

## SHORT COMMUNICATION

### First description of the female of *Sarotesius melanognathus* Pocock 1898 (Araneae: Sparassidae: Palystinae)

**Peter Jäger:** Arachnology, Senckenberg Research Institute, Senckenberganlage 25, 60325 Frankfurt am Main, Germany.  
E-mail: peter.jaeger@senckenberg.de

**Cristina Anne Rheims:** Laboratório de Artrópodes, Instituto Butantan, Avenida Vital Brazil, 1500, 05503-900, São Paulo, SP, Brazil

**Abstract.** The female of *Sarotesius melanognathus* Pocock 1898 is described for the first time. According to characters of the copulatory organs of both male and female as well as to cheliceral dentition the monotypic genus is placed in the Palystinae Simon 1897.

**Keywords:** Description, taxonomy, huntsman spider, Malawi

Pocock (1898) described the genus *Sarotesius* with its type species *Sarotesius melanognathus* from East Africa. It took over one hundred years for the genus to appear again in the scientific literature with illustrations based on the type material published by Jäger & Kunz (2005). During a visit to the Museum of Comparative Zoology in Cambridge, Massachusetts, the second author located a series of reasonably recent material, including one male and three females that were recognised as being conspecific to *Sarotesius melanognathus* Pocock 1898. Thus, here we present a redescription of the male, with new details of the palp structures, and the first description of the female and its copulatory organ. In addition, we comment on the relationships between this genus and the remaining Sparassidae genera.

The examined spiders were preserved in 70% denatured ethanol. Examination and drawings were carried out with a Leica MZ 16 stereomicroscope with drawing mirror. Female copulatory organs were dissected and the sclerotised internal duct system was cleared in 96% DL-lactic acid (C<sub>3</sub>H<sub>6</sub>O<sub>3</sub>). All measurements are in mm. Leg formula, leg spination pattern and size classes follow Jäger (2001). Palp and leg lengths are listed as: total (femur, patella, tibia, metatarsus, tarsus). Arising points of tegular appendages in males are described as clock-positions of the left pedipalpus. The part of the internal duct system with glandular pores is called “turning point”, as at this point the duct system changes its direction. In schematic courses it is marked with “T”, the copulatory orifice with a circle, and the end of the fertilization duct in direction of the *uterus externus* with an arrow. As in Jäger (2005:88), slit sense organs close to the epigyne are illustrated as descriptive character.

Abbreviations: ALE = Anterior lateral eye, AME = Anterior median eye, PJ = Numbers represent subsequent numbers of Sparassidae examined by the authors, PLE = Posterior lateral eye, PME = Posterior median eye, RTA = Retrolateral tibial apophysis, I–IV = Referring to leg numbers.

Museum collections (with curators): MCZ = Museum of Comparative Zoology at Harvard University, Cambridge, Massachusetts (Gonzalo Giribet, Laura Leibensperger), NHM = Natural History Museum, London (Janet Beccaloni).

Sparassidae Bertkau 1872  
Palystinae Simon 1897  
*Sarotesius melanognathus* Pocock 1898  
Figs. 1–4

*Sarotesius melanognathus* Pocock 1898:443, pl. 13, fig. 6 (Description of male, male holotype from East Africa, Ishiromo, H.H.

Johnston leg. 1894/10, NHM 1894.1.15.20, examined); Jäger & Kunz 2005:167, figs. 142–148 (Illustration of male); Platnick 2009.

**Note.**—Pocock (1898) did not state clearly in which country the type locality Ishiromo is situated. However, in Pocock (1896) he mentions Ishiromo as belonging to Nyasaland (= Malawi) and naming H.H. Johnston as collector. Although the exact position of Ishiromo cannot be cleared, Malawi, as only country where *Sarotesius* occurs according to our current knowledge, can be fixed.

**Additional material examined.**—1 male, 3 females, Nyasaland [= Malawi], A. Loveridge, III.1948, Cholo ??? (unreadable word) [= Thyolo], Rheims det. 2006, MCZ 69105.

