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## New *Thiratoscirtus* species from equatorial Africa (Araneae: Salticidae)

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ABSTRACT. Two new species of jumping spiders – *Thiratoscirtus mastigophorus* and *Th. perspicuus* – are described from equatorial Africa. Their affinities and distribution are discussed.

Key words: arachnology, taxonomy, Salticidae, *Thiratoscirtus*, new species, Afrotropical region.

### INTRODUCTION

The genus *Thiratoscirtus* was established by Simon (1886). Currently, 19 species are known (PLATNICK 2013). Descriptions of most of them have been published recently by WESOŁOWSKA & RUSSELL-SMITH (2011) and WESOŁOWSKA & EDWARDS (2012). The list, however, is far from being complete as some species were only assigned to *Thiratoscirtus* as morphospecies (BODNER & MADDISON 2012) and others are certainly to be found in the field.

The type species of the genus is *Th. patagonicus* SIMON, 1886 (described together with *Th. niveimanus* in the same paper), but its description is inaccurate, which also applies to generic features. According to SIMON both species came from South America (Argentina and Brazil, respectively). Recently it appeared that the SIMON'S labelling was incorrect (SZÜTS 2004, see also: WESOŁOWSKA & RUSSELL-SMITH 2011, BODNER & MADDISON 2012, PRÓSZYŃSKI 2013) and two of the above mentioned species were collected in Africa. Thus, the distribution of this genus is probably limited only to the central part of this continent.

The material for this study comes from the Royal Museum of Central Africa in Tervuren, Belgium (MRAC) and from the Natural History Museum in London, Great Britain (NHM).

## TAXONOMY

**Genus *Thiratoscirtus* SIMON, 1886**

*Thiratoscirtus* SIMON 1886: 560; WESOŁOWSKA & RUSSELL-SMITH 2011: 599.

Type species: *Thiratoscirtus patagonicus* SIMON, 1886.

Diagnostic features of *Thiratoscirtus* were already mentioned by SIMON (1886) and supplemented by WESOŁOWSKA & RUSSELL-SMITH (2011): shape of eye field that is slightly trapezoid – distance between anterior-lateral eyes is larger than between posterior-laterals; high carapace; long ventral spines on the first pair of legs, with 4 pairs on tibia and two on metatarsus; the presence of a retrolateral spine on tarsus of female's pedipalp; elongated epigyne with oblong v-shaped posterior edge that is strongly sclerotized; tibial apophysis of male palp short, stout and situated slightly behind the lateral surface of tibia, i.e. towards the dorsal side of tibia; presence of a tuft of long hairs on male's palpal tibia.

***Thiratoscirtus mastigophorus* sp. nov.**

Figs 1-13

## HOLOTYPE

male, ZAIRE [presently the Democratic Republic of Congo], Butembo [N00°14', E29°29'], 1750 m, "sol suspendu" [suspended soil], II-III.1975, leg. M. Lejeune (MRAC, 161 397).

## PARATYPES

1 female together with the holotype; 1 female, ZAIRE [DRC], Kivu, "km 7. route Butembo - Beni" [N00°22', E29°31'], Reserve forest Nahuha, 1700 m, 15-20.IV.1974, leg. M. Lejeune (MRAC, 155 567).

## DIAGNOSIS

The male of this species might be easily distinguished from the congeners by the long whip-like embolus, with its base on the posterior part of a bulb and the semi-round lobe on the retrolateral bulb margin. The cymbium is prolonged, with its top directed retrolaterally. The female is also easily told apart from the other *Thiratoscirtus* species by the large and rounded central depression that is fairly similar to the one in *Th. bipaniculus* WESOŁOWSKA & RUSSELL-SMITH, 2011. However, the structure of copulatory ducts is different in these two species (very short in the newly described species, long and very thin in *Th. bipaniculus*).

