Delimitation and description of 19 new genera, a subgenus and a species of Salticidae (Araneae) of the world

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Abstract


Species Author correction Ylenus arenarius Simon*, 1868 (see footnote on page 29).

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Introduction

Traditional system of Salticidae, inherited after Simon (1901-1903), with numerous partial changes introduced by Petrunkevitch (1928), and fragmentary improvements proposed by many modern authors, is insufficient to accommodate hundreds of new taxa discovered during last 50 years. Radically new approach, based on gene sequencing is being proposed by Maddison (listed in his paper of 2015) and collaborators, but it concentrates on phylogeny, with little application to actual identification and classification of over 600 genera and 4600 better known species (5856 nominal species listed in World Spider Catalog) of that family.
Morphological approach to identification, better answering needs of students of Salticidae of poorly known geographical faunae, is being proposed and summarized by Prószyński (2016a, 2016b), with division of the family into informal groups of genera (with names written in capital letters and ending with “-INES” – like “MYRMARACHNINES” to distinguish from names of traditional subfamilies), temporarily substituting for insufficiently documented subfamilial division. The display of diagnostic characters of 4600 species suggests advisability of further shifting of species and genera.

The present paper proposes partial rationalization of very large genera, containing about 100 species each, by splitting them into more homogenous groupings of species, easier to identify and classify. It proposes also wide application of other diagnostic characters, tested mainly in taxonomic research during 60 years practice of the author and his collaborators, and some other authors.

**Material and Methods**

Paper provides original interpretation of synthetic comparison of main diagnostic drawings documentation of studied genera, published originally in a number of publications in years 1968-2003 of the Authors, when necessary complemented by papers of other Authors. All drawings copied in the present paper are interpreted in the light of diversity of 4600 diagnostic drawings of Salticidae, displayed in Prószyński (2016a, b) “Monograph of Salticidae (Araneae) of the World 1995-2015” (Part I: is available at [http://www.peckhamia.com/salticidae/Subfamilies/](http://www.peckhamia.com/salticidae/Subfamilies/), part II at [http://www.peckhamia.com/salticidae/](http://www.peckhamia.com/salticidae/). To facilitate comparison, copies of all diagnostic drawings and photographs are shown in reduced scale, full scale originals of these are available in original publications indicated.

**Informal group of genera MYRMARACHNINES**

**Representative species.** Myrmarachne tristis (Simon, 1882).

Group of genera MYRMARACHNINES (as documented by Prószyński 2016a) was considered difficult for identification and classification because of wide diversity of habitus appearance of its 266 nominal species, due to irregular protective mimicking of local species of ants (Figs. 1A–F, 4). At the same time body color pattern of studied species is deeply changed by preservation in alcohol, exact documentation of body coloration by color photographs is available for a insufficient number of species, made mainly during last 20 years, promoted mainly by amateur-photographers (see sample Fig. 1). In addition, many authors, have simplified documentation of genital organs, they provided, especially internal structures of epigyne.

The solution of classification of these spiders lays in precise study of fine details of spermathecae and copulatory ducts of females (Figs. 1G–K, 2), as successfully demonstrated by Galiano (1968), but neglected by subsequent authors, it was promoted again by the present Author from 1992 onwards, including revision of 20 Philippine species in 1997, results of which were included into the Internet Database of Salticidae 1995 – 2015 (Prószyński 20016a, b). The main criterion permitting to separate successfully 157 species demonstrated on comparative plates (Prószyński 2016a) are exceptional "pipes-like" sclerotized spermathecae, stretching parallel along median axis of epigyne. Another, heretofore disregarded diagnostic characters, are membranous copulatory ducts, making large coils, running from almost indiscernible copulatory openings, usually slit-like and pressed to median septum of epigyne, towards beginning of spermathecae, near posterior rim of epigyne. Display of copulatory ducts, requires clearing and staining (the best in Chlorazol Black E) of epigyne, which deters many Arachnologists. External appearance of epigyne may be accessory character for classification, provided their internal structures are understood, pictures of spermathecae translucent through tegument of epigyne are misleading.

Male palps are largely uniform (Figs. 3A–K), help to separate the whole group of MYRMARACHNINES from other ant-like genera, but are insufficient for classification of genera and species within the group. They have oval, or almost circular, bulbous, encircled with coils of embolus hidden inside semi translucent sheath. Spermophor is broad, runs along margin of bulbus, often making additional loop, small and thin, before entering embolus. Tibial apophysis (RTA) short, in some genera twisted corkscrew-like and with flange, in other straight. Pedipalpal tarsus in females is broadened, misleadingly resembling male cymbium. Male chelicerae in many genera disproportionately long, with row of numerous
individual teeth along internal edges, fang is very long, in some genera, however, chelicerae are short and teeth make compact group, often with common, sclerotized basis. In females chelicerae are short.

**Gen. Myrmarachne MacLeay, 1839**  
Figures 1A–D, 2A–C, 3A–B

**Type species.** *Myrmarachne melanocephala* MacLeay, 1839.  
**Documentation studied.** Comparative diagnostic drawings of 103 species in Prószyński (2016a) at http://www.peckhamia.com/salticidae/q24-Myrmarachne.html, and original literature.  
**Remarks.** Representative, most speciose genus of the informal group of genera MYRMARACHNINES restricted now to *Myrmarachne tristis* and *formicaria* groups of species of Wanless (1978), containing 103 identifiable species, there are also 106 unrecognizable nominal species and 128 synonyms. Females of all these species can be identified by having loop-like detour in the anterior third of “pipes-like” spermathecae (Figs. 2A–C). Males are recognizable by corkscrew-like, short tibial apophysis with flange, and by additional thin loop of spermophor in male palps (Figs. 3A–B). Other characters, popularly used, are unreliable and do not permit to separate these spiders from other genera: body shape is variable, with various constrictions of carapace and abdomen as well as color pattern (Figs. 1A–D), chelicerae of males are enormously enlarged, but vary, sometimes as long as carapace, but may be longer, or shorter. The copies of almost all diagnostic drawings of *Myrmarachne* available in the world literature, as well as the list of all nominal species and synonymic names are given in Prószyński (2016a, b).  
**Distribution.** *Myrmarachne* (sensu stricto) occurs in warm and temperate areas of the Old World, Australia and Pacific Islands, with distributional centers in tropical Africa and Asia. One species migrated recently to North America.

**Gen. Myrmage Prószyński, 2016, gen. n.**  
Figures 1G, 3D

**Type species.** *Myrmarachne gedongensis* Badcock, 1918.  
**Documentation studied.** Comparative diagnostic drawings of 3 species in Prószyński (2016a) and original literature.  
**Etymology.** Name combines words *Myrmarachne* and *gedongensis*, grammar gender assumed feminine.  
**Diagnosis.** Spermathecal pipes are straight tubes of equal diameter along the whole of their length, without loops or dilatations, their entire internal surface is covered by minute spines (Fig. 1G). Pocket single, very short, located behind proximal ends of “pipes”. Male palps with cymbium broad, distinct spermophor along the margin of bulbus, without additional thin loop (Fig. 3D). Palpal tibia apophysis double bent, with flange. Body of both sexes narrow, carapace with dorsal constriction, thorax sloping. Abdomen pear shaped, anteriorly narrowing, broadest in posterior half, with constriction in 1/3rd of length, there are two dorsal sclerites, the anterior is narrow, the posterior is round. The color pattern of alive uniformly black, preserved in alcohol fade to brown, locally light brown, pink or even yellow. Chelicerae of males long and high, of females short and broad.  
**Description** of type species – see Edmunds & Prószyński (2003: 308, Figs 48-52).  
**Remarks.** Yamasaki and Ahmad (2013) call attention to diversity among original specimens of Badcock, as well as difference in the spelling in original labels.  
**Distribution.** Genus known from Borneo and Malay Peninsula.  
**Composition.** The species transferred from the genus *Myrmarachne* MacLeay, 1839: *Myrmage gedongensis* (Badcock, 1918), comb. n., also *Myrmage* sp. Danum Valley, Sabah. *Myrmarachne dishani* Benjamin, 2015 and *M. imbellis* (Peckham & Peckham, 1892) from Sri Lanka, both described in Benjamin (2015: 10, 15) should be also placed in this genus.
Figure 1. Body color pattern and the internal structure in the informal group of MYRMARACHNINES: A – B Myrmarachne formicaria, female and male; C – D Myrmarachne smaragdina, female and male; E – F Myrmaplata plataeoides, female and male. The internal structure of epigyne in: G – M. gedongensis, H – M. alticephalon, I – Toxeus maxillosus, K – M. yamasaki. The sources of photos: A – B – ©Photo J. Lissner; C – D – ©R. Whyte; E – F ©Photo H.K. Tang (from: http://peckhamia.com/photographers.html); G, H, I, K – T. Yamasaki & A. H Ahmad, Zootaxa, 2013, 3710: 526, Fig. 19E; 538, Fig. 5A; 538, Fig. 31E; 534, Fig. 27G. © 2013 Magnolia Press. By courtesy. Remark. Color photos of 13 other species of MYRMARACHNINES, both in life and preserved, together with excellent diagnostic drawings of palps and epigyne, are provided in recent paper by Benjamin (2015).
NEW GENERA OF SALTICIDAE

