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## Taxonomic notes on the genus *Menemerus* in Africa (Araneae: Salticidae)

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ABSTRACT. Two new species - *M. cummingorum* (Zimbabwe) and *M. tropicus* (Kenya, Uganda) are described. *M. manicus* WESOŁOWSKA, 1999 is synonymized with *M. minshullae* WESOŁOWSKA, 1999. Hitherto unknown male of *M. zimbabwensis* is described, the species is recorded from South Africa for the first time.

Key words: arachnology, taxonomy, new species, new records, Africa, Salticidae, *Menemerus*.

The African species of the genus *Menemerus* SIMON, 1868 were revised by WESOŁOWSKA (1999). This review showed that our knowledge of this genus was very limited. Though forty-three *Menemerus* species were recorded, about half of them were known only from the type locality, species descriptions were often based on single specimen/sex, and their natural history remained virtually unknown. Examination of the recent salticid collections from the Afrotropical Region allows for updating the 1999 review, to introduce corrections and additions to the picture presented there. Here I present descriptions of two new species, describe an unknown male for another species and synonymize names of two species known so far from single sex each.

The specimens constituting the basis of this paper are deposited in the following collections:

BMNH - British Natural History Museum, London, UK  
FSCA - Florida State Collection of Arthropods, Gainesville, USA;  
MHN - Muséum d'Histoire Naturelle, Genève, Switzerland;  
MNH - Museum of Natural History, Wrocław, Poland;

MRAC - Musée Royal de l'Afrique Centrale, Tervuren, Belgium;  
NMK - Kenya National Museum, Natural History, Nairobi;  
NMZ - National Museum (Natural History) of Zimbabwe, Bulawayo;  
PPRI - Plant Protection Research Institute, Pretoria, South Africa.

***Menemerus cummingorum* sp. n.**

(Figs 1-7)

MATERIAL

Holotype, male, ZIMBABWE: Lake Chivero, 30 km SW of Harare, 17°55'S 30°50'E, 1430 m a.s.l., on granite boulders, 30.VII.2000, leg. M. CUMMING (MRAC).

Paratypes: together with holotype, 1 male, 1 juv. (NMZ); ZIMBABWE: same locality, 1 male, 28.VIII.2003 (NMZ); same locality, 2 males, 4.VIII.2004 (PPRI); same locality, 2 males, 1 female, 3 juv., 23.VIII.2003 (MRAC).

DIAGNOSIS

The species may be distinguished by the presence of four white patches on thorax. It is closely related to *Menemerus minshullae* WESOŁOWSKA, 1999, but is clearly bigger; the genitalia of both sexes of these species are very similar. The male differs by the shape of tibial apophysis (compare Fig. 5 with Fig. 10). The female has rounded epigynal depressions, whereas in *M. minshullae* depressions are oval, placed diagonally (compare Fig. 6 with Fig. 12).

