): (1) habitus, dorsal view; (2) ventral view.



Figures 3-8. *Paradoxocerus massaronei* n. sp., cleared aedeagus of holotype: (3) dorsal view, (4) lateral view, (5) ventral view, (6) pygidium, (7) sternite VIII, (8) spicular fork. Scale bar = 1.0 mm.