



Revision of the spider genus *Mystaria* Simon, 1895 (Araneae: Thomisidae) and the description of a new genus from the Afrotropical region

ALLET S. HONIBALL LEWIS^{1,3} & ANSIE S. DIPPENAAR-SCHOEMAN^{1,2}

¹Department of Zoology & Entomology, University of Pretoria, Pretoria, 0002 South Africa

²ARC-Plant Protection Research Institute, P/Bag X134, Queenswood, 0121 South Africa

³Corresponding author. E-mail: ahoniball@gmail.com

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Abstract

The spider genera *Mystaria* Simon, 1895 and *Paramystaria* Lessert, 1919 are revised (Mystarini: Thomisidae). About 400 individuals were studied. The approach followed was classical taxonomy using illustrated sexual dimorphic copulatory characters and described morphological characters, photographed or measured. *Paramystaria* is considered a junior synonym of *Mystaria*, based on similarity to the type *M. rufolimbata* Simon, 1895 but with the exclusion of *M. unicolor* Simon, 1895, a species last studied in 1895. *Mystaria unicolor* is re-described and placed in a new genus, *Leroya* **gen. n.**, together with *L. silva* **sp. n.** (♂♀, DRC) which is recognised as the type species. *Mystaria* now contains 13 well-defined species, four of which are in new generic combinations. Four males are described for the first time, and eight new species. Re-described species include *M. flavoguttata* Lawrence, 1952, *M. lata* Lawrence, 1927, *M. rufolimbata* and *M. variabilis* Lessert, 1919. Subspecies elevated to species level include *M. occidentalis* Millot, 1942 and new species descriptions in-

clude *M. budongo* sp. n. (♂, Rwanda, DRC, Uganda), *M. irmatrix* sp. n. (♀♂, Mozambique, South Africa) *M. lindaicapensis* sp. n. (♀♂, South Africa), *M. mnyama* sp. n. (♀♂, South Africa), *M. oreadae* sp. n. (♀, Rwanda, DRC), *M. savannensis* sp. n. (♀♂, Botswana, South Africa, Zambia, Zimbabwe), *M. soleil* sp. n. (♀♂, Uganda, Kenya) and *M. stakesbyi* sp. n. (♀♂, Ghana, DRC, Kenya, Rwanda, Tanzania, Uganda). The insufficiently known taxa *Paramystaria decorata* Lessert, 1919 and *P. variabilis delesserti* Caporiacco, 1949 are also transferred to *Mystaria*. Keys are provided to species and related tribal genera, with geographic distributions of species recorded. Revisions of more genera are needed, in particular of those genera related to *Mystarina*, before phylogenetic relationships can be considered.

Key words: crab spiders, cheliceral teeth, *Leroya*, *Mystarina*, *Paramystaria*, synonym, taxonomy

Introduction

This paper, the 11th in a series by Dippenaar-Schoeman on the family Thomisidae of the Afrotropical region, forms part of a revision of the tribe *Mystarina*; the genera *Mystaria* Simon, 1895 and *Paramystaria* Lessert, 1919 were revised (Table 1). The genus *Mystaria* was described by Simon (1895) represented by the type species *M. rufolimbata* Simon, 1895 and *M. unicolor* Simon, 1895, both collected from Sierra Leone. In the revision, these two species were carefully studied and found to have no similar diagnostic characters which indicated that they may not be closely related, and consequently, are not considered to represent the same genus.

TABLE 1. Six tribes of the Dietinae of the Afrotropical region and their associated genera as recognised by Simon (1895) and listed by Roewer (1954).