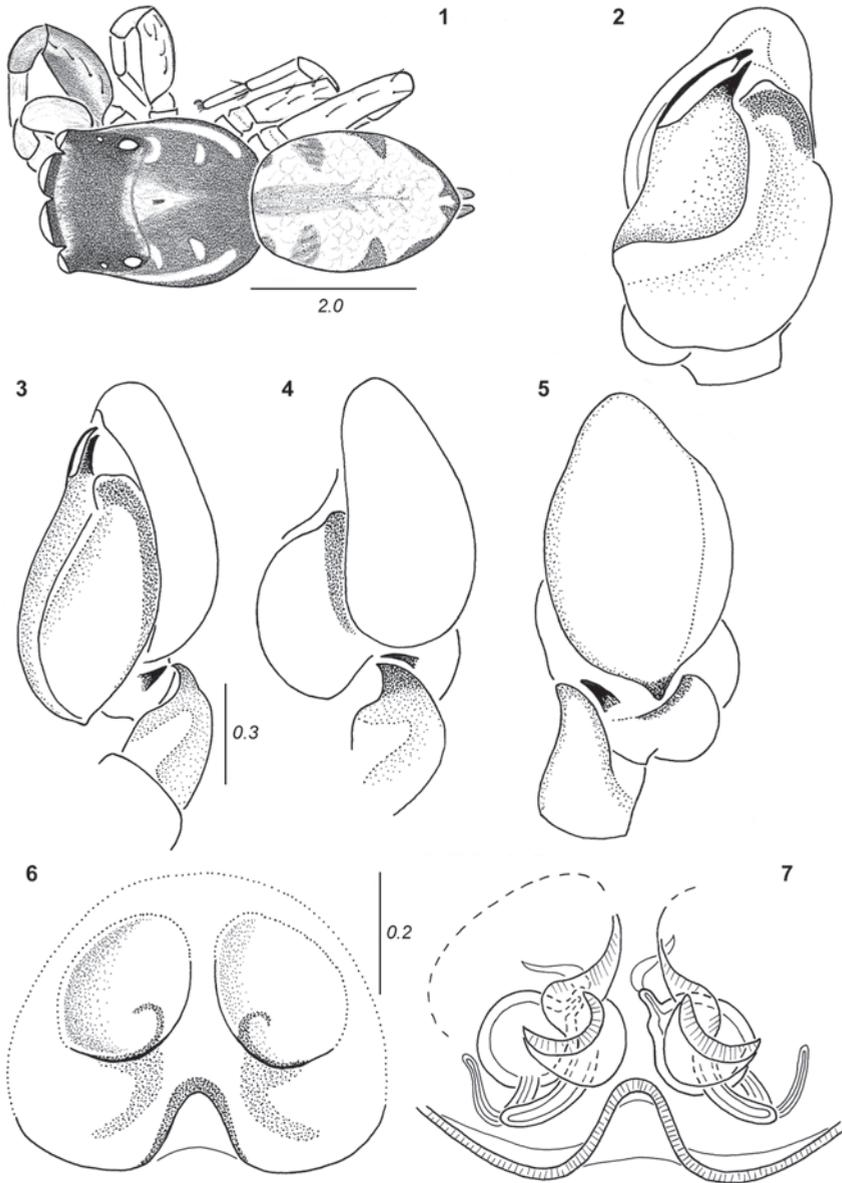
ETYMOLOGY

The species is dedicated to Meg and David CUMMINGS, naturalists from Zimbabwe, who collected many spiders from this country.

DESCRIPTION

Measurements (male/female). Cephalothorax: length 2.2-2.3/2.2-2.4, width 1.7-1.8/1.7-1.8, height 0.8-0.9/0.8-0.9. Abdomen: length 2.3-2.6/2.6-2.9, width 1.4-1.5/1.6-1.7. Eye field: length 1.0-1.1/1.0-1.1, anterior and posterior width 1.3-1.4/1.3-1.4.

Male. Medium sized spider. General appearance in Fig. 1. Cephalothorax flattened, widest behind half of its length. Carapace dark brown, eye field black. Anterior eyes surrounded by fawn scales, long brown bristles scattered on eye field, denser at anterior row of eyes. White hairs form streaks along lateral margins of carapace, ill-defined transversal line behind anterior eyes, triangular patch at foveal area and four patches on thorax (Fig. 1). Clypeus very low, clothed in white hairs. Mouthparts and sternum dark brown. Abdomen yellowish grey, transparent with silver spots of internal guanine crystals, traces of fawn streak medially. Lateral surfaces of abdomen dark, brown patches extend from abdomen sides to dorsum. Venter with large dark patch. Dense brown and grey hairs cover abdomen, hairs longer and bushier at anterior edge. Spinnerets dark. Legs yellow, sometimes with brown marks and patches. Legs of first pair darker than remaining, brownish with black lateral surfaces of femora and patellae. Spines brown; leg hairs dense, brown and grey. Pedipalp light brown, clothed in light



1-7. *Menemerus cummingorum*: 1 - general appearance of male, 2 - palpal organ, ventral view, 3 - palpal organ, ventrolateral view, 4 - palpal organ, lateral view, 5 - palpal organ, dorsal view, 6 - epigyne, 7 - internal structure of epigyne

grey hairs. Bulb oval, embolus with big prolateral lamella (Fig. 2). Tibial apophysis in form of thick spine (Figs 3-5), patella with short wide apophysis (Fig. 5). Palpal femur short, swollen.