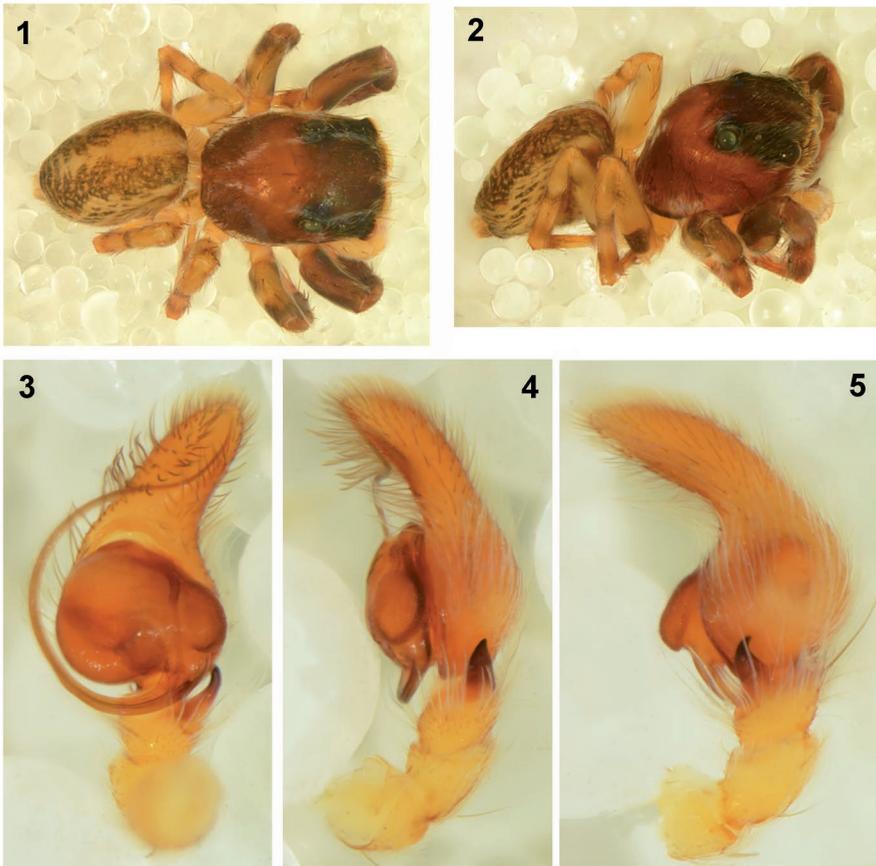
## ETYMOLOGY

The species name *mastigophorus* was derived from two words: *mastig-* (gr. whip, lash, scourge) and *-phoros* (gr. bearing) and means “the one bearing a whip”. It refers to the distinctive shape of embolus in this species.

