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Revision of the genus *Sitticus* Simon, 1901 s. l. (Araneae: Salticidae)*¹

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Abstract

The genus *Sitticus* Simon, 1901 sensu lato is revised and split into new genera *Sittiab* gen. n., *Sittiflor* gen. n., *Sittilong* gen. n., *Sittisax* gen. n., which join existing already *Attulus* Simon, 1889 sensu novo, *Jollas* Simon, 1901, *Sitticus* Simon, 1901 sensu stricto, and *Sittipub* Prószyński, 2016, based on interpretation of taxonomic data from a number of publications of the Author, on the background of world's literature synthesized in Prószyński (2016a, b) available at <http://www.peckhamia.com/salticidae/Subfamilies/>, and <http://www.peckhamia.com/salticidae/>.

The following new synonyms and combinations are established, or clarified. *Attus viduus* Kulczyński, 1895 (removed from synonymy of *A. distinguendus*) = *Attulus avocator* (O. Pickard-Cambridge, 1885) comb. n., *Jollas armatus* (Bryant, 1943) = "*Oningis*" *armatus* Bryant, 1943b - retransfer of misplaced species, belonging to EUOPHRYINES, *Jollas crassus* (Bryant, 1943) = "*Oningis*" *crassus* Bryant, 1943 - retransfer of misplaced species, belonging to EUOPHRYINES, *Jollas lahorensis* (Dyal, 1935) (nomen dubium) = "*Oningis*" *lahorensis* Dyal, 1935 - unrecognizable species, should be listed as nomen dubium in its original combination, *Sitticus absolutus* (Gertsch, Mulaik, 1936) = *Sittiab absolutus* (Gertsch & Mulaik, 1936) comb. n., *Sitticus ammophilus* (Thorell, 1875) = *Attulus ammophilus* (Thorell, 1875) comb. n., *Sitticus ansobicus* Andreeva, 1976 = *Attulus ansobicus* (Andreeva, 1976) comb. n., *Sitticus atricapillus* (Simon, 1882) = *Sittiflor atricapillus* (Simon, 1882) comb. n., *Sitticus avocator* (Pickard-Cambridge O., 1885) = *Attulus avocator* (Pickard-Cambridge O., 1885) comb. n., *Sitticus burjaticus* Danilov & Logunov, 1993 = *Attulus burjaticus* (Danilov & Logunov, 1993) comb. n., *Sitticus caricis* (Westring, 1861) = *Sittiflor caricis* (Westring, 1861) comb. n., *Sitticus clavator* Schenkel, 1936 = *Attulus clavator* (Schenkel, 1936) comb. n., *Sitticus concolor*: Maddison, 1996 (nomen dubium) = *Sittiab cursor* (Barrows, 1919) comb. n., *Sitticus cursor* (Barrows, 1919) = *Sittiab cursor* (Barrows, 1919) comb. n., *Sitticus cutleri* Prószyński, 1980 = *Sittiflor cutleri* (Prószyński, 1980) comb. n., *Sitticus damini* (Chyzer & Kulczynski, 1891) = *Attulus damini* (Chyzer & Kulczynski, 1891) comb. n., *Sitticus distinguendus* (Simon, 1868) = *Attulus distinguendus* (Simon, 1868) comb. n., *Sitticus dorsatus*: Richman, 1979 (nomen dubium) = *Sittiab absolutus* Gertsch & Mulaik, 1936 comb. n., *Sitticus dubatolovi* Logunov & Rakov, 1998 = *Attulus dubatolovi* (Logunov & Rakov, 1998) comb. n., *Sitticus dudkoi* Logunov, 1998 = *Sittiflor dudkoi* (Logunov, 1998) comb. n., *Sitticus dzieduszyckii* (L. Koch, 1870) = *Sittisax dzieduszyckii* (L. Koch, 1870) comb. n., *Sitticus floricola* (Koch C.L., 1837) = *Sittiflor floricola* (Koch C.L., 1837) comb. n., *Sitticus floricola palustris* (Peckham & Peckham, 1883) = *Sittiflor floricola palustris* (Peckham & Peckham, 1883) comb. n., *Sitticus goricus* Ovtsharenko, 1978 = *Attulus goricus* (Ovtsharenko, 1978) comb. n., *Sitticus inopinabilis* Logunov, 1992 = *Attulus inopinabilis* (Logunov, 1992) comb. n., *Sitticus inexpectus* Logunov, Kronestedt, 1997 = *Sittiflor inexpectus* (Logunov, Kronestedt, 1997) comb. n., *Sitticus juniperi* Gertsch & Riechert, 1976 = *Sittiab juniperi* (Gertsch & Riechert, 1976) comb. n., *Sitticus karakumensis* Logunov, 1992 = *Attulus karakumensis* (Logunov, 1992) comb. n.,

¹ Present paper constitutes partial publication of sections of the Internet "Monograph of Salticidae (Araneae) of the World 1995-2016", parts I & II by Prószyński (2016a, b), available at: <http://www.peckhamia.com/salticidae/Subfamilies/> and <http://www.peckhamia.com/salticidae/> respectively

Sitticus kazakhstanicus Logunov, 1992 = *Attulus kazakhstanicus* (Logunov, 1992) comb. n., *Sitticus longipes* (Canestrini, 1873) = *Sittilong longipes* (Canestrini, 1873) comb. n., *Sitticus magnus* Chamberlin, Ivie, 1944 = *Sittiflor magnus* (Chamberlin, Ivie, 1944) comb. n., *Sitticus mirandus* Logunov, 1993 = *Attulus mirandus* (Logunov, 1993) comb. n., *Sitticus monstrabilis* Logunov, 1992 = *Sittiflor monstrabilis* (Logunov, 1992), *Sitticus nenilini* Wesolowska, Logunov, 1993 = *Attulus nenilini* (Wesolowska, Logunov, 1993) comb. n., *Sitticus niveosignatus* (Simon, 1880) = *Attulus niveosignatus* (Simon, 1880) comb. n., *Sitticus penicillatus* (Simon, 1875) = *Attulus penicillatus* (Simon, 1875) comb. n., *Sitticus penicilloides* Wesolowska, 1981 = *Attulus penicilloides* (Wesolowska, 1981) comb. n., *Sitticus pulchellus* Logunov, 1992 = *Sittiflor pulchellus* (Logunov, 1992) comb. n., *Sitticus ranieri* (Peckham & Peckham, 1909) = *Sittisax ranieri* (Peckham & Peckham, 1909), *Sitticus rivalis* Simon, 1937 = *Sittiflor striatus* (Emerton, 1911) - reinstated synonym, contra Logunov, 2004 a: 35, *Sitticus rupicola* (Koch C.L., 1837) = *Sittiflor rupicola* (Koch C.L., 1837) comb. n., *Sitticus saltator* (Simon, 1868) = *Attulus saltator* (Simon, 1868) comb. n., *Sitticus saxicola* (C. L. Koch, 1846) = *Sittisax saxicola* (C. L. Koch, 1846) comb. n., *Sitticus sinensis* Schenkel, 1963 = *Attulus sinensis* (Schenkel, 1963) comb. n., *Sitticus striatus* Emerton, 1911 = *Sittiflor striatus* (Emerton, 1911) comb. n., *Sitticus talgarensis* Logunov & Wesolowska, 1993 = *Attulus talgarensis* (Logunov & Wesolowska, 1993) comb. n., *Sitticus vilis* (Kulczynski, 1895) = *Attulus vilis* (Kulczynski, 1895) comb. n., *Sitticus zaisanicus* Logunov, 1998 = *Attulus zaisanicus* (Logunov, 1998) comb. n., *Sitticus zimmermanni* (Simon, 1877) = *Sittiflor zimmermanni* (Simon, 1877).