Female. Carapace as in male, but coloration often less contrasting. Sternum and mouthparts brown, only maxillae with yellowish chewing margins. Abdomen dark brown laterally, whole dorsum occupied by large leaf-shaped yellow patch. Venter dark greyish with two longitudinal lines formed by light dots. Spinnerets dark brown, near their base tuft of long white hairs. Legs yellow, in some specimens with brownish patches on lateral surfaces of segments, first pair slightly darker. Epigyne with two rounded depressions, clearly separated by median elevated ridge (Fig. 6). Gonopores hidden in very strongly sclerotized "cups", seminal ducts narrow, accessory glands long, receptacles spherical (Fig. 7). Internal structures similar to those of *M. minshullae*, but entrancing cups with bigger additional "wings" (compare Fig. 7 with Fig. 196 in WESOŁOWSKA 1999).

***Menemerus minshullae* WESOŁOWSKA, 1999**

(Figs 8-12)

*Menemerus minshullae* WESOŁOWSKA, 1999: 309.

*Menemerus manicus* WESOŁOWSKA, 1999: 306, **n. syn.**

MATERIAL

ZIMBABWE: Sengwa Wildlife Research Area, 18°08'S 28°11'E, on outside walls of buildings, 2 males, 2 females, 24.XI.2001, leg. M. CUMMING (PPRI); same locality, 1 male, XI.2001 (NMZ); same locality, 2 males, 1 female, 1 juv., X-XI.2002 (MRAC); same locality, 1 female, X-XI.2002 (NMZ).

DESCRIPTION

Measurements (male/female). Cephalothorax: length 1.9-2.1/2.0-2.2, width 1.5-1.6/1.5-1.6, height 0.7-0.8/0.7-0.8. Abdomen: length 2.2-2.5/2.4-3.0, width 1.4-1.5/1.6-1.7. Eye field: length 0.9-1.0/1.0-1.1, anterior and posterior width 1.1-1.2/1.2-1.3.

Male. Carapace flat, black with white lines composed with light hairs along lateral margins. Light patch at foveal area, extending to median streak on thorax. Some whitish hairs on eye field anteriorly, long brown bristles near eyes. Clypeus very low, clothed in white hairs. Chelicerae dark brown, labium, maxillae and sternum slightly lighter. Abdomen elongated, dark brown with large, leaf-shaped, fawn patch occupying almost whole dorsum. Abdominal hairs thin, translucent. Venter brown. Spinnerets greyish brown. First pair of legs dark brown, only tarsi lighter. Legs II - IV light brown with dark stripes along lateral surfaces of segments. Dense, brown hairs cover legs, especially dense on first pair. Pedipalp brown, on tip of its femur and patella white hairs. Base of cymbium and prolateral edge covered with light hairs. Bulb oval, with wide regular furrow separating distal haematodocha, embolus short, membranous conductor with thin sclerotized ridge (Fig. 8). Tibial apophysis wide, characteristic depression on patella (Fig. 10). Palpal femur short, swollen (Fig. 11).