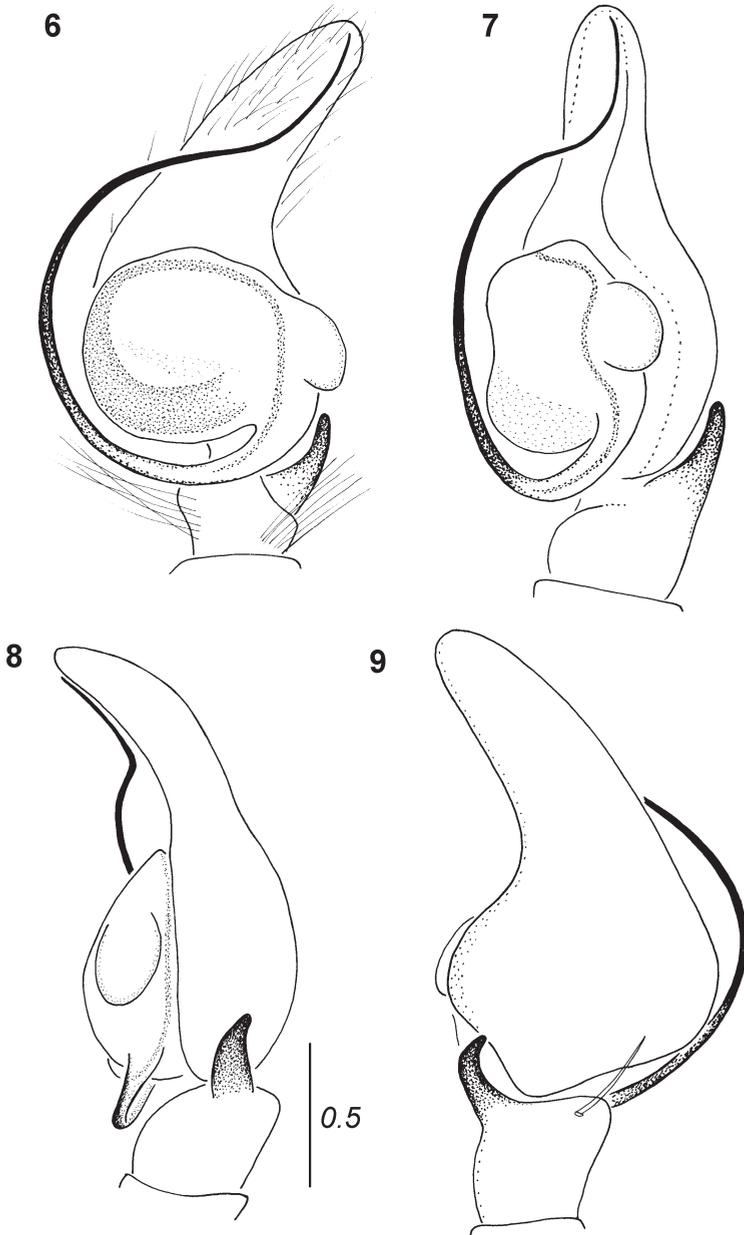
## DESCRIPTION

Dimensions in mm (m/f). Cephalothorax: length 1.9/1.8, width 1.5/1.5, height 1.1/1.3. Eye field: length 1.0/1.0, anterior width 1.4/1.4, posterior width 1.3/1.4. Abdomen: length 1.7/2.2, width 1.2/1.7.

Male. General appearance as in Figs 1, 2. Carapace high, sloping steeply in posterior part (Fig. 2), eye field dark brown, darker than the thoracic part, black around eyes, only little narrowing towards posterior. Small, fawn scales encircle anterior eyes. Thin streak composed of white hairs along margins of carapace. Two similar streaks

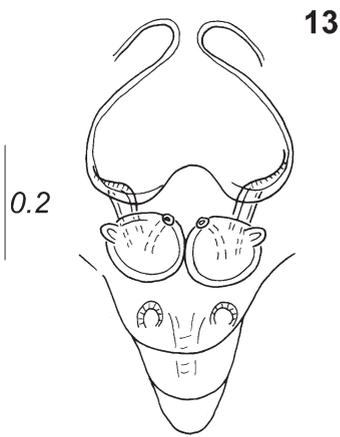
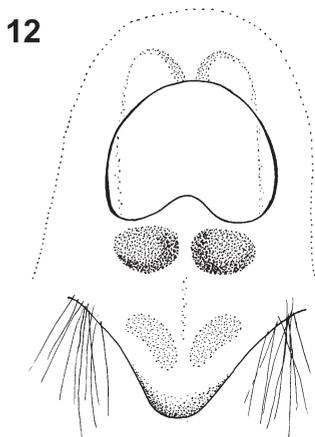
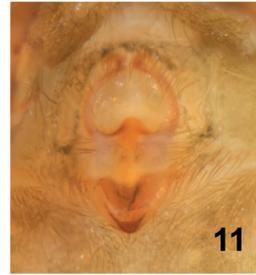


1-5. *Thiratoscirtus mastigophorus*, paratype, male: 1 – general appearance, dorsal view, 2 – lateral view; male palp: 3 – ventral view, 4 – lateral view, 5 – dorsal view