South American groups of species *Sitticus leucoproctus* and *Sitticus palpalis* are left temporarily within genus *Sitticus* pending further research. *Pseudattulus kratochvili* Caporiacco, 1955 (female only) = *Sitticus cabellensis* Prószyński, 1971 comb. reinstated = *Sittisax cabellensis* (Prószyński, 1971) comb. n.

Referring to previous paper by Prószyński (2016c) I correct species synonym *Myrmavola globosa* (Wanless, 1978) = *Toxeus globosus* (Wanless, 1978), being a typing error.

Also, I reconfirm hereby original genus placement of *Emertonius exasperans* Peckham & Peckham, 1892, as seconded by Prószyński & Deeleman-Reinhold, 2010: 164-167, figs 169-171 and documented at: <http://www.peckhamia.com/salticidae/q24-Emer.html>, dismissed by the World Spider Catalog, ver. 2016 with incompetent comment.

Misplacement in *Sitticus* s.l. detected: *Sitticus taiwanensis* Peng X. & Li S., 2002, *Sitticus wuae* Peng X. & Tso I., Li S., 2002 – correction pending further research.

Key words: taxonomy, Salticidae, jumping spiders, new genera, *Sittiab* gen. n., *Sittiflor* gen. n., *Sittilong* gen. n., *Sittisax* gen. n., *Attulus* sensu novo, *Sitticus* sensu stricto, *Sittipub*.

Introduction

Genus *Sitticus* sensu lato, now split into smaller genera, had mainly Eurosiberian distribution, with a number of species extending their ranges to North America, Central Asian Mountains and some temperate Oriental areas (Russian Primore-Maritime Province, Korea, Japan, some areas of China). That group of genera, *Sitticus* and related, contains some 76 nominal species, out of which 57 is recognizable, but 10 known from single sex specimens only. Noticeable in variety of environments (tree trunks, buildings, rocks, but also wet meadows) called attention of a number of arachnologists (during last 60 years Harm, Logunov, Maddison, Marusik, Prószyński, Wesolowska, Żabka and other, in South America Galiano; during previous centuries C.L. & L. Koch, Simon, Emerton, G.W. & E.G. Peckham, O. Pickard-Cambridge, Kulczyński, Dahl) and photographers (Knoflach, Lissner, Senglet and other), was frequently reported in faunal reports and keys.

Recognition of genus *Sitticus* sensu lato created no problem for the arachnologists knowing it from field observations, specimens preserved could be identified in various ways. According to Simon's posthumous key (1937) identification of *Sitticus* require checking of following characters described with relative terms like "longer", "slight", "distinct": - 1. teeth on chelicerae, - 2. length of pedicel, - 3. presence of striae behind eyes III, as well as number and size of spines on legs, - 4. "normal" shape of carapace, - 5. eyes II "distinctly" closer to eyes I than to eyes III, - 6. eye field "slightly" narrowing anteriorly, - 7. reading half a page long description of color pattern and setae distribution, - 8. checking 2 diagrammatic drawings purporting to illustrate several related species. All that might lead to discovery that the examined specimen is, in this example, a *Sitticus*, presumably *S. floricola*.

Alternative identification proposed by Prószyński (1968, 1971a, 1973, 1980, 1983, 1984, 1987, summarized in 2016a, b) is shortened to a look at external appearance (Fig. 3) and at palp, or epigyne with its internal structures (Figs 1, 2), to be compared with existing drawings and photographs, and if these are

not available, with type specimens - inventory of which in 40 collections was published by Prószyński (1971b, 2016b).

Main problem in taxonomic studies is, however, practical selection of diagnostic characters applicable to genera and species: the best appear to be defining of species by precise drawings of palps, epigyne, spermathecae and ducts, to be compared directly with comparable drawings in literature and dismissal of translation of these drawings into words. The graphic definitions appear unequivocal, selected characters are sufficiently stable and permit separation of genera. Tests carried out by Prószyński (1980: 1-7) on large sample of 130 females and 47 males of 4 closely related species of *Sitticus* (*rupicola*, *floricola*, *palustris* and *caricis*), confirmed by 60 years of practice, demonstrated that dutifully made tedious descriptions of external appearances and measurements of body parts (25 of each specimen!) are almost useless. Both raw measurements and indices, calculated from them, shown considerable overlapping even between larger and smaller species, being of little help in separation of species. Routine descriptions of external appearance, ineffective and practically useless, should be replaced nowadays by color photographs of both live and preserved specimens (as in photographs by R. Whyte and his colleagues).

Relationship of species (genera, group of genera) by morphology could be established by continuity of similarities of particular characters, compared in sufficiently numerous taxa. Species apparently standing out of chain of similarities are probably misplaced. Interpretation of morphological premises requires knowledge and documentation of sufficiently numerous samples of both sexes of particular species. It happens that in some species one sex does not fit easily into general pattern (a case of female of *Sittisax saxicola* - Fig. 2A) but then characters of males may help in classification. Individual variation within particular species may raise questions in identification - for instance does bulbus rotated by 35 degree in male *Sittiflor rivalis* (below) indicate separate species status, or is just result of individual behavior of that particular specimen in a moment of preservation? In practice of taxonomic research species described on single specimen (during studies of little known faunae, or material collected from inaccessible areas), may be first trials of recognition, pending confirmation on richer material. The same concerns matching of males and females incidentally stored in the same collection vial, or collected separately, often from places hundreds of kilometers apart. Collections of Salticidae are full of misidentified specimens, and Catalogs lists false synonyms, whose authors were sure that their opinions constitute sufficient proof, as in cases of *Sitticus dorsatus*, *S. concolor* and *S. absolutus* (Figs 2 E-H). Not documented taxonomic decisions and generalizations should be inadmissible.