Figure 2F

Type species. Myrmarachne guaranitica Galiano, 1969.

Eymology. Name combines words Myrmarachne and guaranitica, grammar gender assumed female.

Diagnosis. "Pipes-like" sclerotized spermathecae very thin and long, stretching parallel along the median axis of epigyne and extending right to the posterior rim of epigyne, anteriorly terminated by small, transverse oval chambers with thin internal spines (Fig. 2F). The coils of copulatory ducts developed in the posterior third of epigyne, it is not clear from the published drawings whether are they membranous, or have somewhat thicker walls. Pocket narrow and long. The structure of epigyne is not comparable to any known S and C American genus of MYRMARACHNINES, resemble Asiatic genus Bocus Peckham & Peckham, 1892, but there are no other premises for that comparison. Carapace low and broad, slightly constricted dorsally behind eyefield.

Distribution. Argentina.


Remarks. Only single, damaged female specimen is known, described and drawn by Galiano (1969), other characters are unknown. Classification as separate genus is tentative, due to the striking difference of internal structures of epigyne from all other genera, pending confirmation by new male and females specimens, none were found during last 48 years.


Figure 2D


Documentation studied. Comparative diagnostic drawings of 2 species in Prószyński 2016a and original literature.

Eymology. Name combines words Myrmarachne and nubilis, grammar gender assumed female.

Diagnosis. Female. "Pipes-like" sclerotized spermathecae resemble these in Myrmarachne, however, their transversal detour is turned 90 degrees anteriorwards, as a result double coils of detour lie parallel to the main axis of epigyne, making compact group with the terminal parts of spermathecae (Fig. 2D). The presence of coils of copulatory ducts is distinctly marked, posteriorly to spermathecae on Wanless (1978) drawings, but without details, so their shape is unknown. Pocket is proportionately long and narrow, located between the posterior edge of epigyne and spermathecae. Pedicel relatively short, the abdomen of females not constricted, carapace with indistinct, shallow dorsal constriction.

Males unknown, without the knowledge of their palps the relationship with Myrmarachne is tentative.

Distribution. Madagascar.


Composition. Two species from Madagascar, considered as Myrmarachne nubilis group of species by Wanless (1978: 110-113), are transferred from genus Myrmarachne MacLeay, 1839: Myrmanu mahasoa (Wanless, 1978) comb. n., M. nubilis (Wanless, 1978) comb. n.

Gen. Myrmapana Prószyński, 2016 gen. n.
Figures 2I, 3C, 4E

Type species. Myrmarachne panamensis Galiano, 1969.

Documentation studied. The comparative diagnostic drawings of 5 species in Prószyński 2016a and original literature.
**Etymology.** Name combines words *Myrmarachne* and *panamensis*, grammar gender assumed female.

**Diagnosis.** Female. "Pipes-like" sclerotized spermathecae are relatively short, with broad anterior dilatation (Fig. 2I), resembling Asiatic genera *Emertonius* Peckham & Peckham, 1892 and *Toxeus* Koch C.L., 1846. Copulatory ducts are not demonstrated in drawings of internal structures of epigyne, by analogy to other genera could have shape of membranous coils. Males have almost circular bulbus, encircled with coils of embolus inside semitranslucent sheath. Spermophor broad with distinct additional loop. Tibial apophysis (RTA) short, straight, slightly inclined (Fig. 3C). Male chelicerae long, dorsally flattened and broad, ventrally with row of tiny individual teeth along internal posterior edge, fang is very long. Body is not constricted (Fig. 4E).


**Distribution.** South and Central America.

**Composition.** The following species are transferred from genus *Myrmarachne* MacLeay, 1839: *Myrmapana brasiliensis* (Mello-Leitao, 1922) comb. n., *M. centralis* (Peckham & Peckham, 1892) comb. n., *M. mocamboensis* (Galiano, 1974) comb. n., *M. panamensis* (Galiano, 1969) comb. n., *M. parallela* (Fabricius, 1794) comb. n.

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**Gen. Myrmapeni Prószyński, 2016 gen. n.**

Figures 2E, 3E, 4G–H

**Type species.** *Myrmarachne penicillata* Mello-Leitao, 1933 from Brazil.

**Documentation studied.** Comparative diagnostic drawings of 3 species in Prószyński (2016a) and original literature.

**Etymology.** Name combines words *Myrmarachne* and *penicillata*, grammar gender assumed feminine.

**Diagnosis.** Female. Spermathecae have typical for MYRMARACHNINES "pipes-like" appearance, but with unusual wide divergence of their proximal parts (that is topographically posterior), in addition their proximal ends are twisted into a small coil (Fig. 2E). Copulatory ducts are not marked on drawing of epigyne, presumably can be membranous, like in other related genera. External epigyne is unusually broad, with "windows" anterior and set obliquely, pocket small, posterior. As only one female is known in this genus, *Myrmapeni chickeringi* (Galiano, 1969) comb. n, it is impossible to tell whether are they representative for the whole genus, or unique for this species only.

Male palps are characterized by unusual bunch of long, black setae on palpal tibia, near apophysis (Fig. 3E). Palpal tibia is short and relatively wide, bulbus circular, with distinct additional thin loop of spermophor. Body with shallow abdominal, dorsal constriction, chelicerae with ventral lobe, dorsally flat, broad (Figs. 4G–H).


**Distribution.** Central and South America, however, one species is found in Sarawak, another one in Madagascar.

**Composition.** The following species are transferred from genus *Myrmarachne* MacLeay, 1839: *Myrmapeni borneensis* (Peckham, Peckham, 1907) comb. n., *M. chickeringi* (Galiano, 1969) comb. n., *M. diegoensis* (Wanless, 1978) comb. n., *M. penicillata* (Mello-Leitao, 1933) comb. n., *M. simplexella* Roewer, 1951 comb. n., *M. sumana* (Galiano, 1974) comb. n.

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**Gen. Myrmaplata Prószyński, 2016 gen. n.**

Figures 1E–F, 2G, 3H

**Type species.** *Salticus plataleoides* Pickard-Cambridge O. 1869.

**Documentation studied.** Comparative diagnostic drawings of 5 species in Prószyński (2016a) and original literature.
**Etymology.** Name combines words *Myrmarachne* and *plataleoides*, grammar gender assumed feminine.