**Diagnosis.**—Large Palystinae (body length: males 19.3–23.0, females 19.6–21.8) with 3 anterior and 3 similar sized posterior teeth and a flat prosoma. Males can be distinguished mainly by the shape of the embolus (Fig. 1; see also Jäger & Kunz 2005:figs. 142–145): 1) wide at its base, 2) with distal loop, tapering continuously, 3) between basal and distal part with distinct round apophysis, 4) first, prolateral part of distal loop with indistinct membranous lobe. Females (Figs. 2–4) may be recognised by 1) median septum rounded rectangular with concave posterior margin and separated from epigastric furrow, 2) internal duct system with first winding membranous, covering large parts except for anterior median and posterior part, 3) Internal duct system medially with two tapering glandular appendages and two globular appendages.

**Redescription of male (PJ 3212).**—Prosoma length 11.2, prosoma width 11.3, anterior width of prosoma 6.8, opisthosoma length 11.8, opisthosoma width 9.7. Eyes: AME 0.53, ALE 0.50, PME 0.55, PLE 0.45, AME–AME 0.52, AME–ALE 0.96, PME–PME 0.94, PME–PLE 1.65, AME–PME 0.45, ALE–PLE 0.60, clypeus height at AME 0.43, clypeus height at ALE 0.33. Spination: Palp: 131, 001, 2111; legs: femur I–III 313, IV 310; patella I–III 001, IV 000; tibia 2026; metatarsus I–III 2024, IV 3025. Ventral metatarsus III and IV with 1 distal median spine and dense scopula. Leg formula: 2143. Measurements of palp and legs: Palp 14.3 (4.7, 2.2, 2.7, -, 4.7), leg I 53.2 (14.6, 6.4, 13.9, 15.0, 3.3), leg II 56.4 (16.3, 6.6, 16.2, 13.9, 3.4), leg III 39.0 (11.6, 5.1, 10.2, 9.1, 3.0), leg IV 42.4 (12.5, 4.8, 11.1, 10.9, 3.1). Cheliceral furrow without denticles. Promargin of chelicerae with 3 teeth, retromargin with 3 similar sized teeth, one side with a small denticle between the median and proximal tooth.

**Male palp:** As in diagnosis. RTA arising distally on tibia; simple, stout, slightly bent in retrolateral view. Cymbium longer than tibia, without retrolateral bulge. Embolus arising in a 6-o’clock-position on tegulum, tip of embolus prolatero-distad. Basal part of embolus with