Material and Methods

The paradigm of this paper consists of a number of publications presenting results of revisions of Salticidae, carried out by Prószyński (numerous publications) and by other authors, now instantly available to readers on the Internet. That influenced also style of this presentation, with long descriptions of morphology condensed to the most important data. The aim of this publication is synthetic summary of mass of information concerning genus *Sitticus* s. l., with help of the data stored in electronic database, electronic catalog of spiders and texts of taxonomic literature stored in electronic library. In particular - diagnostic illustrations stored in the Internet database of Salticidae <http://www.peckhamia.com/salticidae/Subfamilies/index.html> (Prószyński 2016a), preliminarily arranged into comparative plates, permitting to scan characters of all recognizable species within seconds. Also additional taxonomic data of particular species (diagnostic documentation of synonyms, geographical distributions, whereabouts of stored collections, etc.) from <http://www.peckhamia.com/salticidae/index.html>. Other facility, used simultaneously, were selected bibliographic citations for each species, available in the World Spider Catalog (later quoted as WSC in the text) at <http://www.wsc.nmbe.ch/>, complemented with full texts of each publication, instantly opened on screen from the electronic library, also provided by the WSC. The above are documented with comparative plates of diagnostic drawings and photographs (Figs 1-3) of representative species of each genus.

Taxonomic descriptions**SITTICINES, Sitticeae, Sitticinae and Sitticini**

Group of genera named Sitticeae, or subfamily Sitticinae, inherited in 1960ties from earlier authors (Simon (1901-1903), Petrunkevitch (1928), and reported by Bonnet (1945-1961) and Roewer (1954 [1955]) containing mixed up crowd of species classified as *Attulus*, *Chalcoscirtus*, *Neon*, *Pseudattulus*, *Sitticus*, *Yllenus* and some other, was revised by Prószyński in 1960ties and 1980ties (op. cit.). These revision delimited genus *Sitticus* sensu lato, defined by type species *Sitticus terebratus* (Clerck, 1757) and including *Attulus* as a synonym (not published formally), but excluded incompatible *Chalcoscirtus*, *Neon* and *Yllenus*. However Maddison stressed at various occasions desirability of retaining *Attulus* and subdivision of *Sitticus*, which was supported by WSC. Finally Maddison (2015: 276) proposed newly defined taxonomic rank, a tribus, called Sitticini, based on gene sequencing and including also South American genera *Aillutticus*, *Amatorculus*, *Capeta*, *Gavarilla*, *Nosferattus*, *Pseudattulus* and *Semiopyla*. Morphological premises for such addition are unclear and are not yet precised, of the other hand practical application of gene sequencing arguments for taxonomic revisions of large series of species is not convincing. Abstaining from polemics on respective merits of morphological and molecular research, I propose to delimit temporarily an informal group of genera called SITTICINES (Prószyński 2016a), for facilitating identification of Sitticinae genera. Since informal group SITTICINES is not provided by rules of the International Code on Zoological Nomenclature, it cannot be described formally, but nothing prevents discussing mutual properties of genera included.

Mutual properties of informal group SITTICINES

Exemplary genus - *Sitticus* Simon, 1901 sensu stricto, whose type species is *Sitticus terebratus* (Clerck, 1757).

Diagnosis. Included genera are characterized by single comb like (multicusp) tooth on anterior median edge of chelicerae, with absence of any posterior tooth, and by "Amycoidea" type of palp with prominent central loop of spermophor in bulbus, continuing along margin of bulbus, the proportions of bulbus to cymbium resembling those in average jumping spider (in difference to genera added by Maddison, listed above). Epigyne, spermathecae and ducts diverse, but generally resembling these in *Attulus* (Figs II-O).²

Diversity of diagnostic characters in ALL recognizable species are shown at http://www.peckhamia.com/salticidae/Sitticinae_clas.html.

Remarks. Splitting of *Sitticus* sensu lato into smaller, more coherent genera, will facilitate creation of keys and identification of species. The convenient criterion of this subdivision is structure of spermathecae and ducts, for routine identification correlated shape of palps and external appearance may help.

Distribution. Mainly Eurosiberian, some species secondarily colonized North America, Korea and Japan. There exist relict[?] ranges of *Attulus* in Central Asian Mountains, separated from forest zones by dry and hot belt of steppes and deserts. Relationships of South American *Jollas* and uncertain species of *Sitticus* to remaining genera are unclear, however their palps and cheliceral dentition are similar.

Composition. Contain genera *Attulus* Simon, 1889 sensu novo, *Jollas* Simon, 1901, *Sitticus* Simon, 1901 sensu stricto and *Sittipub* Prószyński, 2016, as well as new genera derived from *Sitticus* sensu lato and described below: *Sittiab* gen. n., *Sittiflor* gen. n., *Sittilong* gen. n., *Sittisax* gen. n.

Misplacement detected:

Sitticus taiwanensis Peng X. & Li S., 2002 - misplaced, cheliceral dentition disagree with *Sitticus s. l.*
Sitticus wuae Peng X. & Tso I., Li S., 2002 - misplaced, cheliceral dentition disagree with *Sitticus s. l.* (Fig. 2M).

² ATTENTION. Epigyne mounted in Canada Balsam permanent slides of all these species, and all other permanent slides made in early years Prószyński's studies, may be too transparent now to be examined, they require dissolution in toluol or xylo, transfer to ethyl alcohol and, if necessary, repeating staining in Chlorazol Black E. After examination they should be stored in microvials and placed together with their specimens].

Gen. *Attulus* Simon, 1889, sensu Prószyński, 2017

Figures 1I-O, 3B-D

Type species *Attus distinguendus* Simon, 1868 = *Attulus distinguendus* (Simon, 1868) [senior synonym *Attus cinereus* Westring, 1861: 583 (preoccupied by Walckenaer, 1837) = *Attus helveolus* Simon, 1871 (unnecessary replacement name)].

Type material: "*Sitticus distinguendus* Sim. Rothenburg, Oberlausitz. Zimmermann No. 1685" - Mus. Berlin. "*Attul. helveolus* E.S. [= *A. cinereus* Westr.] 885. Galia" - Coll. Simon, Mus. Paris.; "*Sitticus psammodes* Thor., Simferopol [Al. v. Nordm.] No. 1687" - Mus. Stockholm.

Documentation studied. Original research published by Prószyński (1987) (as a collection of diagnostic drawings, including type specimens) and literature data, all summarized in Prószyński (2016a).

Remarks. I have found in 1960ties that genus *Attulus* contained mixed up species of *Sitticus*, *Yllenus* and some other genera [Bonnet (opus cit.), Roewer (opus cit.)]. Since type species *Attulus distinguendus* (and its junior synonym *A. helveolus*) were clearly related to *Sitticus*; I have merged them, and similar species, with *Sitticus*, that transfer was contested recently by Maddison (2015 and some earlier papers) and the WSC because of priority of names. Yielding to their arguments, I revive hereby *Attulus* to which some include species of *Sitticus* sensu lato having similar internal structure of epigyne and palps (Figs 1-3).

Diagnosis. Bulbus elongate oval, spermophor relatively broad with central loop distinctly elongate. Spermathecae "C" shaped, with rami of equal length, or somewhat asymmetrical, usually compressed, those in *A. penicillatus* seem intermediate to *Sittiflor*. Duct thin walled, but not membranous, relatively short and simple (Figs 1L-M).