**Diagnosis.** Female. Spermathecal "pipes" long and thin, differing from *Myrmarachne* by absence of transversal detour, terminated at the anterior end by discrete, round or oval small chamber, with internal spines (Fig. 2G). The proximal (topographically posterior) end of pipe is somewhat swollen, like in *Bocus*. Copulatory ducts, visible after staining, make large membranous coils, connecting slit-like, almost indiscernible, copulatory openings pressed to median septum of epigyne, with proximal ends of spermathecae, near posterior rim of epigyne. Males differ from majority of MYRMARACHNINES by broad basis of embolus, gradually narrowing. In *M. plataleoides* loop of embolus is shorter, overlaying only anterior half of a bulb, but in *M. turriformis* and *M. wanlessi* encircling entire bulbus, spermmophor is not visible on enclosed drawings (Fig. 3H). Tibial apophysis is short, straight and conical. Body of males is very long, with strongly pronounced body constriction, cephalic part twice higher than thorax, block like. Chelicerae are very long, swollen apically, pedicel is long (Figs. 1E–F). Female's abdomen oval, without constriction, pointed posteriorly. Philippine *Myrmarachne assimilis* Banks, 1930 and *Myrmarachne markaha* Barrion, Litsinger, 1995 have similarly elongate chelicerae, but their palps and epigyne indicate that belongs to true *Myrmarachne*.


**Remark.** *Myrmaplata plataleoides*, recognizable at the first glance and common in South and South East Asia, is associated with large, yellow *Oecophylla* ants, broadly distributed in tropical Asia, Africa and Australia and popularly known because builds large aerial nest from living leaves of trees. However, in Australia, local *Oecophylla smaragdina* is associated with *Myrmarachne smaragdina* Ceccarelli, 2010, externally very similar to *Myrmaplata plataleoides* (documented by photos by R. Whyte, see also Ceccarelli (2010: 250) but having spermathecae of true *Myrmarachne*. Similarity of their habitus is apparently due to mimicking the same model ant.

**Distribution.** India, Sri Lanka, Peninsular Malaysia, Singapore, China.


**Gen. Myrmatheca Prószyński, 2016 gen. n.**

**Figures 1H, 3J, 4F**

**Type species.** *Myrmarachne alticephalon* Yamasaki & Ahmad, 2013.

**Documentation studied.** Comparative diagnostic drawings of 2 species in Prószyński (2016a) and original literature.

**Etymology.** Name combines words *Myrmarachne* and *spermatheca*, assumed grammar gender - feminine.

**Diagnosis.** Female. "Pipes-like" sclerotized spermathecae are modified in a pair of huge distal chambers in anterior part of epigyne, resembling two tightly pressed sclerotized hemispheres, followed by minute, thin and short, thread-like proximal parts of *pipes*, with slightly more distinct, transverse parts, expectedly harboring the armatures of junction with copulatory duct, and of a scent gland (Fig. 1H). These should be examined under higher microscope power. Membranous copulatory ducts seem to coil around distal parts of "pipes", but are not sufficiently visible on enclosed photo. Pocket very small and thin, moved ahead towards the center of epigyne, reaching the level of spherical chambers of spermathecae. Antero-median rim of "windows", on both sides of posterior pocket, is light sclerotized.

Males have long, anteriorly swollen chelicerae. Bulbus oval, spermmophor broad, with indistinct, thin duct anteriorly. Tibial apophysis short, inclined and waving, apically narrowing (Fig. 4F). Body elongate, with very high, block like cephalic part. Male chelicerae very long, dilated in apical half.

**Remarks.** Grace to excellent photograph of stained microscopic slide by T. Yamasaki, we have learned structure of the astonishing spermathecae of his *Myrmatheca alticephalon*, whose details can be interpreted only by comparison with other genera of MYRMARACHNINES.
More diagnostic documentation - see at: http://www.peckhamia.com/salticidae/q24-Myrmat.htm
and, especially, Yamasaki & Ahmad (2013: 507, fig. 4A-G, 5A-E).

**Distribution.** Two species in Borneo: Sabah, of which one is pending description. A specimen reported from Indonesia: Sumatra: Padang pending confirmation of conspecificity, the third species is described from Madagascar.

![Figure 2](image-url) Diversity of internal structures of epigyne in MYRMARACHNINES: A – *Myrmarachne tristis*, B – C – *M. ramosa* compared with its alleged synonym *M. melanoccephala*, D – *Myrmanu nubilis*, E – *Myrmapeni chickeringi*, F – *Myrmagna guaranitica*, G – *Myrmaplata plataleoides*, H – *Myrmavola galianoae*, I – *Myrmapana panamensis*, J – *Myrnele peckhami*. Sources: A, G, H – J. Prószyński, ©Annales zoologici, 2003, 51, 3: 109, Fig. 452; 1992, 44, 9: 85-186, Figs 87; 2001, 51 (4): 520-521, Figs 10; B – J. Prószyński, ©Bulletin of the British Arachnological Society, 2003, 12: 301, Fig. 29; C – Edwards & Benjamin, Zootaxa 2009, 2309: 10, Fig. 5C; D, J – F.R. Wanless, Bulletin of the British Museum (Natural History) (Zoology series) 33: 111, Fig. 72B; 119, Fig. 80D; 143, Fig. 70; Reproduced with the permission of the Trustees of the Natural History Museum, London; E, F – M. E. Galiano, Revista del Museo Argentino de Ciencias naturales Bernardino Rivadavia, Entomologia, Buenos Aires, 3: 143, Figs. 65; 136, Fig. 66
Composition. The following species are transferred from genus *Myrmarachne* MacLeay, 1839: *Myrmatheca alticephalon* (Yamasaki, Ahmad, 2013) comb. n., *Myrmatheca ransoni* (Wanless, 1978) comb. n., undescribed species was photographed by P. Koomen. *Myrmavola* Prószyński, 2016 comb. n. Figures 1K, 2H, 3G, K, 5A–D


Documentation studied. Comparative diagnostic drawings of 8 species in Prószyński 2016a and original literature.

Etymology. Name combines words *Myrmarachne* and *volatilis*, assumed grammar gender - feminine.

Diagnosis. Female. Spermathecae "pipes-like", stretching parallel along median axis of epigyne, differ from *Myrmarachne* by the lack of spermathecal transverse detour, instead the apical end of pipes is twisted into a single loop, much broadened, having internal wall covered by short spines resembling that in *Myrmele*, posterior parts of pipes are very thin (Fig. 1K, 2H). Copulatory ducts, invisible without staining, make membranous coils, running from copulatory openings, near the median septum of epigyne, towards the posterior end of spermathecae, near the posterior rim of epigyne. Posterior pocket small, diverse in particular species.

Male palps with bulbous oval, encircled with the coils of embolus, spermophor running along the posterior part of the margin of bulbus, it has narrow branch running anteriorwards, but disappearing under the coil of embolus without completing small loop in the visible part of bulbus (Fig. 3G, K). As some irregularities in appearance of spermophor are visible in several genera of MYRMARACHNINES, in difference to typical *Myrmarachne*, this structure deserves closer attention in future research. Tibial apophysis (RTA) inclined and gently bent, but not twisted. Male chelicerae medium long, with ventral edge lobate anteriorly, with a group of somewhat longer teeth. Body without constrictions, with thorax gently sloping, abdomen oval, pointed posteriorly (Figs 5A–D). Body in *M. christae* longer. Color pattern in some species with dark transverse band across abdomen, which is not common in MYRMARACHNINES.


Note on placement. Edwards & Benjamin (2009: 14) were right proposing to remove *Damoetas galianoae* and *D. christi* from the genus *Damoetas* and pointing at the similarities of the single ventral loop in their spermathecal complex to the the *volatilis* and *electrica* groups of *Myrmarachne*. However, palp appearance, they based upon, is poor character in separating genera in MYRMARACHNINES and body shape is entirely unreliable, because is influenced by mimicking various ants, or other insects. This coincides with rearrangement of the genus *Myrmarachne* into smaller genera, and particularly new genus *Myrmavola* Prószyński, 2016, into which I hereby transfer *M. galianoae*, as a type species. This move replaces the species name "galianoae" superfluous, because *Damoetas galianoae* was never used in the primary literature in combination with genus "*Myrmarachne*", so it is not a homonym.

Composition. The genus contains two species described originally in the genus *Damoetas* Peckham & Peckham, 1886: *M. christae* (Prószyński, 2001), comb. n., and *M. galianoae* (Prószyński, 2001), comb. n. The following species are transferred from genus *Myrmarachne* MacLeay, 1839: *Myrmavola andrewi* (Wanless,1978), comb. n., *M. brevichelicera* (Yamasaki & Ahmad, 2013), comb. n., *M. globosa* (Wanless, 1978), comb. n., *M. volatilis* (Peckham & Peckham, 1892), comb. n., *M. yamanei* (Yamasaki, 2012), comb. n.. Species *M. yamasakii* Prószyński, sp. n. is described as new (see below).