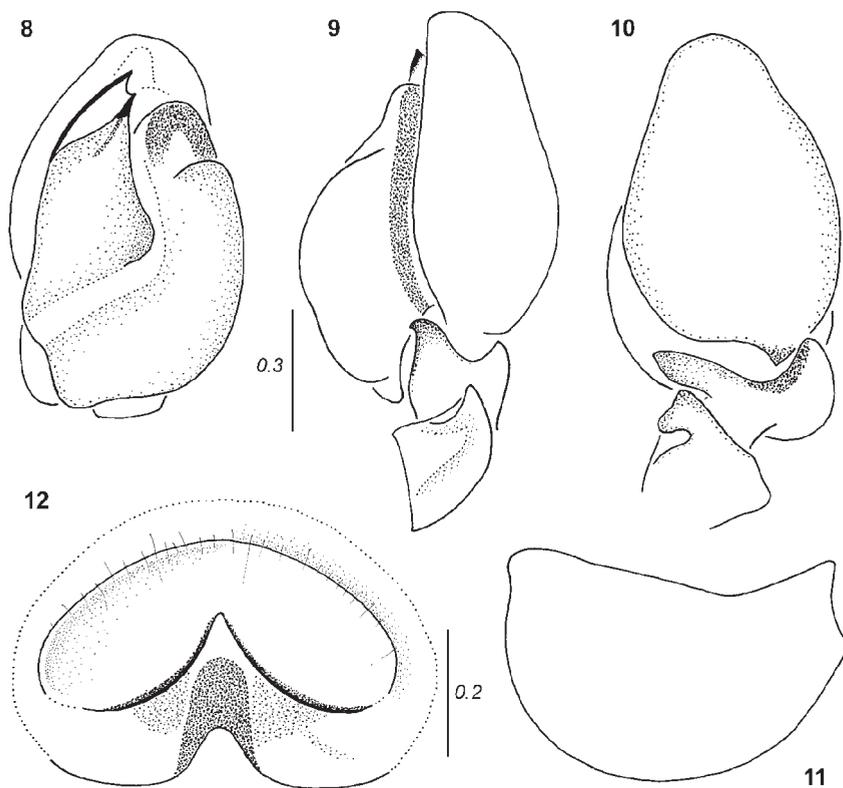
Female. Similar to male. Abdominal pattern more contrasted; leaf-shaped patch light yellowish, laterally abdomen dark brown to blackish (see Fig. 192 in WESOŁOWSKA 1999). Venter light. Spinnerets yellow. Legs pale yellow, with brown spines and hairs. Epigyne wider than its length, strongly sclerotized, with two large depressions, long pocket at epigastric furrow (Fig. 12). Internal structure - see Fig. 196 in WESOŁOWSKA 1999.

## DISTRIBUTION

Species known from Malawi and Zimbabwe.

## REMARKS

Each sex was originally described as a separate species; male as *M. manicus*, female as *M. minshullae* (see WESOŁOWSKA 1999). The studied samples contain both males and females of these two species together, so their species names are to be synonymized.



8-12. *Menemerus minshullae*: 8 - palpal organ, ventral view, 9 - palpal organ, lateral view, 10 - palpal organ, dorsal view, 11 - palpal femur, 12 - epigyne

***Menemerus tropicus* n. sp.**

(Figs 13-21)