Description. Small spiders of average body shape and proportions, abdomen usually dark, with a pair of white round spots (Figs 3 B-D), in some species with median abdominal whitish streak, mountain species living in higher altitudes are unusually black or blackish. Enclosed illustrations are integral part of description. Diversity of diagnostic characters in ALL recognizable species are shown at <http://www.peckhamia.com/salticidae/q29-Sit-dis.html>.

Distribution. Euro-Siberian, one species (*A. ammophilus*) recently migrated to North America (Maddison, personal communication).

Composition. The following species are included: *Attulus ammophilus* (Thorell, 1875), *A. ansobicus* Andreeva, 1976, *A. avocator* (Pickard-Cambridge O., 1885), *A. burjaticus* Danilov, Logunov, 1993, *A. clavator* Schenkel, 1936, *A. damini* (Chyzer, Kulczyński, 1891), *A. distinguendus* (Simon, 1868), *A. dubatolovi* Logunov, Rakov, 1998, *A. goricus* Ovtsharenko, 1978, *A. inopinabilis* Logunov, 1992, *A. karakumensis* Logunov, 1992, *A. kazakhstanicus* Logunov, 1992, *A. mirandus* Logunov, 1993, *A. nenilini* Wesolowska, Logunov, 1993, *A. niveosignatus* (Simon, 1880), *A. penicillatus* (Simon, 1875), *A. penicilloides* Wesolowska, 1981, *A. saltator* (Simon, 1868), *A. sinensis* Schenkel, 1963, *A. talgarensis* Logunov, Wesolowska, 1993, *A. vilis* (Kulczyński, 1895), *A. zaisanicus* Logunov, 1998.

Corrections to list of synonyms:***Attulus vilis* (Kulczyński, 1895)**

Attus vilis Kulczyński, 1895a: 8, pl. 1, f. 3-4

Sitticus vilis Prószyński (1976: 156, f. 303; 1987: 98)

Sitticus ammophilus Wesolowska, 1996: 41-43, f. 33A-C.

Differences in shape of spermathecae (Figs 1L-N) prove separate species status of syntypes of *Attulus ammophilus* and *A. vilis*, the latter is therefore removed from synonymy of the previous. Therefore:

Sitticus ammophilus: Wesolowska, 1996 (in part) = *Attulus vilis* (Kulczyński, 1895) (removal from synonymy).

***Attus viduus* Kulczyński, 1895 = *Attulus avocator* (O. Pickard-Cambridge, 1885)**

Attus avocator O. Pickard-Cambridge, 1885b: 106.

Attus viduus Kulczyński, 1895: 79, pl. 2, f. 28-29 (preoccupied by Walckenaer, 1847)

Sitticus viduus Prószyński, 1975: 216, f. 1j, 1976: 156, f. 304, Wesolowska, 1981b: 156, f. 84-87 (f).

Sitticus avocator Prószyński & Żochowska, 1981: 26, f. 25-26, Żabka, 1981a: 410, f. 7-10 Prószyński, 1982: 288, f. 44-45, 1987: 90-92, 97, Bohdanowicz & Prószyński, 1987: 127, f. 252-257.

Attulus distinguendus (misidentified): Logunov & Kopponen (2000, Entomologica Fennica, 11: 70, 83).

Species name of *Attus viduus* Kulczyński, 1895 was preoccupied by Walckenaer 1847, unnecessarily replaced by Roewer, 1951: 453, found to be junior synonym of *Attus avocator* O. Pickard-Cambridge, 1885 by Prószyński & Żochowska (1981: 26, f. 25-26). Different opinion on synonymy was expressed by Logunov & Kopponen (2000) transferring East Palaearctic *Sitticus viduus* into European *Sitticus distinguendus*, these species differing strikingly by color pattern, while separation of them by palps and spermathecae is difficult and require experience (see drawings of dorsal pattern of 6 specimens of *A.*

avocator, palps of 17 and epigyne with spermathecae of 6 in Prószyński [1987: 90-92], compare with the same of *Attulus distinguishedndus* shown on Figs 1I-J, 3B). Correct placement in synonymy influences, in this case, understanding of distribution of the species concerned). Therefore:

Attus viduus Kulczyński, 1895 (removed from synonymy of *A. distinguendus*) = *Attulus avocator* (O. Pickard-Cambridge, 1885).

Gen. *Jollas* Simon, 1901

Figures 2I-J

Type species *Jollas geniculatus* Simon, 1901 Prószyński, 1987: 58, figs unnumbered.

Documentation studied. Original diagnostic drawings of type species in Prószyński (1987: 58-59) and of all species in Galiano (1991), summarized in Prószyński (2016a, b).

Diagnosis. Promarginal cheliceral tooth comb like, the retromarginal one absent, according to published drawings spermatheca seems to be divided into two chambers, ducts have walls as thick as spermathecae, copulatory openings separate, pocket prominent (Figs 2I-J). Palp and spermathecae resembling *Sittiab* and *Sittilong*.

Description. See original descriptions of particular species. Enclosed illustrations are integral part of description.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Jol.html>.

Distribution. Caribbean, Central and South America.

Remarks. External appearance: long legged, small spider, not resembling European SITTICINES according to the photo by Maddison (2015) (genital documentation not enclosed so identification is not confirmed).

Composition. The following recognizable species are included: *Jollas amazonicus* Galiano, 1991, *J. geniculatus* Simon, 1901, *J. manantiales* Galiano, 1991, *J. minutus* (Petrunkevitch, 1930), *J. paranacito* Galiano, 1991.

Corrections to list of synonyms.

Jollas armatus (Bryant, 1943) = "*Oningis*" *armatus* Bryant, 1943b - transfer of misplaced species, belonging to EUOPHRYINES,

Jollas crassus (Bryant, 1943) = "*Oningis*" *crassus* Bryant, 1943 - transfer of misplaced species, belonging to EUOPHRYINES,

Jollas lahorensis (Dyal, 1935) (nomen dubium) = "*Oningis*" *lahorensis* Dyal, 1935 - unrecognizable species, should be listed as nomen dubium in its original combination.

Gen. *Sittiab* Prószyński, 2017 gen. n.

Figures 2E, F1-H2

Type species *Sitticus absolutus* Gertsch, Mulaik, 1936.

Etymology. Name coined of the names "SITTI-cus-AB-solutus".

Documentation studied. Original research published by Prószyński (1973) and literature data summarized in Prószyński (2016a, b).

Diagnosis. Distinctive character of the genus is the single copulatory duct running from mutual anterior copulatory opening, forking next in the middle of epigyne and joining a pair of spermathecae consisting of three spherical chambers. Male palps with central loop of spermophor extending along almost the whole length of oval bulbus, which resembles some *Attulus*, but differing from the latter by more proximal arising point of tibial apophysis, which is thin, long, apically slightly arching. Palpal tibia short, in two species distinctly narrowing proximally.