6-9. *Thiratoscirtus mastigophorus*, male palp: 6 – ventral view, 7 – ventroretrolateral view, 8 – lateral view, 9 – dorsal view

starting between median and lateral anterior eyes, v-shaped on thoracic part (Fig. 1). Clypeus low, with a row of white hairs above base of chelicerae. Sternum light brown. Chelicerae stout, rather short, brown, unidentati. Endites dark brown to yellowish near their margins. Legs brownish, I and II darker than the other two pairs, the first one stout, the longest and the darkest. Yellow patches on retrolateral side of femora I and II, tarsi yellowish. Tibia I with four pairs of ventral spines, metatarsus - with two pairs. Legs III and IV yellow with darker markings, dark patches on ventral sides of femora at their base, coxae yellowish. Abdomen generally brownish with a middle light band dorsally, in posterior braking into chevrons. Two light bands on the sides of abdomen. Venter greyish brown. Spinnerets yellowish, darker on lateral sides. Pedipalps yellow. Palpal organs: bulb roundish with a small semi-round lobe on its retrolateral side, long whip-shaped embolus with its base on posterior part of bulb, prolong cymbium with the top directed retrolaterally. Tibial apophysis slightly shifted to the dorsal side, a single long bristle situated on dorsum of tibia (Figs 3-9).



10-13. *Thiratoscirtus mastigophorus*, paratype, female: 10 – general appearance, dorsal view; 11, 12 – epigyne; 13 – internal structure of epigyne

Female. Similar to male in general appearance (Fig. 10), but somewhat darker. Carapace darker than in male with evenly blackish eye field, streaks of white hairs in its lateral part. All of the legs of similar size and colour, rather short. Darker markings on tibiae and big yellow patches on femora. Palps brown, with a retrolateral bristle on tarsus concealed in dense hairs. Abdominal pattern composed of mosaic of small brown and yellowish patches, chevrons in its posterior part (Fig. 10). Epigyne long, with oval central depression anteriorly, strongly sclerotized v-shaped posterior edge and one more sclerotized structure between central depression and posterior part (Figs 11-12). Copulatory openings situated in the posterior part of depression, copulatory ducts short and thick, spermathecae spherical and large (Fig. 13).

***Thiratoscirtus perspicuus* sp. nov.**

Figs 14-27

HOLOTYPE

male, CONGO [DRC], Kivu, volcano Karisimbi [S01°50', E29°44'], Rukumi, 3600 m, "dans mousses de *Senecio*", 10.VII.1970, leg. R. P. Lejeune (MRAC, 138 474).

PARATYPES

1 male, 1 female, IVORY COAST: Nimba Mts [N07°62', W08°39'], 1952-62, leg. M. Lamotte (NHM); male: CONGO [DRC], Kivu, Butembo, "vallée du la Musosa", V.1967, leg. R. P. Lejeune (MRAC, 132 821); 1 male, CONGO [DRC], Kivu, "entre fenielle et base trone bananier sauvage [the base of foliage of a 'wild' banana tree], sommet Ile Idjuoi [?]", 29.IV.1964, leg. Q. Faiu (MRAC, 126 530).

DIAGNOSIS

The male of this species differs from the congeners in the structure of the palpal organs, particularly by a short and semitransparent lamella-like embolus and the presence of the cap-like protuberance at embolus base. The female may be recognized by the structure of the epigyne, especially by the shape of pouches formed by the rim of epigynal depression and straight, comparatively thin copulatory ducts.

ETYMOLOGY

The species name – *perspicuus* (lat. perspicuous, transparent, clear) refers to a delicate, semi-transparent embolus characteristic for this species.