## MATERIAL

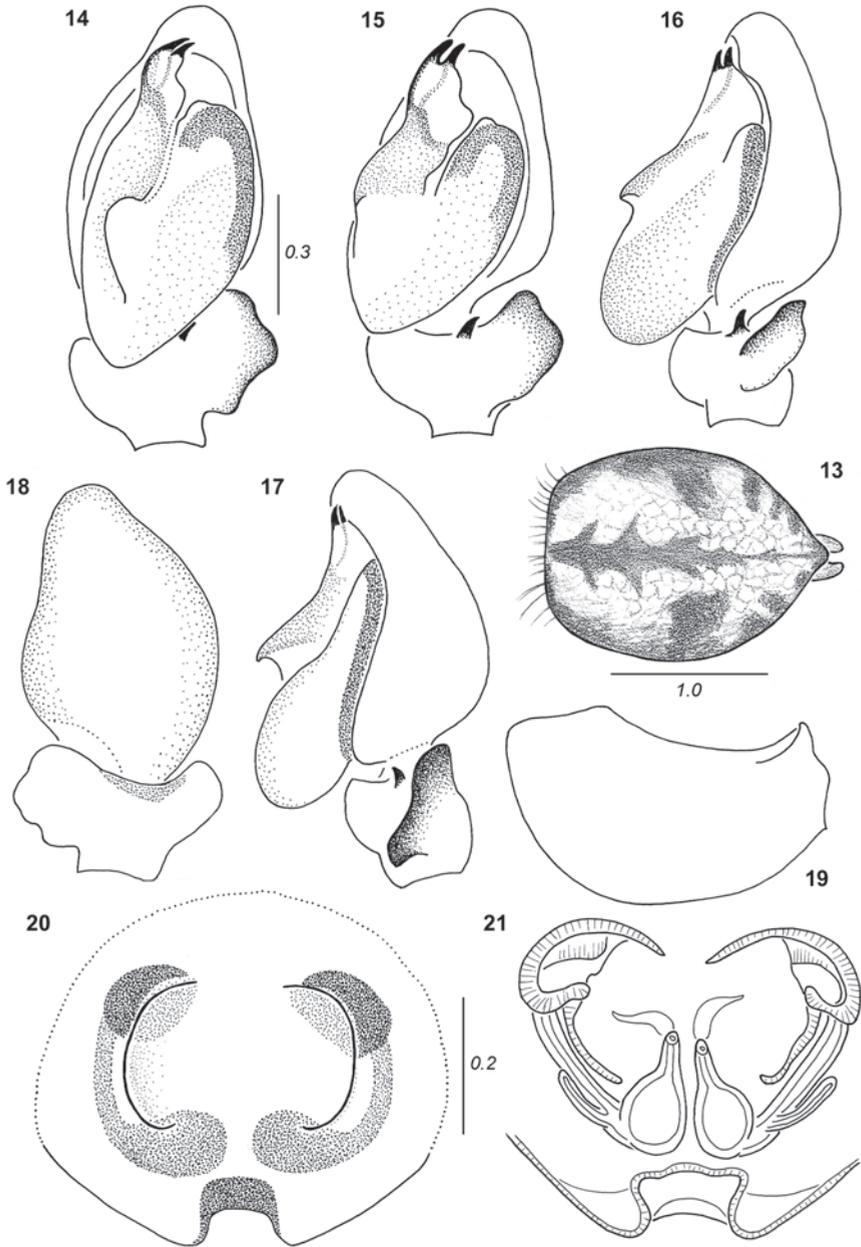
Holotype, male, KENYA: Mbita Point, 0°25'S 34°13'E, E shore of Lake Victoria, 1150 m a.s.l., V.2001, leg. R. JACKSON (MRAC).

Paratypes: together with holotype, 4 males, 5 females (MRAC); KENYA: Mbita Point, 3 males, 4 females, XII.1997 (MHN); same locality, 1 male, 1 female, XII.1997 (MNH); same locality, 1 male, 1 female, II.1998 (FSCA, K 779/98); same locality, 2 males, 1 female, II.1998 (FSCA, K 843/98); Naivasha, 0°43'S 36°30'E, 2 males, 8 females, 1 juv., II.1998, leg. R. JACKSON (NMK); same locality, 2 males, 1 female, 5 juv., II.1998, (FSCA, K 854/98); UGANDA: Entebbe, 0°04'N 32°28'E, shore of Lake Victoria, Botanical Gardens, rain forest, 1 male, 9 females, I.1996, leg. R. JACKSON (FSCA); same locality, 2 males, 12 females, I.1996, (FSCA, U 23/96); same locality, 3 males, 13 females, I.1996, (FSCA, U 89/96) same locality, 2 males, 1 female, I.1996, (FSCA, U 165/96); 2 males, 5 females, I.1996, (FSCA, U 223/96); same locality, 1 male, 3 females, I.1996, (FSCA, U 356/96); same locality, 3 males, 11 females, I.1996, (FSCA, U 357/96); same locality, 2 males, 4 females, 2 juv., II.1996, (FSCA, U 368/96); Jinja, 0°26'N 33°13'E, N shore of Lake Victoria, 5 males, 5 females, 4 juv., I.1996, leg. R. JACKSON (FSCA).