Description. Small jumping spiders with abdomen oval, or broadened in the posterior third, total body length about 3 mm (detailed measurements - see Prószyński, 1973). Dorsal pattern in preserved specimens consists of mosaic of small light and dark dots (Prószyński 1973: Figs 17-21), but there is no color photos documentation of either alive or preserved specimens. Species of this genus are identifiable mainly by internal structures of epigyne, described above and shown on Figs 2E, F1-H2. Epigyne of several species with translucent parts of spermathecae visible as two distinct but variable circles, a character not

permitting to identify a species, none the less misleading previous authors. Enclosed illustrations are integral part of description.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-lon.html>.

Remarks. Spermatheca divided into three spherical chambers is unique among SITTICINES and the only analogy is provided by European Alpine species *Sittilong longipes* comb. n., however it has separate copulatory openings and its external appearance is entirely different (Fig. 3J).

Distribution. North America.

Composition. The following species are included: *Sittiab absolutus* (Gertsch, Mulaik, 1936) comb. n., *S. cursor* (Barrows, 1919) comb. n., *S. juniperi* (Gertsch, Riechert, 1976) comb. n. Diversity among unidentified specimens suggest existence of more species, pending research.

Corrections to list of synonyms.

***Sitticus absolutus* Gertsch & Mulaik, 1936 - comb. reinstated**

Figs 2E, B2, G2a

Alleged synonymy with *Attus dorsatus* Banks, 1895e: 97 is rejected because that species is unidentifiable and, formally, there is even no publication establishing that synonym. Richman (1979: 125) note, on which the WSC base synonym, contains merely hearsay evidence: "... the type specimen of Banks "is apparently" in the Museum of Comparative Zoology..." and refers to the sources: Levi, Griswold, Johnson, Icenogle and Cutler, he was not able to indicate any published source of that synonymy (personal correspondence), and there is nobody else vouching that. "Peckhamia", now respectable and accepted Internet journal, was in 1979 stenciled private bulletin, not acceptable as a source of taxonomic decisions. The diagnostic documentation suggested by the WSC quotation of *Sitticus dorsatus*: Breene et al., (1993: 67, f. 47A-B) (authored in fact by G.B. Edwards) consist of two drawings of *Sitticus absolutus* (compare Figs 2H1-H2) copied from Gertsch & Mulaik (1936. Am. Mus. Novit. 851: 19, f 19, 20) and one line couplet from a key "33a Cheliceral retromarginal teeth absent". Therefore:

Sitticus dorsatus: Richman, 1979 (nomen dubium) = *Sittiab absolutus* Gertsch & Mulaik, 1936 comb. n.

***Sitticus cursor* Barrows, 1919 comb. reinstated**

Figs 2F1, G1

Alleged synonymy with *Attus concolor* Banks, 1895c: 206 is rejected because assumed species identity is not proven, what more, is doubtful in view of:

- lack of documentation, for which observation of epigyne with "single opening and two circles" (Maddison 1996: 270) cannot substitute as fitting at least 3 species (Figs 2F-G6);
- circumstances of that discovery are not raising confidence: an unidentified (misidentified?) specimen of alleged holotype of *Attus concolor* Banks, 1895 was retrieved by Maddison (1996: 270) from not defined vial of *Pelegrina proterva*,
- note on this discovery was published inside Maddison's description of *Pelegrina proterva* (Dendryphantinae), unnoticeable to specialists of *Sitticus*. By the way: quotation "*Sitticus concolor* Maddison, 1996: 270" (*removed from S of Pelegrina proterva, contra Edwards, 1980: 12, Sm*)" in the WSC (version 18,0) mistakes *Pelegrina* with *Sitticus*. Maddison overlooked also large revision on the subject, published twelve years earlier by Prószyński (1973). Therefore:

Sitticus concolor: Maddison, 1996 (nomen dubium) = *Sittiab cursor* (Barrows, 1919) comb. n.

Gen. *Sitticus* Simon, 1901, sensu stricto

Figures 2E-H, 3B

Type species *Araneus terebratus* Clerck, 1757 = *Sitticus terebratus* (Clerck, 1757).

Documentation studied. Original research published by Prószyński (1968) and literature data, summarized in Prószyński (2016a, b).

Diagnosis. Resembles other SITTICINES by comb like cheliceral tooth (Fig. 2E) and type of palps, with central loop of spermophor. Differs by lateral expansion of anterior tip of cymbium, bulbous round, encircled by embolus, tibial apophysis large (Fig. 2F). Copulatory ducts half encircling epigyne laterally and passing into central, entangled, very complicated knot (usually simplified on published drawings) (Figs 2G-H), hiding spermatheca which also is not shown. Abdomen dark with whitish, irregular median streak, accompanied by irregular white dots (Fig. 3B).

Description. Male with bulbus round, or near round, typical loop of spermophor, embolus encircling bulbus and stretching in front of it inside prominent groove on expanded laterally tip of cymbium, tibial apophysis long, slightly bent, in *S. terebratus* robust. Epigyne with a pair of anterior openings, very close to each other, or fused, pocket simple. Copulatory ducts half encircling epigyne laterally and passing into central entangled, very complicated ducts, simplified on existing drawings. Spermathecae poorly visible among loops of ducts. Body coloration dark, with white, irregular streak on abdomen, expanded transversally by whitish spots and dots. For detailed measurements - see Prószyński (1968). Enclosed illustrations are integral part of description.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-ter.html>.

Distribution. Eurosiberian, one species occurring in cooler areas of Europe, two penetrated North America (of which *S. fasciger* arrived there around 1959).

Composition. The following species are included: *Sitticus fasciger* (Simon, 1880), *S. finschi* (Koch L., 1879), *S. godlewskii* (Kulczyński, 1895), *S. tannuolana* Logunov, 1991, *S. terebratus* (Clerck, 1757).

Corrections to list of synonyms:

***Sitticus godlewskii* (Kulczyński, 1895)**

Attus godlewskii Kulczyński, 1895d: 74, pl. 2, f. 34;

Sitticus godlewskii Simon, 1901a: 580, Prószyński, 1962a: 65, f. 1-4,

Sitticus fasciger Prószyński, 1968c: 399, f. 3, 9-16.

Kulczyński described this species from a single, damaged specimen collected by either B. Dybowski or W. Godlewski (both prisoners of "katorga" - Imperial Russian labor camp) in Darasuń, East Siberia. Redescribed by Prószyński (1962a: 65, f. 1-4) it was later synonymized with *Sitticus fasciger* (Prószyński, 1968c: 399, f. 3, 9-16) because of similarity of entangled ducts in epigyne. However, in an afterthought, degree of similarity may indicate rather affinity than identity. That dilemma may be solved only on fresh specimens collected and observed at the type locality. Reviving *S. godlewskii* as valid species may contribute to the solution. Therefore:

Sitticus fasciger (Simon, 1880) (in part) = *Sitticus godlewskii* (Kulczyński, 1895) (removal from synonymy, self-correction).

***Sitticus leucoproctus* group of species**

Figure 2K

Exemplary species - *Sitticus leucoproctus* (Mello-Leitão, 1944).