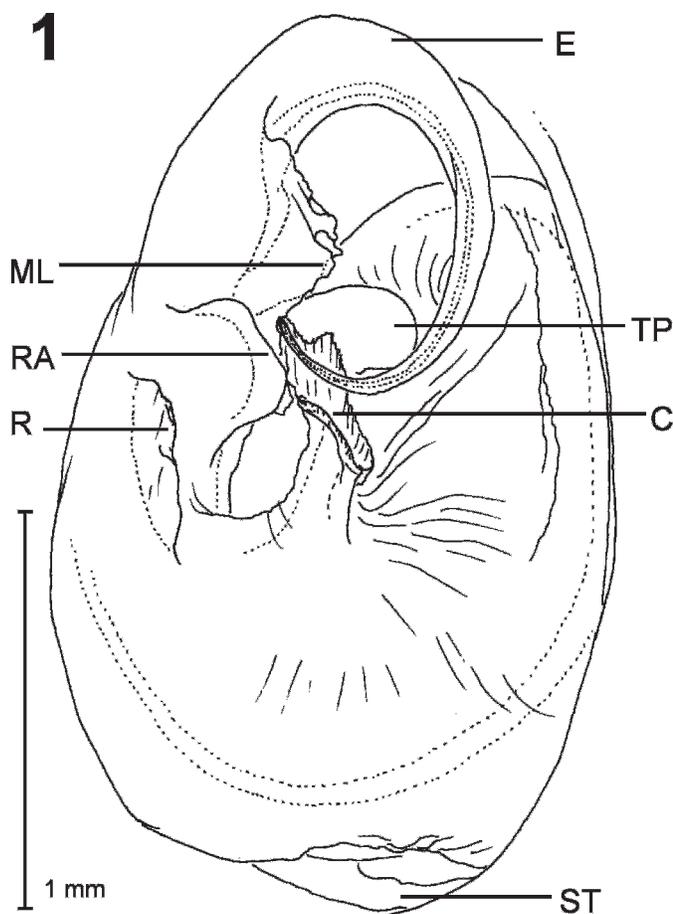


Figure 1.—*Sarotesius melanognathus* Pocock 1898, male from Malawi. Tegulum, retrolatero-ventral view. C = conductor, E = embolus, ML = membranous lobe, R = ridge, RA = round apophysis, ST = subtegulum, TP = tegular process.

ridge. Membranous conductor reduced, situated in the center of tegulum. Behind conductor with dorsal tegular process, which latter arises from the prolateral side between tegulum and subtegulum (Fig. 1). This process is so far unique for the entire family (but compare *Heteropoda homstu* Jäger 2008 in Jäger 2008:fig. 266 for a similar but most likely analogous structure).

**Coloration:** Generally reddish to yellowish brown without distinct pattern. Dorsal shield of prosoma with striae and a longitudinal line medially and one on each side between head part and thorax part; eye region a bit darker. Sternum dark brown with bright radial lines with anterior margin as center. Labium, gnathocoxae and chelicerae dark red-brown. Ventral coxae and appendages yellowish brown with distal segments darker, turning into reddish brown. Opisthosoma grayish brown with dorsal bright patch above heart and four ventral longitudinal parallel lines, the lateral two broader.

**Description of female (PJ 3213).**—Prosoma length 9.1, prosoma width 9.4, anterior width of prosoma 6.0, opisthosoma length 10.7, opisthosoma width 8.5. Eyes: AME 0.57, ALE 0.50, PME 0.40, PLE 0.49, AME–AME 0.35, AME–ALE 0.83, PME–PME 0.80, PME–PLE 1.41, AME–PME 0.35, ALE–PLE 0.55, clypeus height at AME 0.30, clypeus height at ALE 0.29. Spination: Palp: 131, 001, 2111, 1013; legs: femur I 3(2)13, II–III 313, IV 310; patella I–III 001, IV 000; tibia I 2026, II 1014(2028), III–IV 2026; metatarsus I 2021(4), II 1023(2015), III 3024, IV 3035(2033). Ventral metatarsus III and IV with one distal median spine and dense scopula. Leg formula: 2143. Measurements of palp and legs: Palp 10.7 (3.5, 1.9, 2.2, -, 3.1), leg I

35.7 (9.7, 5.0, 8.8, 9.4, 2.8), leg II 39.4 (11.1, 5.2, 10.1, 10.2, 2.8), leg III 26.9 (8.3, 3.9, 6.6, 6.0, 2.1), leg IV 28.6 (9.0, 3.6, 7.1, 6.8, 2.1). Cheliceral furrow without denticles. Promargin of chelicerae with 3 teeth, retromargin with 3 similar sized teeth. Palpal claw like leg claw, with 10 teeth.

**Copulatory organ:** As in diagnosis. Epigynal field rounded, longer than wide, with two slit sense sensilla close to the field. Lateral lobes almost touching each other between median septum and epigastric furrow. Median septum less sclerotised than lateral lobes, bright. Subseptal pocket present, bordered dorsally by membranous part. Copulatory opening situated at anterior margin of median septum. Posterior part of internal duct system running laterally posteriorad.

**Coloration:** As in male. Dorsal shield of prosoma and opisthosoma covered by soft hairs. Sternal pattern with bright patches, rather than with lines. Dorsal opisthosoma with distinct transversal bar at anterior margin, six muscle sigilla distinctly marked with black, middle largest.