Other specimens: KENYA: Mbita Point, 1 female, II.1996 (FSCA, K 1108/96); same locality, 2 females, XII.1997, (FSCA, K 260/98); same locality, 1 male, I.1998, (FSCA, K 458/); same locality, 3 males, I.1998, (FSCA, K 473/98); same locality, 5 males, II.1998, (FSCA, K 673/98); same locality, 2 females, II.1998, (FSCA, K 684/98); same locality, 1 female, II.1998, K 772/98); same locality, 2 females, II.1998, (FSCA, K 775/98); same locality, 1 male, II.1998, (FSCA, K 792/98); same locality, 4 females, II.1998, (FSCA, K 793/98); same locality, 1 female, XII.2002, (FSCA, K 140/02); same locality, 1 female, XII.2002, (FSCA, K 200/02); 1 female, 1 juv., II.2002, (FSCA, K 303/02); Naivasha, 1 female, I.1998, (FSCA, K 505/98); same locality, 1 male, II.1998, (FSCA, K 853/98); UGANDA: Entebbe, 5 females, 1 juv., I.1996, (FSCA, U 202/96); same locality, 1 female, 1 juv., I.1996, (FSCA, U 289/96); same locality, 1 female, I.1996, (FSCA, ex U 290/96); same locality, 3 males, I.1996, (FSCA, U 326/96); same locality, 1 female, II.1996, (FSCA, U 371/96); Jinja, 1 male, 2 females, 6 juv., I.1996 (FSCA).

## DIAGNOSIS

The female of the species is related to *Menemerus paradoxus* WESOŁOWSKA et VAN HARTEN, 1994 from Yemen, but the epigyne differs in having a narrower pocket at epigastric furrow and smaller receptacles (compare Fig. 21 with Fig. 100 in WESOŁOWSKA & VAN HARTEN 1994). The male palp slightly resembles this of *Menemerus meridionalis* WESOŁOWSKA, 1999 from South Africa, but has clearly larger retrolateral apophysis (compare Figs 14-18 with Figs 188-191 in WESOŁOWSKA 1999).



13-21. *Menemerus tropicus*: 13 - abdomen of male, 14 - palpal organ, ventral view, 15-16 - palpal organ, ventrolateral views, 17 - palpal organ, lateral view, 18 - palpal organ, dorsal view, 19 - palpal femur, 20 - epigyne, 21 - internal structure of epigyne

## ETYMOLOGY

The specific name is derived from the climatic zone in habited by this spider.

## DESCRIPTION

Measurements (male/female). Cephalothorax: length 1.7-2.0/2.0-2.1, width 1.3-1.6/1.5-1.6, height 0.7-0.9/0.7-0.8. Abdomen: length 1.7-2.2/2.4-2.9, width 1.4-1.7/1.8-2.2. Eye field: length 0.8-0.9/0.9-1.0, anterior and posterior width 1.1-1.2/1.2-1.3.

Male. Small spiders with rounded abdomen. Cephalothorax low, flattened, broadest behind half of its length. Carapace dark brown with almost black eye field, densely covered with grey and brown hairs, along lateral margins of carapace white band formed by white hairs, long brown bristles in vicinity of eyes. Clypeus low, dark with grey hairs. Mouthparts and sternum brown. Abdomen flattened, rounded, its anterior edge almost straight. Dorsum area transparent with silver spots of internal guanine crystals, pattern of abdomen comprised of irregular median brown streak and submarginal brown patches (Fig. 13). Abdomen clothed in dense brown and grey hairs, longer and bushier at anterior margin. Venter greyish, slightly darker medially. Spinnerets short, beige. First pair of legs brown, darkest lateral surfaces of femora. Remaining legs yellow with brownish marks at bases and tops of segments. Spines and leg hairs brown. Pedipalp brownish, base of femur and cymbium darker, hairy. Retrolateral tibial apophysis very large, lobate; ventral apophysis small, spike like (Figs 14-17). Bulb elongated, embolus very short, double (with tegular apophysis - Figs 14-15), bent to bulb. Palpal femur with process at its base (Fig. 19).