*Myrmavola yamasakii* Prószyński, 2016 sp. n.

Figures 1K, 2H, 3K, 5B–D


Ecol. Mont., 7, 2016, 4–32
NEW GENERA OF SALTICIDAE

Etymology. Named for Dr. Takeshi Yamasaki, an author of excellent papers on Myrmarachne.

Diagnosis. Resembling Myrmavola galianoae (Prószyński, 2001), comb. n., from which differs distinctly by small and narrow posterior pocket of epigyne, fitted into wide span between proximal ends of spermathecal "pipes" (Fig. 1K), in M. christae (Prószyński, 2001), comb. n., the posterior pocket is also small and narrow, but the posterior ends of "pipes" are very close each other and the pocket is fitted tightly.

Male bulbus oval with open additional loop, tibial apophysis slightly longer than in Myrmarachne, gently waving apically, but not twisted, there is no flange (Fig. 3K). Body shape and color pattern similar to the remaining species of the genus, without any resemblance to Myrmarachne (Figs. 5B–D).

For full description - see Yamasaki & Ahmad (2013: 534-535).

Nomenclatorial note. Original name of this species - Myrmarachne mariaelenae used by Yamasaki & Ahmad, 2013 is a result of double mistake, the first - assumption by Edwards & Benjamin (2009: 14) that the species Damoetas galianoae Prószyński, 2001 should be transferred to the genus Myrmarachne, where would become junior homonym of Myrmarachne galianoae Cutler, 1981. Hence they replaced specific name by "mariaelenae". Because classification to Myrmarachne cannot be sustained, the replacement name become superfluous as never used in the primary literature. The second mistake was identification of the species described by Yamasaki & Ahmad as conspecific with "mariaelenae" - that is originally "galianoae", as these specimen are in fact not conspecific, it become necessary to describe them under new name. Informed on the changed status of this species Dr. Yamasaki did not use the occasion to describe it himself.

Distribution. Species known from Borneo: Sabah.

Gen. Myrmele Prószyński, 2016 gen. n.

Figures 2J, 3I


Documentation studied. Comparative diagnostic drawings of 4 species in Prószyński (2016a) and original literature.

Etymology. Name combines words "Myrmarachne" and "electrica", grammar gender assumed feminine.

Diagnosis. Female. Anterior part of "pipes-like" sclerotized spermathecae resembling these in Myrmavola by single loop of anterior detour of "pipes", but differs strikingly by strange, double spiral structures, in membranous parts attached to the proximal ends of spermathecae (but located in posterior epigyne!), being presumably modified copulatory ducts (Fig. 2J).

Male. Palps with round bulbus, spermophor without additional thin duct, distal part of embolus filamentosus (Fig. 3I). Chelicerae in males moderately enlarged, with basal ventral lobe, dorsally flat. Body elongate in various degree and relatively flat, constrictions weakly developed. This diagnosis agrees with Wanless definition of Myrmarachne electrica group of species from Madagascar by "coiled distal seminal ducts and median pouch [pocket]" in females, in males by "filamentosus distal embolus".


Note on genera relationships. Imprecise drawings hamper drawing final conclusion on the relationships of genera Myrmele and Myrmavola. While this paper rearranges the genera of MYRMARACHNINES by the structure of spermathecae and ducts, Wanless (1978: 106) confirms the similarity of females of M. longiventris and M. peckhami, which, incidentally, he has found in the same vial). Further research may necessitate revival of Bizonella.

Remarks. "Myrmarachne" eumenes (Simon, 1900) is standing out with body shape, with enormous long pedicel and the constriction of carapace and abdomen, however the shape of spermathecae fits the definition of Myrmavola - see Wanless (1978a, Fig. 73), its placement pending further considerations and leave uncertain "Myrmarachne" longiventris (Simon, 1903) (the latest being the type species of the genus Bizonella Strand, 1929 (= Bizone Simon, 1903), deserving reinstatement).

Distribution. Madagascar.

**Gen. Panachraesta** Simon, 1900, comb. tentatively reinstated

Figure 4I

*Panachraesta paludosa* Simon, 1900b: 405.

*Panachraesta paludosa*: Simon, 1901a: 504, fig. 596-597.

*Panachraesta paludosa*: Prószyński, 1987: 74 (Figs unnumbered)


Type species. *Panachraesta paludosa* Simon, 1900.


**Remarks.** This genus does resemble MYRMARACHNINES by epigyne with two white "windows" and the translucent, long "pipes" of spermathecae. The photograph of dorsal habitus and the epigyne of female syntype provided by Benjamin (2015, Fig. 13A-B) agree with drawings by Prószyński (1987: 71, unnumbered) with minor differences due presumably to the individual variation of specimens studied. However, his excellent documentation (Figs. 14a-16d) seem to indicate mixing up several species of the genus, in particular females show different shape of abdomen, broadest at 2/3rd of its length and the triangular posterior tip of abdomen, also his newly photographed alive and preserved specimens show the slight constriction of abdomen, increased by fine white band – these should not disappear without trace, even from long time preserved syntype. Therefore I hypothesize that these specimens represent different, although related species. The internal structure of epigyne and palps presented in the same paper by Benjamin indicate resemblance to some *Toxeus* (*T. cuneatus* (Badcock, 1918), comb. n. or *T. jajpurensis* (Prószynski, 1992), comb. n.). While placement in *Toxeus* require confirmation, the transfer of *Panachraesta paludosa* to the genus *Myrmarachne* is not accepted and the original combination is hereby reinstated, pending further research. With the uncertain matching of female, the placement of male is also suspended, pending further research.

Compositions. Single species described from Sri Lanka.

**Gen. Toxeus** Koch C.L., 1846 gen. reinstated

Figures 1I, 3F, 4C–D

**Type species.** *Toxeus maxillosus* Koch C. L., 1846.

**Documentation studied.** Comparative diagnostic drawings of 8 species in Prószyński (2016a) and original literature, especially Yamasaki & Ahmad (2013: 538, Figs. 30A-G, 31A-E, 42A-F).

**Diagnosis.** Female. "Pipes-like" sclerotized spermathecae, stretching parallel along the median axis of epigyne, without transverse detour, usually pressed to each other along part of their course, are either thin, gradually slightly dilating along their course in their distal half (located in the anterior part of epigyne), with internal spines as in *T. cuneatus* (Badcock, 1918), or making asymmetrical terminal chamber with long internal spines (Fig. 1I). They differ from spermathecae in *Myrmage gedongensis* Badcock, 1918), comb. n. or *T. jaipurensis* (Prószynski, 1992), comb. n.). While placement in *Toxeus* require confirmation, the transfer of *Panachraesta paludosa* to the genus *Myrmarachne* is not accepted and the original combination is hereby reinstated, pending further research. With the uncertain matching of female, the placement of male is also suspended, pending further research.

**Composition.** Single species described from Sri Lanka.
along the margin of bulbus. Tibial apophysis indistinctly double bent, but not twisted screw like (Fig. 3F). Chelicerae in both sexes have developed ventral lobe, extending their height, none the less, male chelicerae are long, but shorter than in *Myrmarachne*, with two rows of tiny teeth, fang is long. The size of specimens medium, some species have total length 7-8 mm. Body compact, constrictions variable, in some species indistinct, with thoracal part depressed, abdomen in some species almost round, in other elongate with two sclerites.


Nomenclatural note. Genus name "Toxeus" was introduced by Koch C.L. in 1846 in combination with specific name "maxillosus", subsequently used as synonyemic combinations with five other specific names, by Thorell, Pickard-Cambridge F., and one Smith (1907). The names of two taxa of the family level, derived from Toxeus - Toxeae and Toxeinae were proposed by Pickard-Cambridge F. in 1900 but none were used after 1907 in primary literature (Bonnet 1957, 1959: 2997-3014, 4663). As a name for that genus is accepted reinstated name Toxeus, still available according to Edwards (2013, Peckhamia 110.1: 7).