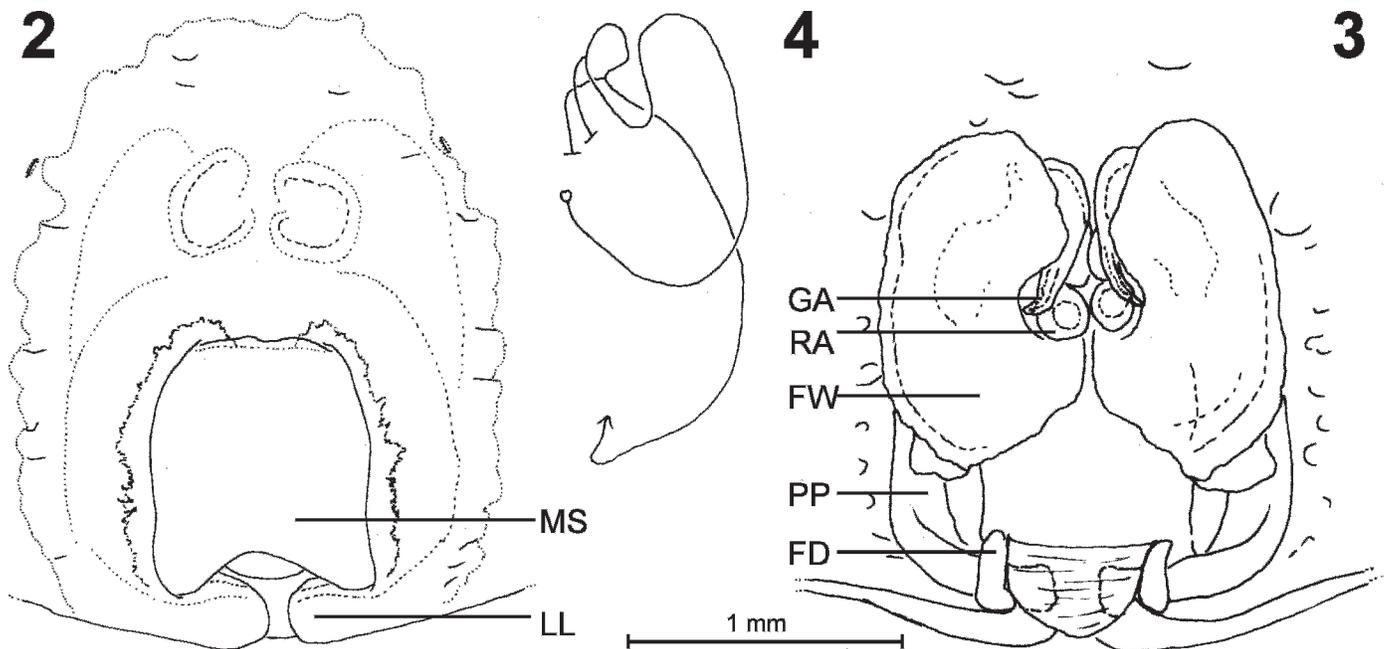
**Variation.**—*Males* (n = 1, holotype): Prosoma length 8.4, opisthosoma length 10.8. Spination: Palpal femur 131; Femur IV 311; Tibia I 202(3)6; Metatarsus III 3124, IV 302(3)6.

*Females* (n = 2): Prosoma length: 9.6, opisthosoma length 10.0–12.2. Spination: palpal patella: 130, Femur I 113/314/313, II 312/313, III 311/312, IV 310; Patella II 002/001, III 000/001; Tibia I–II 2026, III 2016/2026, IV 2006/2026; Metatarsus I–II 2024, III 1024/3024, IV 3025.

**Distribution.**—The species is known from the type locality (East Africa, Malawi, Ishiromo) and from S-Malawi: Thyolo (= Cholo).