DESCRIPTION

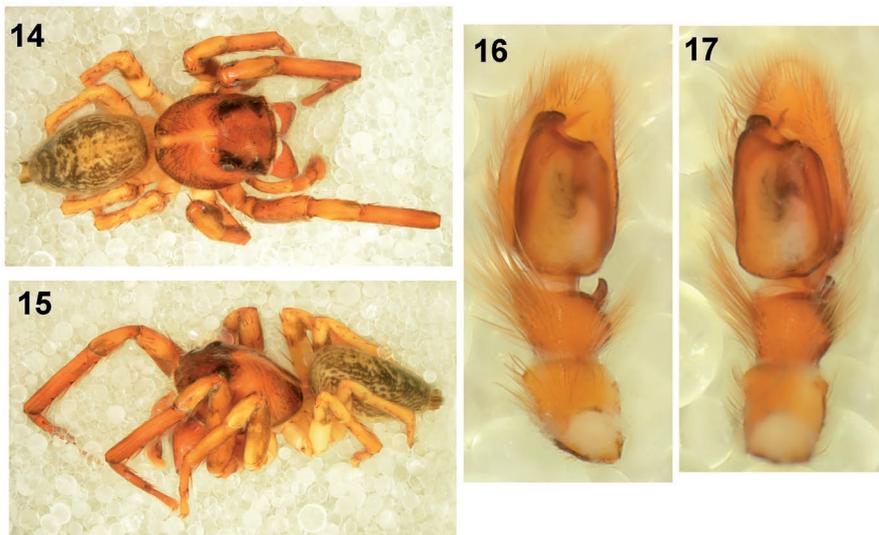
Dimensions in mm (m/f) for 4 males and 1 female. Cephalothorax: length 2.4-3.0/2.4, width 2.0-2.5/2.1, height 1.4-1.8/1.6. Eye field: length 1.2-1.5/1.2, anterior width 1.7-2.1/1.9, posterior width 1.5-1.9/1.6. Abdomen: length 2.3-3.2/3.6, width 1.5-2.0/2.4.

Male. General appearance as in Figs 14, 15. Carapace shape between oval and rectangular, high, gently sloping in posterior part. Eye field evenly brown, slightly darker than thoracic part, eyes of the second and the third row surrounded by black

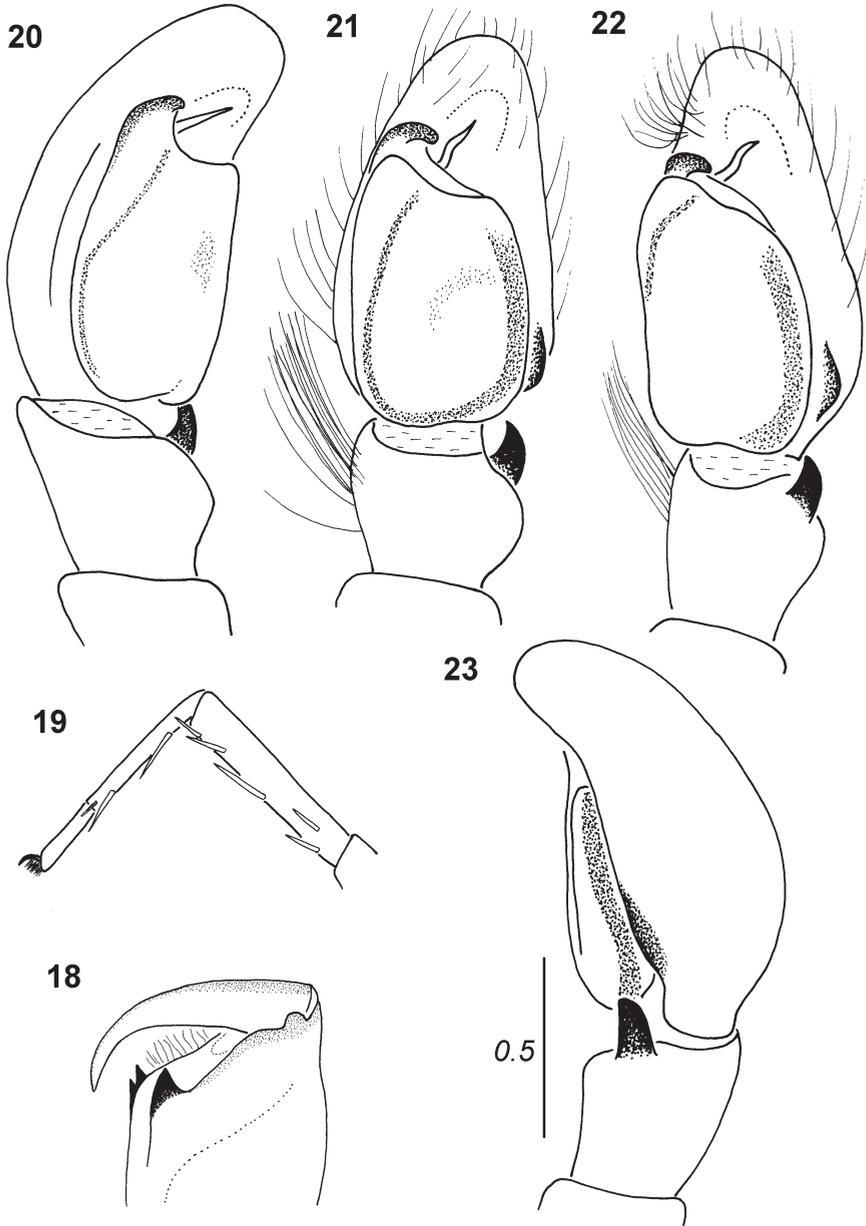
area. Eyes of the anterior row encircled by long, white hairs, similar hairs cover clypeus. The thoracic part brown to yellow with a maze of black lines and a light yellow band in the middle (covered densely with white hairs). Carapace clothed both in white and dark hairs. Fovea sulciform and clearly visible. Sternum yellow, endites and labium brownish, distally yellow. Chelicerae large, stout, from light to dark brown, dentition is depicted in Fig. 18. Legs I and II brown to yellowish brown, with darker basal part of femora and patches on lateral surfaces of patellae distally. First pair of legs the longest (especially tibia is elongated) and the darkest. Dense hairs on the ventral surface of distal segments of legs I. Legs III and IV considerably lighter than I and II, of equal length, their femora yellow with darker apical parts. Spines of tibia and metatarsus of legs I as in Fig. 19. Spines on the legs brown, hairs light. Abdomen oval, elongated, generally dark grey to yellowish, dorsum covered with a mosaic of dark and light patches, in the middle considerably lighter, in posterior part with a few light chevrons, venter light with dark patches and the band in the middle. Posterior spinnerets dark, anterior light. Comparison of four males shows that they differ considerably in the intensity of their colouring, ranging from almost dark brown to light and in the clarity of the dorsal pattern of abdomen.