Definition. Provisional and uncertain South American group of species, pending further research.

Diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-leu.html>.

Remarks. Palps resembling SITTICINES, but resemblance of internal structures is uncertain. Knowledge of this group of species is too insufficient to precise their placement. Enclosed illustrations are integral part of description.

Composition. The following species are included: *Sitticus cellulanus* Galiano, 1989, *S. flabellatus* Galiano, 1989, *S. leucoproctus* (Mello-Leitão, 1944).

***Sitticus palpalis* group of species**

Figure 2L

Exemplary genus - *Sitticus palpalis* (F. O. Pickard-Cambridge, 1901).

Definition. Provisional and uncertain South American group of species, pending further research.

Diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-pal.html>.

Remarks. Palps resembling SITTICINES, but resemblance of internal structures is uncertain. Knowledge of this group of species is too insufficient to precise their placement. Enclosed illustrations are integral part of description.

Composition. The following species are included: *Sitticus canus* (Galiano, 1977), *S. mazorcaanus* Chamberlin, 1920, *S. palpalis* (F. O. Pickard-Cambridge, 1901), *S. phaleratus* Galiano & Baert, 1990, *S. tenebricus* Galiano & Baert, 1990, *S. uber* Galiano & Baert, 1990, *S. vanvolsemorum* Baert, 2011.

Gen. *Sittiflor* Prószyński, 2017 gen. n.
 Figures 1A-D, 3E-H

Type species *Euophrys floricola* C. L. Koch, 1837 = *Sittiflor floricola* (C. L. Koch, 1837) comb. n.

Etymology. Name coined of the type species names SITTI-cus-FLOR-icola.

Documentation studied. Original research published by Prószyński (1980) and literature data, summarized in Prószyński (2016a, b).

Diagnosis. Bulbus almost round, with "S"-like loop located near center, differs from *Sitticus terebratus* by tip of cymbium not expanded laterally and by smaller tibial apophysis. Spermathecae differs from those "C"-shaped in *Attulus*, by unequal development of both rami, the anterior one is shorter, the posterior longer and developed along longitudinal axis of epigyne. Ducts long, running around anterior half of spermathecae, in some species very long, extending like flattened loop along the whole spermatheca, they can be inserted to either ramus (Figs 1A-D).

Description. Body about 4-6 mm long, for detailed measurements - see Prószyński (1980). Dark colored - from light brownish to almost black, with ringed legs. Majority of species have a pair white spots in the posterior half of abdomen, either round or rectangular, there is also irregular, light abdominal streak. Carapace with thin white lines, median one and lateral along edges of dorsal surface, also along ventral edge of carapace. The white dots and lines pattern is to some extent variable, variously developed in some species, and possibly varying geographically, in some species (*S. caricis*) it is absent entirely. Frontal color pattern seems to be important for identification, but was little used. Enclosed illustrations are integral part of description. There are some environmental differences among related species: *S. floricola* builds large white retreats atop of *Juncus* (Fig. 1D), along water shores and on wet meadows, *S. caricis* living on the same meadows is rarely seen because keeps low on tussock of grasses, just above their roots (personal communication from A. Kajak), microhabitat preferences of *S. inexpectus* found on the same meadows are not yet known. *Sitticus rupicola* is a mountain dweller, moving about rock surface, always nearby vegetation, it builds nests between surfaces of rocks and stones laying on them.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-flo.html> .

Distribution. Mainly Eurosiberian, with several species colonizing Northern America, *S. caricis* extends ranges to Russian Primore (Maritime Province).

Composition. The following species are included: *Sittiflor atricapillus* (Simon, 1882) comb. n., *S. caricis* (Westring, 1861) comb. n., *S. cutleri* (Prószyński, 1980) comb. n., *S. dudkoi* (Logunov, 1998) comb. n., *S. floricola* (Koch C.L., 1837) comb. n., *S. floricola palustris* (Peckham, Peckham, 1883) comb. n., *S. inexpectus* (Logunov, Kronstedt, 1997) comb. n., *S. magnus* (Chamberlin, Ivie, 1944) comb. n., *S. monstrabilis* (Logunov, 1992) comb. n., *S. pulchellus* (Logunov, 1992) comb. n., *S. rupicola* (Koch C.L., 1837) comb. n., *S. striatus* (Emerton, 1911) comb. n., *S. sylvestris* (Emerton, 1891) comb. n., *S. zimmermanni* (Simon, 1877) comb. n.

Corrections to list of synonyms

***Sitticus rivalis*: Logunov, 2004**

Sitticus rivalis: Logunov, 2004 a: 35, f. 10-12, 17-21 = *Sitticus striatus*: Prószyński, 1980: 27, f. 91-93 - removal of *S. rivalis* from synonymy of *S. striatus* is rejected because of misjudged importance of diagnostic characters: spermathecae and ducts, which are identical, are the most reliable indicator of relationships in *Sitticus*. The only visible difference between drawings of palps is bulbus rotation by about 35 degrees, but bulbus is rotatable, especially during copulation and possibly in other situations. Palps in *Sitticus* are poor indicator of species differences. Documentation of color differences is based on preserved, bleached specimens, insufficient and unreliable. Therefore (pending studies on more specimens):

Sitticus rivalis Simon, 1937 = *Sittiflor striatus* (Emerton, 1911) - reinstated synonym, contra Logunov, 2004 a: 35.

Sitticus floricola palustris (Peckham & Peckham, 1883) and *S. floricola* (Koch C.L., 1837) were described as separate species on different continents, but their alleged morphological differences seems to be insignificant and they were never compared in a professional way, their split distribution resemble several

Eurosiberian relatives being recent immigrants to North America. Solving of uncertain status of *Sittiflor floricola palustris* seems to be desirable.

Gen. *Sittilong* Prószyński, 2017 gen. n.
Figures 1P, 3J

Attus longipes Canestrini, 1873: 49; 1876: 214, pl. 8, f. 1; Simon, 1876a: 105;

Sitticus muralis Schenkel, 1925: 316.

Sitticus longipes Simon, 1937: 1188, 1256, f. 1873-1875; Prószyński, 1973a: 89, f. 50-55, 1991: 518, f. 1391; Hansen, 1986: 114, f. 14; Breuss, 2001: 189, f. 14-15; Logunov, 2004b: 274, f. 1-2.

Type species *Attus longipes* Canestrini, 1873: 49.

Etymology. Name coined of the type species name "SITTI-cus-LONG-ipes".

Documentation studied. Original research published by Prószyński (1973) and literature data summarized in Prószyński (2016a, b).

Diagnosis. Differs from other genera by black color pattern (high mountain melanism?), with silver median streak along abdomen, body less robust with relatively longer legs (Fig. 3J). Palp *Attulus* like, with slim tibial apophysis. Female spermathecae rather unusual, divided into three chambers like in *Sittiab*, but with separate copulatory openings and ducts (Fig. 1P).