Female. Resembling male, but slightly darker coloured. Thoracic part of carapace lighter than in male, but abdomen very dark, greyish brown with yellowish irregular median streak, venter dark grey, in some specimens with two longitudinal lines composed of small yellow patches. Whole body clothed in dark hairs. Spinnerets dark. Chelicerae brown. Labium and maxillae brown with pale yellow chewing margins. Legs and palps yellow with brown marks. Epigyne with notch in posterior margin and large oval central depression (Fig. 20.), sometimes partially plugged with waxy secretion. Seminal ducts narrow, long accessory glands lead into terminal part of seminal ducts, receptacles small spherical (Fig. 21).

## HABITAT

*M. tropicus* was collected in *Cambretaceous* savanna on shore of Lake Victoria (JACKSON 1986).

## NATURAL HISTORY

The species lives communally in large interspecific nest complexes (JACKSON 1986).

***Menemerus zimbabwensis* WESOŁOWSKA, 1999**

(Figs 22-29)

## MATERIAL

SOUTH AFRICA: Kruger National Park, Shingwedzi Camp, 23°11'S 31°43'E, 24.-26.IV.2006, leg. M. CUMMING (PPRI); ZIMBABWE: Hwange National Park, Sinamatella Camp, 18°36'S 26°19'E, on trunk of *Colophospermum mopane* tree, 2 males, 1 female (during mating game), 2.IX.2004, leg. M. CUMMING (MRAC); Tsholotsho, 19°46'S 27°44'E, on ground, 1 male, 5.I.2002, leg. L. SIBANDA (MHN); same locality, 1 male, 12.V.1999 (BMNH); same locality, 2 males, 1 juv., VI.1999 (PPRI); same locality, 1 male, 1 female, 2.V.2000 (NMZ); same locality, 1 female (PPRI); same locality, 1 male, IX.1999 (NMZ).

## DESCRIPTION

Measurements (male/female). Cephalothorax: length 2.5-3.0/2.7-3.2, width 1.9-2.4/2.1-2.5, height 0.7-1.0/0.8-1.0. Abdomen: length 2.8-3.5/3.6-4.6, width 1.7-2.1/2.2-2.8. Eye field: length 1.0-1.2/1.1-1.3, anterior and posterior width 1.4-1.6/1.7-1.9.

Male. Big, pilose spider, general appearance as in Fig. 22. Cephalothorax oval, flattened. Carapace dark brown, near eyes long brown bristles, white hairs cover densely eye field and median part of thorax. Narrow white streak formed by light hairs along lateral margins of carapace. Clypeus very low, clothed in white hairs. Chelicerae, labium and sternum dark brown, maxillae of similar colour with paler chewing margins. Abdomen oval, slightly narrowing posteriorly, with broad median brown streak, sides greyish white (Fig. 22). Whole abdomen covered with hairs of background color. Venter dark. Spinnerets brownish. Legs brownish, bases of segments darker. First pair of legs dark brown. Spines brown, leg hairs grey and brown. Pedipalp brown, clothed in light hairs. Bulb very elongated, embolus accompanied with tegular apophysis (Fig. 23). Retrolateral tibial apophysis horizontal, very long (Fig. 25). Palpal femur long, with process at its base (Fig. 28).