Pedipalps brown, covered with dense hairs, tuft of long light hairs prolaterally on tibia. Retrolateral tibial apophysis short, stout, located slightly dorsally. Bulb ovoid with the characteristic cap-like protruberance (more or less curved) near base of embolus. Embolus short, partly or totally transparent (Figs 16, 17, 20-23).

Female. Similar in general appearance to male, but lighter (Fig. 24). The colouration of the abdomen less contrasting than in male, legs I not distinctly longer than the others. Chelicerae not so stout as by male. Pedipalp has the single retrolateral spine



14-17. *Thiratoscirtus perspicuus*, holotype, male: 14 – general appearance, dorsal view, 15 – lateral view; male palp: 16 – ventral view, 17 – ventroretrolateral view



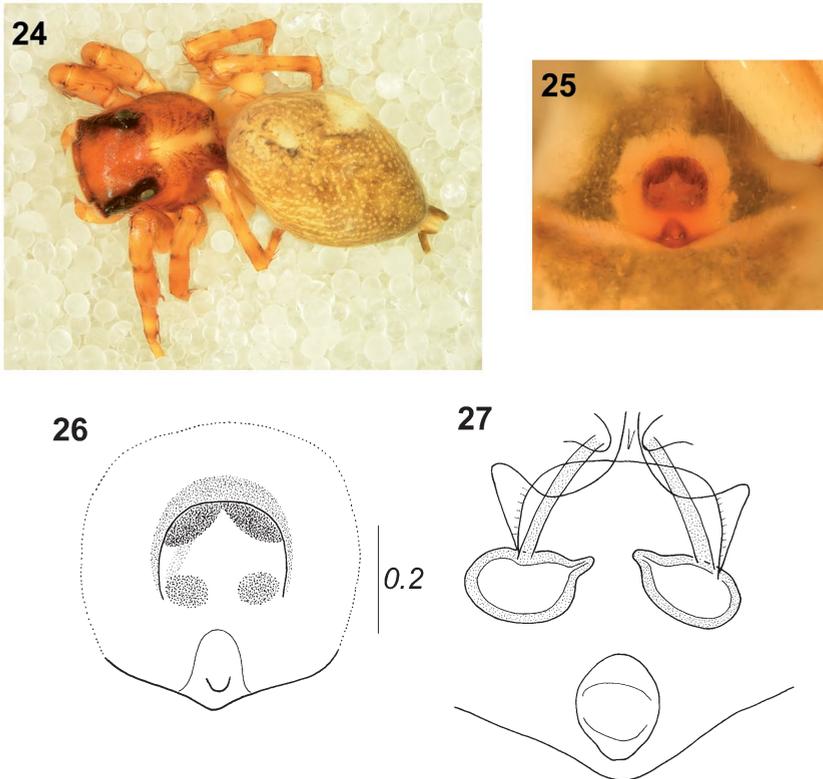
18-23. *Thiratoscirtus perspicuus*, male: 18 – cheliceral dentition, 19 – leg I, distal part, prolateral view; male palp: 20 – ventroprolateral view, 21 – ventral view, 22 – ventroretrolateral view, 23 – lateral view