1 Amyciaeini	2 Apyretini	3 Dietini	4 Emplesiogonini	5 <i>Mystarina</i>	6 Tagulini
<i>Amyciaea</i> Simon, 1885	<i>Apyretina</i> Strand, 1929	<i>Diplotychus</i> Simon, 1903	<i>Emplesiogonus</i> Simon, 1903	<i>Mystaria</i> Simon, 1895	<i>Tagulis</i> Simon, 1895
<i>Hewittia</i> Lessert, 1928	<i>Lampertia</i> Strand, 1907	<i>Oxytate</i> Koch, 1878	<i>Plastonimus</i> Simon, 1903	<i>Paramystaria</i> Lessert, 1919	
	<i>Zametopias</i> Thorell 1892	<i>Phaenopoma</i> Simon, 1895	<i>Pseudoporrhopis</i> Simon, 1886	<i>Sylligma</i> Simon, 1895	
		<i>Ostanes</i> Simon, 1895			

A second genus, *Paramystaria* from Tanzania was described 24 years later by Lessert (1919), and included two species, *P. variabilis* Lessert, 1919, the type species, and *P. decorata* Lessert, 1919. Another two species were subsequently added, namely, *P. lata* Lawrence, 1927 from Namibia, and *P. flavoguttata* Lawrence, 1952 from the Democratic Republic of Congo (DRC). Due to colour variation, differing eye distances and cephalothorax form in *P. variabilis*, two subspecies were recognised by Millot and Caporiacco, namely, *P. v. occidentalis* Millot, 1942 from Republic of Guinea and *P. v. delesserti* Caporiacco, 1949 from Kenya.

Lessert (1919) diagnosed *Paramystaria* and the type, *P. variabilis* on the presence of cheliceral teeth on the pro- and retromargin of the cheliceral furrow (Figs 1–5). However, after examining the type species of *Mystaria*, *M. rufolimbata*, it was also proven to have three small teeth on the cheliceral margins as was observed by Jézéquel (1964). The presence of these small teeth was observed in all the species described in *Paramystaria*. Such small characters possibly may not have been visible to Simon (1895) without modern technology such as SEM and sexually dimorphic characters such as the copulatory organs were not yet used to identify species. On the other hand, teeth on chelicerae in *M. unicolor* are absent, only long setae on the edge of the promargin are present.

Mystaria rufolimbata, and all species of *Paramystaria* share similar morphology, not only with respect to their chelicerae, but also in eye patterns, clypeal length, variable abdominal and leg patterns and copulatory organs. The median ocular quadrangle (MOQ) is small with clypeal length equal to or slightly shorter than MOQ length. Apparent individual abdominal patterns vary within and/or between species. Copulatory organs in females include simple epigynes and complex coiling intromittent canals while males have a disc-shaped tegulum, long, coiling emboli and delicate retro-lateral tibial apophysis (RTA).

Based on the similarities in all of these characters, *Paramystaria* is here recognised as a junior synonym of *Mystaria* and all the species are transferred to *Mystaria*. However, this decision entails the exclusion of *M.*

- MOQ area slightly wider than long, anteriorly slightly narrower than posteriorly (Figs 139, 140) *Leroya* **gen. n.**
- 4. Carapace with leaf-shaped setae next to lateral eyes. *Tagulis* Simon, 1895 (Tagulini)
- Carapace without leaf-shaped setae next to lateral eye area 5
- 5. Carapace with numerous long erectile setae on posterior-thoracic edge, fovea and laterad to eye region, ant-like, chelicerae without cheliceral teeth, body and legs usually uniform brown *Sylligma* Simon, 1895 (Mystarini)
- Carapace only sometimes with a few long setae, not ant-like, but with large abdomens compared to carapace, chelicerae with three cheliceral teeth, body and legs usually with markings. *Mystaria* Simon, 1895 (Mystarini)