**Relationships.**—*Sarotesius melanognathus* is identified as member of the subfamily Palystinae by the cheliceral dentition (3 anterior and 3 similar sized posterior teeth) and the overall similarity of its copulatory organs with those of the genus *Palystes* L. Koch 1875 and other representatives (see also Rheims 2007). Especially, the congruence with copulatory organs of the *Palystes superciliosus* species group (Croeser 1996; Jäger & Kunz 2005) is striking: males have a similarly simple RTA, a distal embolus with a loop, a centrally arising conductor; females exhibit the same general course of the internal duct system with the first, membranous winding running anteriorly then medially, where glandular appendages are observed in almost all species and roundish appendages in some species. The posterior part of the internal duct system runs laterally from the epigastric furrow to the fertilization ducts. Both sexes have a distinctive sternal pattern. Differences in *Sarotesius* are the distance between the median septum and the epigastric furrow (without distance in *Palystes*) and the flat prosoma, the subequal size of the eyes and the large distance between anterior median and anterior lateral eyes (raised prosoma, larger anterior lateral eyes, the latter close to the anterior median eyes in *Palystes*). Several taxa that show similar and intermediate combinations of the character states listed above include “*Olios*” *fasciventris* Simon 1880 from Zanzibar, “*Olios*” *spinipalpis* (Pocock 1901), from South Africa and *Remmius vultuosus* Simon 1897 from Congo, type species of the genus *Remmius* Simon 1897. Without a revision of Palystinae no certain statement can be made on the systematic position of *Sarotesius*.

Peter Jäger is grateful for a grant from the European Union (SYS-RESOURCE) enabling him to visit the collections in the Natural History Museum, London to examine the type of *Sarotesius melanognathus* and additional relevant material of the spider subfamily Palystinae. Cristina Rheims received financial support from the Ernst Mayr Grant from the Museum of Comparative Zoology (MCZ) at Harvard University, the Theodore Roosevelt Memorial fund from the American Museum of Natural History, and from the “Fundação de Amparo à Pesquisa de São Paulo” (FAPESP grants 02/11277-9 and 06/61167-6). We gratefully acknowledge the loan of the material from Malawi by the MCZ processed by Laura Leibensperger and Gonzalo Giribet.



Figures 2–4.—*Sarotesius melanognathus* Pocock 1898, female from Malawi. 2. Epigyne, ventral view. 3. Vulva, dorsal view. 4. Schematic course of internal duct system, dorsal view. FD = fertilization duct, FW = first winding of internal duct system, GA = glandular appendage, LL = lateral lobe, MS = median septum, PP = posterior part of internal duct system, RA = round appendage.

#### LITERATURE CITED

- Croeser, P.M.C. 1996. A revision of the African huntsman spider genus *Palystes* L. Koch 1875 (Araneae: Heteropodidae). *Annals of the Natal Museum* 137:1–122.
- Jäger, P. 2001. Diversität der Riesenkrabbspinnen im Himalaya. Über eine Radiation zweier Gattungen in den Schneetropen (Araneae: Sparassidae: Heteropodinae). *Courier Forschungsinstitut Senckenberg* 232:1–136.
- Jäger, P. 2005. New large-sized cave-dwelling *Heteropoda* species from Asia, with notes on their relationships (Araneae: Sparassidae: Heteropodinae). *Revue Suisse de Zoologie* 112:87–114.
- Jäger, P. 2008. Revision of the huntsman spider genus *Heteropoda* Latreille 1804: species with exceptional male palpal conformations (Araneae: Sparassidae: Heteropodinae). *Senckenbergiana biologica* 88:239–310.
- Jäger, P. & D. Kunz. 2005. An illustrated key to genera of African huntsman spiders (Arachnida, Araneae, Sparassidae). *Senckenbergiana biologica* 85:163–213.
- Platnick, N.I. 2009. The World Spider Catalog, Version 10.0. American Museum of Natural History, New York. Online at <http://research.amnh.org/entomology/spiders/catalog/index.html>
- Pocock, R.I. 1896. Notes on some Ethiopian species of Ischnurinae contained in the collection of the British Museum. *Annals and Magazine of Natural History* (6)17:312–319.
- Pocock, R.I. 1898. The Arachnida from the regions of Lakes Nyassa and Tanganyika contained in the collection of the British Museum. *Annals and Magazine of Natural History* (7)2:429–448.
- Rheims, C.A. 2007. Análise cladística dos gêneros de Sparassidae Bertkau (Arachnida, Araneae). Unpublished Ph.D. thesis, Instituto de Biociências da Universidade de São Paulo, São Paulo, Brazil.

*Manuscript received 23 October 2009, revised 22 December 2009.*