Composition. The following species are transferred from genus Myrmarachne MacLeay, 1839: *Toxeus bicuspidatus* (Yamasaki, 2012); *T. cuneatus* (Badcock, 1918), comb. n.; *T. gorontaloensis* (Yamasaki, 2012, comb. n. [reinstated]; *T. hirsutipalpi* (Edmunds & Prószyński, 2003), comb. n.; *T. jaipurensis* (Prószyński, 1992), comb. n.; *T. latithoracicus* (Yamasaki & Huang 2012), comb. n.; *T. magnus* (Saito, 1933), comb. n.; *T. maxillosus* Koch C. L. 1846.

**Informal group of genera PELLENINES**

*Pellenes (Pellap)* Prószyński, 2016 subgen. n.

Figures 5E–G

Representative species. *Pellenes (Pellap) lapponicus* (Sundevall, 1833).


Remarks. Splitting the genus *Pellenes* Simon, 1876 into four subgenera: nominal *Pellenes*, *Pelmirus*, *Pelmatus* and *Pelpaucus*, differing by such characters as the shape of palpal organ, especially by embolus structure, and by epigyne, was done by Logunov and Marusik (2000), which left outside holarctic species *Pellenes lapponicus* (Sundevall, 1833). Since that species has some outstanding structures, it seems logical to create a separate subgenus - *Pellap* for it. Among peculiar structures of that subgenus, special attention deserves robust and thick “embolus”, being in fact a composite structure, consisting of external sheath and internal sclerotized, hair-like (but apparently strong and presumably elastic) proper embolus, discovered by Logunov, Marusik (1999, Fig. 126). That structure coincides well with emboli in other subgenera of *Pellenes*, but its discovery have much broader significance - in many Salticidae “embolus” appears thick, often semitransparent, with indistinct thin dark streak, sometimes protruding from the tip of “embolus”. Therefore, I provisionally assume, that such “emboli” have composite structure of external sheath and internal, hair like proper embolus.

Diagnosis of the subgenus *Pellenes (Pellap)* (new). Female. Epigyne elongate with prominent, broad medial groove, running from rudimentary anterior pocket, somewhat like in *Habronattus*. Spermathecae and ducts form elongate compact bodies, consisting of spiral structures, stretching along the whole length of epigyne (Fig. 5F).

Male. Sheath encircles embolus ventrally and laterally, opened dorsally - as demonstrated on excellent SEM scan of dorsal side of bulbus, separated from cymbium, provided by Logunov & Marusik (Fig. 5G). Tibial apophysis large and unusually expanded apically, trapezium like, articulate with prominent swelling of dorsal wall of the cymbium (Figs. 5E, G).


Remarks. The placement of this species is rather special and deserves, perhaps, separate genus status. Palpus is not similar to remaining *Pellenes*, epigyne could be compared with such species as *Pellenes ostrinus* (Simon, 1868), *P. diagonalis* (Simon, 1868) and *P. turkmensis* Logunov, Marusik & Rakov, 1999, and with the genus *Habronattus* F. O. Pickard-Cambridge, 1901, which unfortunately is insufficiently known.
**NEW GENERA OF SALTICIDAE**


**Informal group of genera PSEUDICIINES**

Figures 6A–C, 7A–K, 8A–J

**Representative genus.** *Pseudicius* Simon, 1885.

**Type species.** *Pseudicius encarpatus* (Walckenaer, 1802).

**Documentation studied.** Comparative diagnostic drawings of 116 species in Prószyński (2016a) (http://www.peckhamia.com/salticidae/Pseudiciinae_clas.html).
Figure 6. Color photos of diagnostic characters and habitus of new genera: A – C – *Psenuc* sp. [from Australia]: row of subocular stridulatory bristles on tubercles, flattened body and palp; D – *Logunyllus univittatus*; E – F – *Logunyllus vittatus*, male and female; G – H – *Orienticus vulpes*, female and male; I – J – *Nandicus*: sp from Nanad Devi National Park – key photos by Miss Shazia Quasin, matching habitus appearance with the internal structure of epigyne (compare also Fig. 9E). Photos by: A – C – ©R. Whyte; D – E – ©J. Lissner; G – H – ©Kyoto Ogata; I – J – ©Shazia Quasin. By courtesy.
**Diagnosis.** PSEUDICIINES group of genera can be recognized at first glance by elongated body, flat but robust, with particularly long and robust legs I, and by a few kinds of characteristic color patterns (Figs. 6B, 8B, E, G, H). While similar silhouettes can be find in some other, unrelated genera as well, the strict diagnostic characters are unmistakable and strikingly visible: a row of short bristles on tubercles, about 10 of them, stretching under eyes lateral, being a part of stridulatory apparatus “femur I - carapace” (Figs. 6A, 7A, 8J). Another striking character is modified tibia I - broader, shortened, with deformed and/or missing spines, and with a peculiar dorsal trichobothrium - long and bent apically under almost straight angle (90 degrees) (Figs. 7A, 8B).

The structures of epigyne and palps are comparable inside the whole group, but quite diversified, which may be misleading at superficial examination.

**Female.** Epigyne has a pair of grooves and a pair of distinct pockets, variably located. Copulatory ducts relatively thick-walled, evolving from a simple and short arch (as in *Pseudicius palaestinensis* Strand, 1915), to long and very complicated coils (as in *Afraflacilla javanica* (Prószyński & Deeleman-Reinhold, 2012) comb. n., or *A. bipunctata* (Peckham & Peckham, 1903) comb. n.), with the armature of the scent-exuding pore developed into a branching off duct, long and prominent. In *Okinawichus* gen. n. (see below) the entrance part of ducts is membranous, long, twisted into flat spiral parallel to epigyne surface, only later passing into sclerotized ducts, comparable with those in other genera.

Spermathecae being the terminal portion of ducts, on which they pass without distinct border, changing from simple oval to long and bent loop, slightly more broader than the duct and with spines on the interior surface (Figs. 7D, H–J, 8A, C, F).

Male palp diverse, at first look unrelated, some cannot be easily classified, but an examination of morphological series permits to find similarities. Bulbus is oval, or oval distorted with protuberances, embolus variable from thick and relatively short to hair thin and long, in some species encircling bulbus, arising variably, latero-apically or latero-basally. Tibial apophysis (RTA) prominent, usually medium long, often split into 2-3 rami (Figs. 6C, 7B–C, K, 8B–D, I).

**Relationship.** The row of stridulatory bristles on tubercles under eyes lateral, as well as body appearance gives PSEUDICIINES unique character, separating distinctly from other groups of genera, the structures of epigyne and palps do form morphological lines correlating with presumed evolution.

**Gen. Nepalicius Prószyński, 2016, gen. n.**

Figures 7A–D

**Type species.** *Icius nepalicus* Andreeva, Heciák & Prószyński, 1984.

**Documentation studied.** Comparative diagnostic drawings of 3 species in Prószyński (2016a) and original literature, especially Prószyński (1992a: 106, Figs. 67, 69-72).

**Etymology.** Name combines words Nepal and *Icius*, grammar gender assumed masculine.

**Diagnosis.** Share mutual diagnostic characters of PSEUDICIINES: lateral, subocular row of about 10 short bristles on protuberances, modified tibia of robust leg I, flattened body and characteristic color pattern.

Males differ from other genera by bulbus rounded, circled by embolus, entirely or partially, dorsal ramus of tibial apophysis reduced to semicircular protuberance (Figs. 7A – C).

**Female.** Epigyne with a pair of grooves and openings in the posterior part, pockets not discovered. Ducts and spermathecae differ from remaining PSEUDICIINES genera by their arrangement parallel to the main axis of the body, not transverse. Copulatory openings small, located near the posterior edge of epigyne, ducts, slightly bent s-shaped, runs anteriorwards, along almost the whole length of epigyne. Thickness of ducts’ wall equal to that of spermathecae. Spermathecae originate just anteriorly to scent openings, semicircularly bent and ending at the level of mid-length of epigyne, their internal surface with a network of delicate, vein-like thickenings (Fig. 7D).