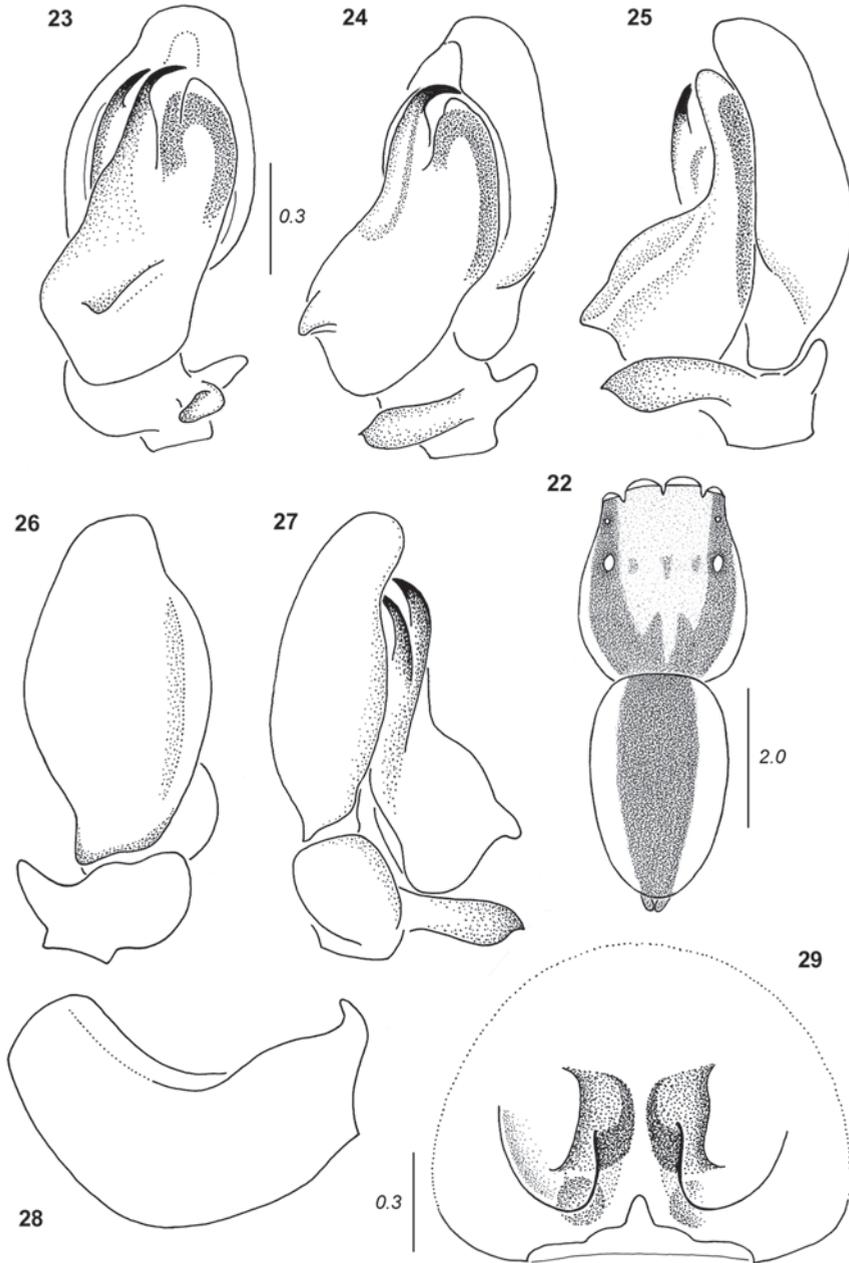
Female. Larger than male. Carapace flat, dark brown with white lines along lateral margins. White hairs cover dorsum, especially dense medially, long brown bristles near eyes. Mouthparts as in male. Abdomen elongated, dark brown with ill-defined median streak formed by white hairs, pair rounded patches contiguous to the streak posteriorly. Long, dense brown and grey hairs at anterior abdominal edge. Venter light with broad greish beige stripe. Spinnerets dark, Legs dark yellow with brown patches, palps yellow clothed in whitish hairs. Epigyne oval with shallow central depression, in some specimens partially plugged with waxy secretion (Fig. 29). Internal structures - see Fig. 301 in WESOŁOWSKA 1999.

## REMARKS

The species was described on the base of single female, the male is described for the first time. The palpal organ of the male slightly resembles this of *Menemerus pilosus* WESOŁOWSKA, 1999 but differs by the shape of tibial apophyses (compare Fig. 25 with Fig. 230 in WESOŁOWSKA 1999).

## DISTRIBUTION

Hitherto known from Zimbabwe, the first time recorded from South Africa.



22-29. *Menemerus zimbabwensis*: 22 - general appearance of male, 23 - palpal organ, ventral view, 24 - palpal organ, ventrolateral view, 25 - palpal organ, lateral view, 26 - palpal organ, dorsal view, 27 - palpal organ, prolateral view, 28 - palpal femur, 29 - epigyne

## ACKNOWLEDGEMENTS

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