Description. Body size about 5 mm, for detailed measurements - see Prószyński (1973). Black coloration could be possibly explained as high mountain melanism, facilitating warming of organism in cool high mountains environment, encountered also in other SITTICINES (*Attulus ansobicus* for instance). Enclosed illustrations are integral part of description.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-lon.html>.

Distribution. Europe - Alps, between 2300 - 3500 m.

Composition. Single species included: *Sittilong longipes* (Canestrini, 1873) comb. n., no other species known.

Gen. *Sittipub* Prószyński, 2016
Figures 1Q, 3K

Type species *Aranea pubescens* Fabricius, 1775 = *Sittipub pubescens* (Fabricius, 1775) in Prószyński (2016: 27, f. 8K-M).

Diagnosis and description - see Figs 1Q, 3Q, also Prószyński (1983: map 5, 2016c: 27, fig. 8K-M) and Żabka (1997: 92, f. 346-351). *Sittipub pubescens* agrees with characters expected from *Sitticus* - single, comb like tooth on cheliceral margin, comparable body shape and habits. However, it differs by short, differently shaped embolus, entirely different epigyne, spermathecae and ducts. Specimens of this common (in Poland) species, which I used to collect, had no white abdominal spots visible on Fig. 3K. Enclosed illustrations are integral part of description.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sittipub.html>.

Note. Could it be that genus *Sittipub* represent separate branch of SITTICINES, arrived to Palaearctics and developed independently? The other species - *S. relictarius*, has the same characters but developed different enough to be considered kernel of a new genus, if more species would be discovered.

Comparable forms seem to occur among some South American Amycoidea, but closely similar genera are not yet known.

Distribution. Eurosiberian, recent immigrant to North America.

Composition. The following species are included: *Sittipub pubescens* (Fabricius, 1775), *S. relictarius* (Logunov, 1998) [but see also Prószyński (1987: 99-100)].

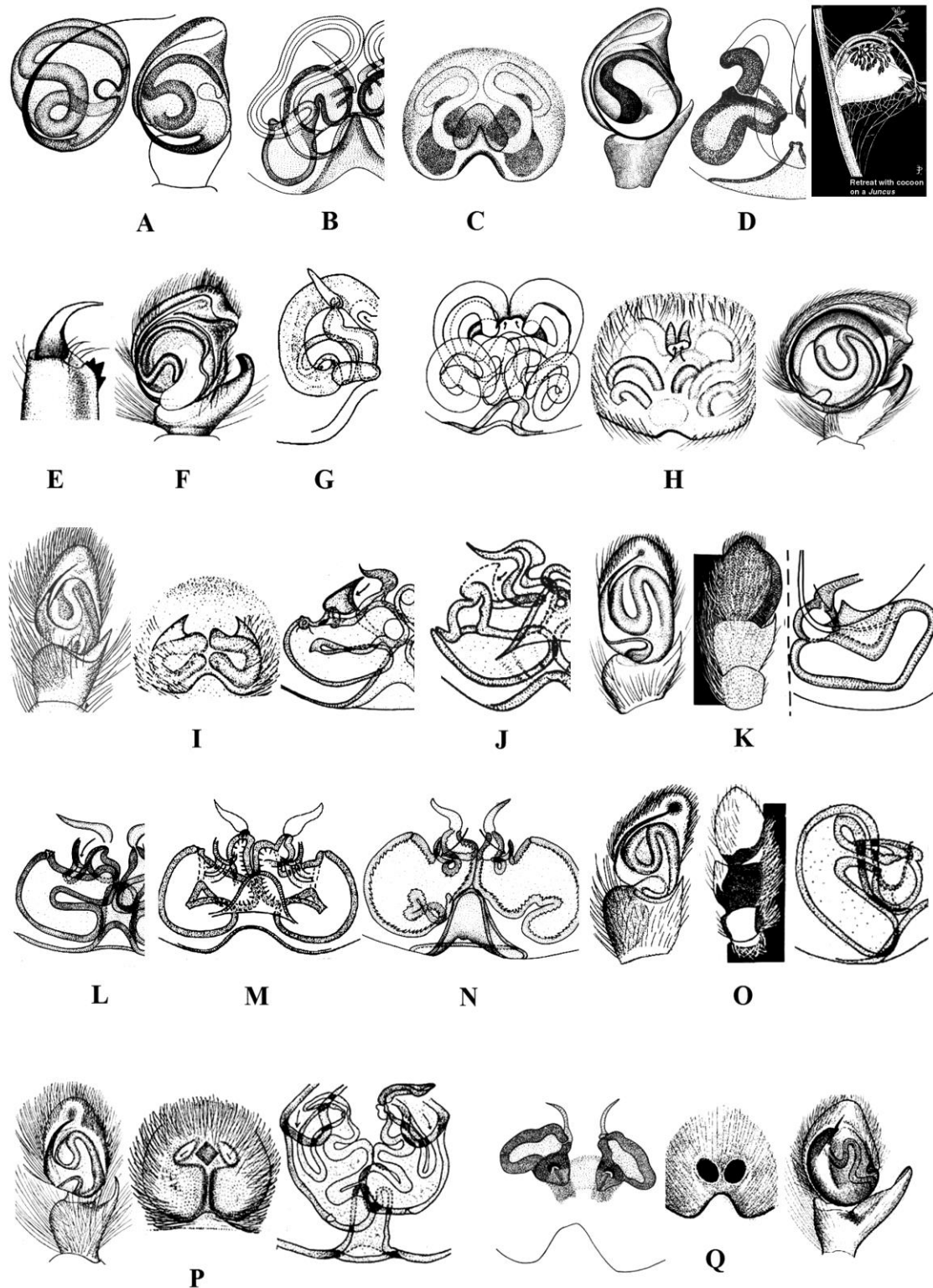


Figure 1. Diversity of palps and epigyne in *Sitticus* and related genera: **A - C** - *Sittiflor zimmermanni* cleared bulbous showing course of spermophor, palp, spermatheca with duct, epigyne; **D** - *Sittiflor floricola* palp, spermatheca with duct, retreat atop meadow *Juncus*, with cocoon inside; **E - G** - *Sitticus terebratus* tooth, palp, knot of copulatory ducts [simplified!]; **H** - *Sitticus fasciger* knot of copulatory ducts, epigyne, palp; **I** - *Attulus distinguendus* type: palp, epigyne, spermatheca and duct; **J** - its synonym *Attulus cinereus* = *A. helveolus*) type specimen: spermatheca and duct, **K** - *Attulus saltator* (O. Pickard-Cambridge, 1868); **L - N** - are these forms synonyms?: *Attulus ammophilus*: spermatheca and ducts [**L** - syntype drawn by Prószyński, **M** - specimen from Turkmenistan drawn by Wesołowska], **N** - *Attulus vilis*- syntype specimen from Armenia Goktscha [Sevan] Lake, by Prószyński; **O** - *Attulus vilis*; **P** - *Sittilong longipes*, **Q** - *Sittipub pubescens*. SOURCES: Drawings by J. Prószyński in ©Annales zoologici: 26: 239-247; 1973a. 30; 1980: 36; Atlas:....:1987a: 89; 94-95, except **M** - Wesołowska 1996: Arthropoda Selecta 5(1/2): 17-5341-43, f. 33A-C; **Q** - Żabka (1997). Fauna Polski 19: 92, f. 346-351. All copyrights are retained by the original authors and copyright holders, used by their courtesy.