**Remarks.** Suguro and Yahata (2014: 63(2): 87-97, f 25, 27, 28) match female purporting to be *Nepalicius coreanus* with male *Tasa nipponica* (Fig. 7O) as a new combination *Tasa coreanica*, supposedly based on gene sequencing, but providing no taxonomically or biologically relevant data. Matching male and female of *Pseudicius koreanus* in Boddanowicz & Prószyński (1987: 67-71, Figs 67-68, 73) was done by Takeo Yaginuma, who has collected both sexes in Japan: Kochi Pref. 28. VI. 1964, and send me for

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**Ecol. Mont., 7, 2016, 4-32** 21
identification and taxonomic study as a couple of the same species. The detailed drawing of spermathecae of the Japanese female was made to check and confirm original drawings of partly damaged holotype of that species, from North Korea, by Wesolowska (1981, Figs. 54-55), made in my laboratory. Matching these spiders was also accepted by Ono, Ikeda, Kono (2009: 570, Figs. 104-106). In the light of the above documentation I declare merging genera Pseudicius and Tasa invalid and false, and the combination of Tasa koreanica also invalid.

**Distribution.** Nepal, India, Korea, Japan, Seychelles Is.

**Composition.** The following species are transferred from the genus Pseudicius Simon, 1885: *Nepalicius koreanus* (Wesolowska, 1981), comb. n., *N. nepalicus* (Andreeva, Heciak, Prószyński, 1984) comb. n., *N. seychellensis* (Wanless, 1983) comb. n.

**Gen. Okinawicius Prószyński, 2016, gen. n.**

Figures 7E–K, 8C–E

**Type species.** *Pseudicius okinawaensis* Prószyński, 1992.

**Documentation studied.** Comparative diagnostic drawings of 11 species in Prószyński (2016a) and original literature.

**Etymology.** Name combines words Okinawa and *Icius*, grammar gender assumed masculine.

**Diagnosis.** Share mutual diagnostic characters of PSEUDICIINES: lateral, subocular row of about 10 short bristles on protuberances, modified tibia of robust leg I, flattened body and characteristic color pattern.

Female differs by prominent pockets on the surface of epigyne, which are unusually long and prominent. There is a pair of medial depressions on epigyne, with indistinct copulatory openings, visible only after clearing of epigyne. Striking difference is provided by a flat spiral of several concentric membranous coils of copulatory ducts, in a plane parallel to the surface of epigyne (Figs. 7K, 8D), visible after staining in Chlorazol Black E. These join narrow and long, sclerotized spermathecae near the prominent armature of scent opening (which in *O. modestus* is long, chimney-like). Sclerotized parts of these structures is comparable to *Nepalicius*.

Males (matching require confirmation). Embolus arise laterally from bulbus, either in its mid-length, or posteriorly. Tibial apophysis with stumpy rami, two or three (Figs. 7K, 8D).


**Remarks.** Females of *O. sheherzadae* and males of *Pseudicius sindbadi* were collected in the same day – April 11th, 1980, in the same locality Thanomah in Saudi Arabia, at the same altitude 2140 m., and by the same collector W. Buettiker, since Salticidae in deserts are sparse and rarely collected, there is good chance that they may match, therefore belong to the same species. If so, morphologically similar male of *Pseudicius shirinae* from Wadi Harth may also belong to *Okinawicius*. The placement of *Okinawicius* (?) *vankeeri* (Metzner, 1999) is tentative, male palp resembling *Okinawicius shirinae* and *O. delesserti*, the ducts of epigyne rather *Pseudepis*, or even *Pseudicius*, that problem pending further studies.

Suguro and Yahata (2014: 63(2): 87-97) proposed to synonymize *Pseudicius tokaraensis* and *P. okinawaensis* (Fig. 7G), misinterpreting epigyne and internal structures of epigyne of these species (Figs. 7E – F, H – I), that synonymy is rejected hereby and both species are sustained as valid and separate, I transfer them now to the genus *Okinawicius* Prószyński, 2016 (here described).


**Correction of synonyms of Helicius kimjoopili Kim, 1995**

Figures 7L-P

Suguro and Yahata (2014: 63(2): 87-97) purported to synonymize original misidentification of *Helicius kimjoopili* Kim (1995: 2, f. 1-5), transferring it to *Pseudicius*. However, there are two versions of the original
publication of Kim 1995, describing two different species from Korea, under the same name _Helicius kimjoopili_ Kim, 1995, both misplaced in the genus _Helicius_ (compare epigyne in the true representative species of _Helicius—H. yaginumai_ (Figs 7L). In one version, species marked here as “Helicius kimjoopili-1”) (Fig. 7N) resembles genus _Nandicus_ Prószyński, 2016 (partial synonym of _Pseudicus_ Simon, 1885, see below) (Figs. 7M, 9E-J). Similar looking female, but apparently of different species, from Japan, was identified by Suguro & Yahata (2014) as _Pseudicus kimjoopili_ (Fig. 7P), accompanying male cannot be identified. The another species from Korea, described by Kim Joo-Pil (1995), marked here as “Helicius kimjoopili-2” (Fig. 7O) resembles genus _Plexippoides_ , possibly _Plexippoides regius_ Wesolowska, 1981, but available documentation is insufficient to be sure of that identification.

Bizarre publication of two different papers containing description of two different spiders as the same issue of the journal _Korean Arachnology_, 11(2): 1-5 (both known to me from PDFs available in the Internet) makes problem of validity of that description irresolvable. Both are obviously written by Mr Kim Joo-Pil himself, apparently by some mistake. I have lost contact with the Author after 1997, efforts to find him by Internet have failed, also his Dongguk University does not show information on him, or his Arachnological Institute of Korea, I could not find e-mail addresses to that University. It is not known whether type specimens of his species survived.

Summing up the above, the descriptions of the species _Helicius kimjoopili_ Kim, 1995 should be invalidated and species name “kimjoopili”, published originally as binomen “Helicius kimjoopili”, as well as synonyms based on it, should be considered “nomen dubium”.

**Gen. _Psenuc_ Prószyński, 2016, gen. n.**

Figures 6A–C, 8A–B

**Type species.** _Pseudicus vesporum_ Prószyński, 1992.

**Documentation studied.** Comparative diagnostic drawings of 9 species in Prószyński (2016a) and original literature, especially Prószyński (1992).

**Etymology.** Name combines words _Pseudicus_ and _nuclearis_, grammar gender assumed masculine.

**Diagnosis.** Share mutual diagnostic characters of _PSEUDICIINES_: lateral, subocular row of about 10 short bristles on protuberances, the modified tibia of robust leg I, flattened body and characteristic color pattern.

**Female.** Internal structures of epigyne set transversally, however, spermatheca is somewhat swollen distally, copulatory ducts light sclerotized, encircles proximal, the level part of spermatheca by a single, or a few coils, the armature of scent opening developed into long, prominent duct, chimney-like (Fig. 8A). Epigyne externally comparable with _Psudicus_, differs by large oval, shallow depression with a pair of median grooves containing medial copulatory openings. There is a pair of indistinct, postero-lateral pockets, translucent trough tegument.

Male palp with elongate oval bulbus, with pronounced posterior part. Embolus parallel to bulbus, arising laterally from the posterior part of bulbus. Tibial apophysis short and single, inclined ventrally, with vestigial dorsal ramus reduced to slight swelling on the dorsal edge (Fig. 8B).

**More diagnostic characters – see at:** http://www.peckhamia.com/salticidae/q27-Psenuc.html.

**Distribution.** Africa, Australia, China, Pacific Islands, Philippines, Vietnam.


**Gen. _Rudakius_ Prószyński, 2016, gen. n.**

Figures 8F–J

**Type species.** _Menemerus cinctus_ Pickard-Cambridge O., 1885.

**Documentation studied.** The survey of diagnostic drawings in Prószyński (2016a) and original literature.
NEW GENERA OF SALTICIDAE


24
**Etymology.** Named in honor of great Persian poet Rudaki (850-940 n.e.) who lived in the Samanid court in Buchara (present day Uzbekistan) - in the area of occurrence of this genus. Name combines words Rudaki and Pseudicius, grammar gender assumed masculine.