on tarsus. Epigyne rounded, with sclerotised protrusion at its posterior edge and large shallow depression in the centre (Figs 25, 26). Copulatory openings hidden in strongly sclerotized pouch-shaped atria, formed by anterior rim of central depression, copulatory ducts thin and almost straight, spermathecae ovoid (Fig. 27).

#### DISTRIBUTION AND MICROHABITATS

All *Thiratoscirtus* species that have been described until now came from tropical part of western Africa (Cameroon, southern Nigeria, Sierra Leone, Fernando Po). Additionally, an undescribed species used by BODNER & MADDISON (2012) in their analysis was found in western Africa (Gabon). The present records stay in accordance with the known distribution of *Thiratoscirtus* and Kivu seems to be the furthest location of this genus to the east in equatorial Africa. The range of rainforest habitats in central Africa (LE HOUÉROU 2009) seems therefore to overlap with the distribution of *Thiratoscirtus*.

Both of the species described here were collected in mountainous areas. There is, however, little information about the microhabitats in which *Th. perspicuus* and



24-27. *Thiratoscirtus perspicuus*, paratype, female: 24 – general appearance, dorsal view, 25, 26 – epigyne, 27 – internal structure of epigyne

*Th. mastigophorus* were found. The specimen of *Th. perspicuus* from Karisimbi volcano was collected from 'Senecio' (3600 m a.s.l.). This surely refers to *Dendrosenecio erici-rosenii* (Asteraceae) that grows - among other mountain ranges - in the Virunga Mountains, from above 3500 to 4500 m a.s.l. (KNOX & PALMER 1995). The other specimen was found in a base of leaves of a 'wild' (meaning rather 'not cultivated') banana tree. In the case of *Th. mastigophorus*, two specimens were found on suspended soil, i.e. the one associated with epiphytic plants. All the above mentioned records may suggest that these species prefer tree-like plants, but data are still insufficient to entirely support this presumption. BODNER & MADDISON (2012) have noticed that Thiratoscirtinae were predominately found in forests and *Thiratoscirtus* species were observed rather in the leaf litter than in other habitats.

#### AFFINITIES

The general appearance (especially those characters that have been listed in generic diagnosis) of the genus seems to be consistent. The structure of female genitalia also follows the similar pattern. However, the structure of male palpal organs is extremely diverse (see also: WESOŁOWSKA & RUSSELL-SMITH 2011, BODNER & MADDISON 2012, WESOŁOWSKA & EDWARDS 2012). It must also be mentioned that BODNER & MADDISON (2012) created a separate subfamily – Thiratoscirtinae on the basis of molecular analysis, grouping a few African genera in it. Hence the most related genera would be: *Thiratoscirtus*, *Alfenus*, *Bacelarella*, *Longareus*, *Malloneta*, *Pochyta* and a few others. This viewpoint on affinities within this group seems also to be reliable considering morphology and genitalia structure. Nevertheless, relationships of these genera and position of *Thiratoscirtus* among them are still poorly known and require further profound studies.

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