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References

- Benjamin, S.P. (2011) Phylogenetics and comparative morphology of crab spiders (Araneae: Dionycha, Thomisidae). *Zootaxa*, 3080, 1–108.
- Benjamin, S.P. & Jalee, Z. (2007) Redescription of *Tagulis mystacinus* (Araneae: Thomisidae) from Sri Lanka. *Zootaxa*, 1560, 63–68.
- Benjamin, S.P., Dimitrov, D., Gillespie, R.G. & Hormiga, G. (2008) Family ties: molecular phylogeny of crab spiders (Araneae: Thomisidae). *Cladistics*, 24, 708–722.
<http://dx.doi.org/10.1111/j.1096-0031.2008.00202.x>
- Caporiacco, L. di (1949) Aracnidi della Colonia del Kenya raccolti da Toschi e Meneghetti negli anni 1944–1946. *Commentationes Pontificiae Academiae Scientiarum*, 13, 309–492.
- Fannes, W., De Bakker, D., Loosveldt, K. & Jocqué, R. (2008) Estimating the diversity of arboreal oonopid spider assemblages (Araneae, Oonopidae) at Afrotropical sites. *Journal of Arachnology*, 36, 322–330.
<http://dx.doi.org/10.1636/ct07-128.1>
- Jézéquel, J.F. (1964) Araignées de la savane de Singrobo (Côte d'Ivoire). III.-Thomisidae. *Bulletin de l'Institut français de Afrique Noire*, 26, 1103–1143.
- Kranz, G.W. & Walter, D.E. (2009) *A manual of Acarology*. 3rd Edition. Tech University Press, Texas, 807 pp.
- Lawrence, R.F. (1927) Contributions to a knowledge of the fauna of South-West Africa V. Arachnida. *Annals of the South African Museum*, 25, 1–75.
- Lawrence, R.F. (1952) A collection of cavernicolous and termitophilous Arachnida from the Belgian Congo. *Revue de zoologie et de botanique africaines*, 46, 1–17.
- Lessert, R. de (1919) Araignées du Kilimandjaro et du Merou (suite). III. Thomisidae. *Revue suisse de zoologie*, 27, 99–234.
- Lessert, R. de (1925) Araignées du sud de l'Afrique (suite). *Revue suisse de zoologie*, 32, 323–365.
- Lessert, R. de (1936) Araignées de l'Afrique orientale portugaise recueillies par MM. P. Lesne et H.-B. Cott. *Revue suisse de zoologie*, 43, 207–306.
- Lessert, R. de (1943) Araignées du Congo Belg (III). *Revue suisse de zoologie*, 50, 305–338.
- Lyle, R. & Haddad, C.R. (2009) *Planochelas*, a new genus of tracheline sac spiders from West and Central Africa (Araneae: Corinnidae). *Annals of the Transvaal Museum*, 46, 91–100.
- Millot, J. (1942) Les araignées de l'Afrique Occidentale Français: Thomisidae. *Mémoires de l'Académie des sciences de l'Institut de France*, 65, 1–82.

- Ono, H. (1988) *A revisional study of the spider family Thomisidae (Arachnida, Araneae) of Japan*. National Science Museum, Tokyo, 252 pp.
- Platnick, N.I. (2014) *The world spider catalog, Version 12.0*. American Museum of Natural History. Available from: <http://research.amnh.org/entomology/spiders/catalog/index.html> (Accessed March 2014)
- Roewer, C.F. (1954) *Katalog der Araneae 1758 bis 1940. Vol. 2*. Institut Royal des Sciences Naturelles de Belgique, Bruxelles, 923 pp.
- Seyfulina, R.R. & De Bakker, D. (2008) Linyphiid spiders (Araneae, Linyphiidae) from African forest canopies. *Revista Iberica de Arachnologia*, 15, 67–79.
- Seyfulina, R.R. & Jocqué, R. (2009) *Venia kakamega* gen. n., sp. n., a new, canopy-dwelling, Afrotropical erigonine spider (Araneae, Linyphiidae). *Journal of Afrotropical Zoology*, 5, 3–13.
- Simon, E. (1895) *Histoire naturelle des Araignées. Vol. 1*. Roret, Paris, 1084 pp.
<http://dx.doi.org/10.5962/bhl.title.51973>