**Diagnosis.** Share mutual diagnostic characters of PSEUDICIINES: lateral, subocular row of about 10 short bristles on protuberances (Fig. 8J), modified tibia of robust leg I, flattened body and characteristic color pattern (Figs. 8G–H). At first glance epigyne and palps appear entirely different from other genera of this group, however, in spite of different appearance, all parts of these structures appear homologous.

Female. Epigyne has two large grooves, separated by a septum, but without visible external pair of pockets. Copulatory openings are distinctly visible in the middle part of medium septum, sclerotized and followed by broad, sclerotized ducts running posteriorly, then making a full circle tight loop, near branching off point of the scent opening armature. From that spot follows an obliquely sclerotized duct, unusually narrow, to postero-medially located spermthecae, small in comparison with the size of the epigyne (Fig. 8F). In Rudakius afghanicus (Andreeva, Heciak & Prószynski, 1984), comb. n. spermtheca is different, intermediary to the state in Afraflacilla: elongate vessel, running medially, parallel to the main body axis and much larger, about half the length of epigyne.

Male palp is very special, with the anterior edge of bulbus truncated transversally, with robust embolus arising antero-laterally and the posterior part of bulbus expanded diagonally, postero-laterally. Tibial apophysis large, consisting of two long, pointed rami, widely spaced, in some species, however, dorsal ramus is distinctly shorter (Fig. 8I).


**Distribution.** Rudakius is a central Central Asian genus, occurring also in China, Ethiopia, India, Malaysia, Saudi Arabia.

**Composition.** The following species are transferred from the genus Pseudicius Simon, 1885: Rudakius afghanicus (Andreeva, Heciak, Prószynski, 1984), comb. n., R. cinctus (Pickard-Cambridge O., 1885), comb. n., R. delesserti (Caporiacco, 1941), comb. n., R. maurei (Prószyński, 1992), comb. n., R. rudakii (Prószyński, 1992), comb. n., R. spasskyi (Andreeva, Heciak, Prószyński, 1984), comb. n., R. wenshanensis (He, Hu, 1999), comb. n. Species Rudakius citri (Sadana, 1980), comb. n. was originally misidentified as Phlegra citri Sadana, 1980: 229, Figs 1–5; Rudakius ludhianaensis (Tikader, 1974 - nec Sadana et Kaur, 1974), comb. n. was originally misidentified as Marpissa ludhianaensis Tikader, 1974: 205, Figs 1-3.

**Removed from the genus Pseudicius Metaphidippus [?] siticulosus (Peckham, Peckham, 1909) comb. n.**

Syonyms: Pseudicius siticulosus Peckham & Peckham, 1909: 495, pl. 39, Fig. 11.


**Remarks.** Transfer to DENDRYPHANTINES is based on diagnostic drawings by W.P. Maddison (http://www.peckhamia.com/salticidae/q8-Metap.html#met-sit), published in 1996, but unfortunately the crucial drawing of internal structures of epigyne was not published. Owing to the kindness of Dr. W.P. Maddison I have seen that drawing in 1986, but I have no permission to display it. Maddison, informed on misplacement of this species, has told me that he has been aware of that since many years, but he doubts that genus Metaphidippus Pickard-Cambridge F. O., 1901 is correct placement.

**Comment.** Removal from Pseudicius is necessary for understanding the evolution of that genus, which has never reached Western Hemisphere, however, records in World Spider Catalog are not updated yet.

**Gen. Nandicius Prószyński, 2016, gen. n.**

Removed from the genus Pseudicius Informal group of genera CHRYSSILLINES Figures 6I–J, 9E–J

**Type species.** Phintella mussooriensis Prószyński, 1992.
NEW GENERA OF SALTICIDAE

Documentation studied. Comparative diagnostic drawings of 10 species in Prószyński (2016a) and original literature.

Etymology. Name combines name of the Nanda Devi National Park and Icius, grammar gender assumed masculine.

Diagnosis. Nandicius differs strikingly from Pseudicius and related genera by the absence of subocular row of stridulatory bristles on protuberances and tibia I not modified.

Male palpal organ resembling Chrysilla Thorell, 1887 and Phintella Bösenberg & Strand, 1906, embolus base has a form of thin, soft layer laying diagonally over bulbus, narrowing anteriorly and producing anterior embolus short, claw-like and sclerotized. Only the antero-lateral angle of spermatophor is visible. Tibial apophysis variable, biramous with ventral ramus thin and gently bent (in N. pseudoicioides even twisted "S" like), dorsal ramus robust, but in some species modified into a short lobe, or even reduced to a vestigial tooth (Figs. 9F, I).

Female. Epigyne with prominent oval depression medially, there is a pair of translucent pockets, spaced at the posterior rim of epigyne, which is somewhat bent anteriorwards, copulatory opening located medially, in the mid-length of epigyne. Spermathecae resembling some Pseudicius, with spermathecae slightly elongate oval, set transversally or parallel to main axis, with distal part elongate and duct like, ducts sclerotized, semiarch ing (Figs. 6J, 9E, H–J).

Body small and fragile, not flattened or elongated, with brown pattern on whitish background Fig. 6I). Legs whitish, legs I not strikingly longer or more robust than legs II–IV.


Remark. Taxonomic position of Nandicius (known to me from old type specimens and a series of drawings of unidentified species from Central Asia) remained enigmatic for 30 years, because of mixture of poorly understood characters resembling other, unrelated genera. The breakthrough is due to photographs received from Miss Shazia Quasin, of a species with epigyne almost identical with the drawings of epigyne, made in 1980s (Figs. 6J, 9E). These structures, with the simultaneous absence of Pseudicius-like features, could be accommodated only by erection of a new genus.

Distribution. Central Asia, China, India, Nepal, Pakistan.


Informal group of genera NOTICIINES
Removed from the genus Pseudicius
Figures 6G–H, 9K–M

Early synonyms: Attus vulpes Grube, 1861: 23 (D), Pseudicius orientalis Kulczynski, 1895d: 59, pl. 2, Figs 12-14 (Dmf), Euophrys undulatovittata Bösenberg & Strand, 1906: 339, pl. 14, Fig. 376 (Dm), Euophrys brevicauleis Bösenberg & Strand, 1906: 340, pl. 14, Fig. 387 (Dm), Breda lambda-signata Bösenberg & Strand, 1906: 345, pl. 9, Fig. 136, pl. 13, Fig. 352 (Dmf).


Followed by 40 citations of the above combination.

Type species. Attus vulpes Grube, 1861.

Documentation studied. Comparative diagnostic drawings of 2 species in Prószyński (2016a) and in original literature, especially Prószyński (1971).

Etymology. Name combines words Pseudicius and orientalis, grammar gender assumed masculine.

Diagnosis. Differs from Pseudicius by the absence of the row of stridulatory bristles on protuberances below eyes lateral, lack of modification of tibia I, legs I not particularly enlarged, and somewhat by dorsal pattern (Figs. 6G–H).
Male. The structure of embolus excludes it from the genus *Icius* Simon, 1876, with the basis of embolus turning medial-wards, embolus bent, originally directed medially but immediately turned anteriorwards (Fig. 9K) reminding distantly that structure in *Chinattus* Logunov, 1999.

Female. Epigyne transversally oval, with a pair of medium size grooves, separated by narrow septum. Narrow pockets translucent under the posterior edge of epigyne (Fig. 9L). Spermathecae set transversally, ducts narrow but not membranous, joining spermatheca in the middle of its length, next running straight anteriorly, towards small, round copulatory openings (Fig. 9M).

More diagnostic documentation – see at:

**Remark.** Classified by the majority of authors as *Pseudicius*, following Kulczyński's (1895) description, the absence of key features of *Pseudicius* was confirmed recently by G.N. Azarkina – personal communication.

**Distribution.** Asiatic Russia: Far East and Baikal area, China, Korea, Japan. Species transferred from the genus *Pseudicius* Simon, 1885 now included in genus: *Orienticius chinensis* (Logunov, 1995) comb. n., *O. vulpes* (Grube 1861) comb. n.

**Informal group of genera SITTICINES**

**Gen. Sittipub Prószyński, 2016 gen. n.**

*Figures 8K – M*

Selected synonyms: *Aranea pubescens* Fabricius, 1775: 438.

*Sitticus pubescens* Simon, 1901a: 578, Figs 699-700.


*Sitticus pubescens* Zabka, 1997: 92, Figs 346-351.

Combination *Sitticus pubescens* was used at least 28 times.

**Type species.** *Aranea pubescens* Fabricius, 1775: 438.

**Documentation studied.** Numerous specimens from Poland, comparative diagnostic drawings of 2 species by Prószyński (1987: 96) and other rich literature.

**Diagnosis.** Type species recognizable by *Sitticus*-like habitus appearance and habitat preference. It resembles other SITTICINES by single, comb like cheliceral tooth on the anterior inner edge of chelicerae. It resembles several *Sitticus* species by body shape and coloration, which is dark grey with darker but irregular abdominal pattern, devoid of any striking white spots or stripes.

Males differ by very short and bent embolus, arising anterolaterally from broad basis. Spermophor relatively thin, in a form of somewhat distorted loop, located semilaterally. Tibial apophysis huge, and broad (Fig. 8M).

Females have unique epigyne, in a form of slightly concave, sclerotized plate, with two dark translucent spots of internal structures in the middle (Fig. 8L). Spermathecae irregular, oval, heavily sclerotized chamber, almost directly connected with copulatory openings, usually blocked by secretion (Fig. 8K).

**Distribution.** European species, common on sun exposed tree trunks (especially on pines), stones and rocks, timber and stone constructions. Recent migrant to Northern America, locally common.

**Remarks.** Geographical origin of the genus is unknown yet. With exception for a single species in Caucasus area, there is no known relative with similar structure of epigyne. Palpal organ reminiscent of some S American genera (*Hypaeus* Simon, 1900) and Amycoida (*Adnemasturnus* Galiano, 1988, *Semiopyla* Simon, 1901) with the central loop of spermophor irregular, embolus short and thin, arising from thick basis set anterolaterally.

**Composition.** The genus consists of two species transferred from *Sitticus*: European and North American *Sittipub pubescens* (Fabricius, 1775) and Caucasus Area *S. relictarius* (Logunov, 1998).
Informal group of genera YLLENINES
Figures 6D–F, 8N, 9A–D

Representative species of the group. Yllenus arenarius Simon*, 1868.

Documentation studied. Comparative diagnostic drawings of 75 species in Prószyński (2016a) and the literature (especially Prószyński (1968) and Logunov & Marusik (2003)).

Diagnosis. Species of the group have relatively uniform habitus and natural history, previously classified as a single genus Yllenus, containing together 77 species and split now into three genera, two of which are new. The main diagnostic character of the group is scopula – brush of setae stretching from claws onto ventral surface of tarsus I (Fig. 8N), also large conductor in male palp, splitting off from the basis of embolus (Figs. 9A, C), the latter is hair like. The internal structure of epigyne (Figs. 9B, D) differs in three genera, but is similar within each genus. Chelicerae are slender, without developed posterior median edge, there are no cheliceral teeth, except a minute tip of sclerotized anterior median edge, protruding near the fang in some species. The size of carapace and abdomen are comparable, color pattern camouflaging in sandy environment (Figs. 1D–F). Carapace highest at eyes III, from where thorax is gently sloping, there is no flattened thoracic part. Palpal femur broad, crescent shaped, often with protuberance. Epigyne with prominent median pocket, spermathecae and copulatory ducts either heavily sclerotized or if walls of ducts thinner, then form complicated coils, in some species even double spiral (Fig. 9B). That combinations of characters is unknown in other groups of genera, including ground dwelling AELURILLINES.

Remarks. All species of YLLENINES dwell on sands, in Asia, Africa and Europe (South and Central), protected by camouflage coloration, hiding under surface of sand, where they make nests, retreats and produce cocoons. Their natural history was studied in details by Bartos (2005) on Yllenus arenarius Simon, 1868, and was confirmed by sundry observations on many other species. The structure of this taxon fit definition of subfamily, with several mutual characters, including appearance and biology. Male palps, epigyne and internal structure of epigyne delimit three groups of species, here described as three genera, closely related to each other but constituting separate lines.

Remarks. Splitting off embolus from conductor in Yllenus, both arising from the mutual base, is striking in comparison with Pellentes lapponicus, as demonstrated in SEM of that species (Fig. 5G). I hypothesize that it represents ancestral state.

Gen. Logunyllus Prószyński, 2016 gen. n.
Figures 6D – F, 9C – D

Type species. Attus albocinctus Kroneberg, 1875.

Documentation studied. Comparative diagnostic drawings of 35 species in Prószyński (2016a) and in original literature.


Diagnosis. General characters and habitus appearance (Figs. 6D – F) shared with remaining genera of YLLENINES – Marusyllus Prószyński, 2016 gen. n. (see below) and Yllenus Simon, 1868, but palps and epigyne are “normal” - that is male cymbium and embolus are relatively short, conductor is slender, while bulb is relatively large (Fig. 9C). The articulating apparatus consists of complicated processes on cymbium and tibia. The epigyne of female is relatively strongly sclerotized, the copulatory canals are straight, or form

*The authorship of Yllenus arenarius is written differently in various publications, usually "Menge in Simon, 1868", including Bonnet 1959: 4904 (although he sacrificed half a page to prove that Menge himself did not use name Yllenus and described his species as Marpesia arenicolor only in 1877). World Spider Catalog (version 2016) also uses that authors' combination citing the paper, but "abbreviates" the authorship of species to nonexistent paper "Menge 1868". Radical proposal to limit authors’ quotation to the authors’ of publication only (http://www.peckhamia.com/salticidae/introduction/I_About_this_database.html#different), illustrated by example of this very species, was overlooked. I may add that the only author quoting correctly Yllenus arenarius Simon, 1868 was Roewer (1954: 1252).
simple loops, the latter often consist of distal - stronger sclerotized, and proximal - less sclerotized parts (Fig. 9D).


**Remarks.** The description of this genus upgrades, without other changes, previously described group of species *Yllenus (albocinctus)* group (Prószyński, 1968: 455, Logunov, Marusik 2003b: 23).

**Distribution.** Asia: desert and grassland zones, Europe: Mediterranean, Arabian Peninsula, Israel, N Africa.


**Gen. Marusyllus** Prószyński, 2016 gen. n.

Figures 9A–B

**Type species.** *Yllenus hamifer* Simon, 1876.

**Documentation studied.** Comparative diagnostic drawings of 21 species in Prószyński (2016a) and original literature.

**Etyymology.** Named in honor of prominent arachnologist – Dr. Y.M. Marusik [MARUS-ik-YLLL-US], co-author of the big monograph of the genus *Yllenus*, the editor of many of my publications and a personal friend. Grammar gender - masculine.

**Diagnosis.** General characters shared with remaining genera of YLLENINES (see above), but palps and epigyne very special.

Palp. The tip of cymbium striking by being drawn into long, anterior "tail", arching above bulbus and serving as guide to embolus, the latter's hair thin and very long. Bulbus relatively small. Conductor very unusual, crescent shaped, broad and robust, in majority of species larger than bulbus. Palpal femur broad, crescent shaped, tibia short with large tibial apophysis, articulating with corresponding plate-like outgrowth of the cymbium's postero-ventral angle (Fig. 9A).

Spermathecae set transversally, flattened oval, small and simple but with developed posterior part, often coiled and set parallel to epigyne's axis. Copulatory ducts thin walled, long but twisted into tight and compact, double spiral (Fig. 9B). The length of ducts seems to be correlated with the length of embolus of male.

**More diagnostic documentation** – see at: http://www.peckhamia.com/salticidae/q34-Marus.html

**Remarks.** The description of this genus upgrades, without other changes, previously described group of species *Yllenus (hamifer)* group (Prószyński, 1968: 430., Logunov, Marusik 2003b: 118).

**Distribution.** Central Asia, Asiatic Russia: Tuva, Korea.


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**References**