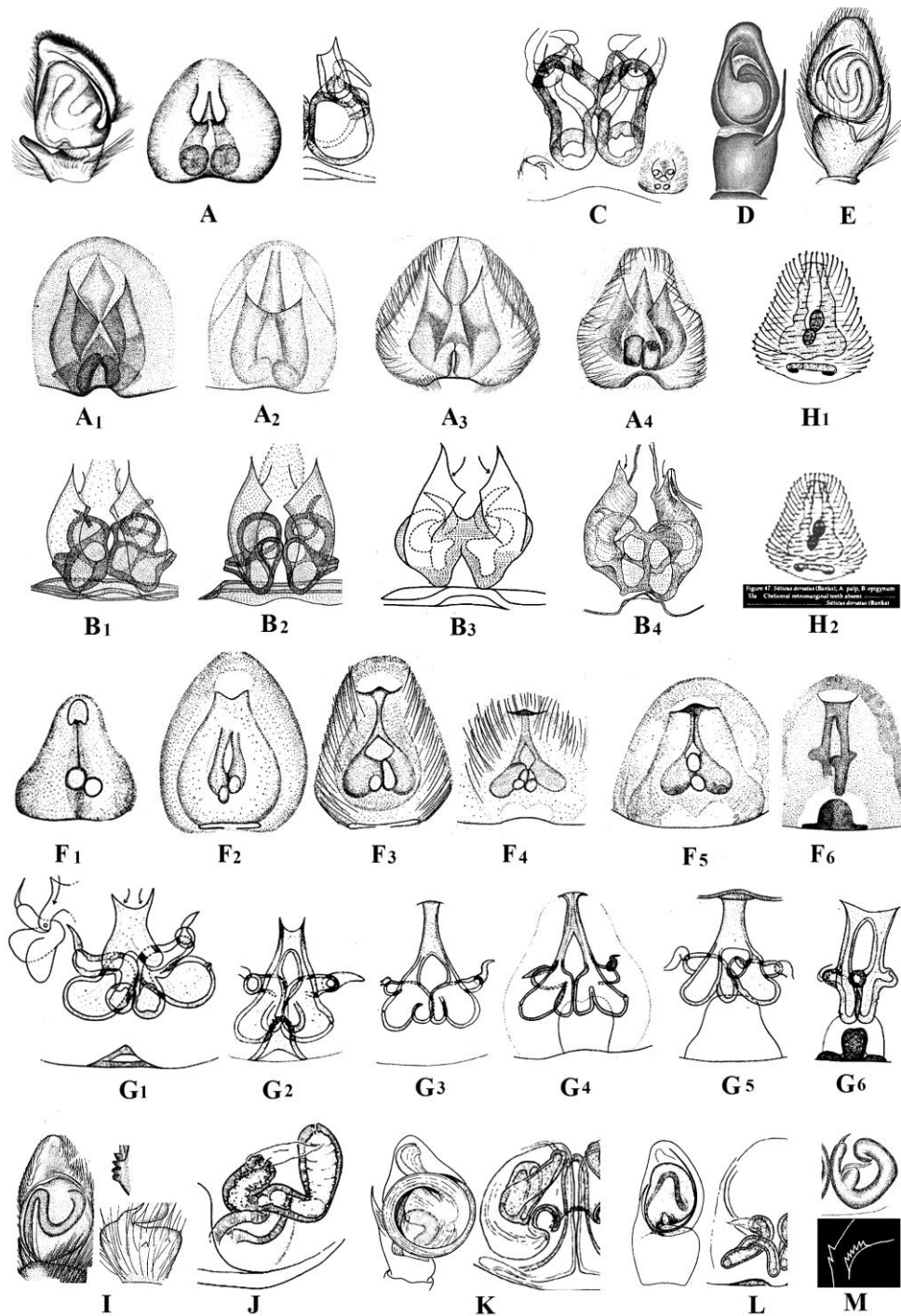


Figure 2. Diversity of palps and epigyne in *Sitticus* and related genera (continuation). **A** - *Sittisax saxicola* palp and spermatheca; **A1-4, B1-4** *Sittisax ranieri* [epigyne and its internal structure in: **A1, B1** - type specimen of *S. ranieri* from Mt. Glacier, **A2, B2** - Wallowa Mts specimen, **A3, B3** - *Sittisax "mazamae"* Schenkel, 1951, Crater Lake, Oregon specimen; **A4, B4** - Mongolian specimen]; **C** - "*Sitticus*" *cabellensis*, female; **D** - its supposed match - *Pseudattulus kratochvili*; **E** - *Sittiab absolutus*, paratype male [**F1, G1** - *S. cursor*, **F2, G2** - *Sitticus absolutus*, paratype female; **F3, G3** - *S. callidus*, **F4, G4** - Salt Lake City specimen; **F5, G5** - Idaho specimen, **F6, G6** - Llano, Texas specimen. Comparison of original documentation: **H1**- original drawing of *Sitticus absolutus* Gertsch & Mulaik, 1936 and **H2** - its copy labeled as *Sitticus dorsatus* by Edwards - the only existing drawing and the key couplet of the synonym *Sitticus dorsatus*; **I** - *Jollas geniculatus* male, palp ; **J** - *Jollas geniculatus* spermatheca; **K** - *Sitticus leucoproctus*; **L** - *Sitticus palpalis*; **M** - *Sitticus wuae* Peng X. & Tso I., Li S., 2002 - misplaced, cheliceral dentition disagree with *Sitticus s. l.* SOURCES: **A - C, E - G** - Prószyński: ©Annales Zoologici, 1968, 28: 183-204 and 1973a, 30: 71-95; **D** - Ruiz, Brescovit & Lise, 2005: Revista Brasileira de Zoologia 24: 376-381.756; **H1** - Gertsch & Mulaik, 1936 ©American Museum Novitates 851: 1-21; **H2** - Edwards in Breene, Dean, Nyffeler & Edwards (1993). Biology, Predation Ecology, and Significance of Spiders in Texas Cotton Ecosystems with a Key to Species. 1993: 67, f. 47B; **J** - ©Galiano 1991. Physis C. 47 (112): 18, ff. 38; **K** - ©Galiano 1989. Rev. Soc. ent. Argentina, 45 (1-4): 259, f 8-9; **L** - ©Galiano 1991. Acta Zool. Lilloana 40, 1: 61, ff. 11, 16; **M** - Peng X, Tso I & Li S, 2002. Zoological Studies 41 (1): 2-3, f 5-8. All ©copyrights are retained by the original authors and copyright holders, used by their courtesy.

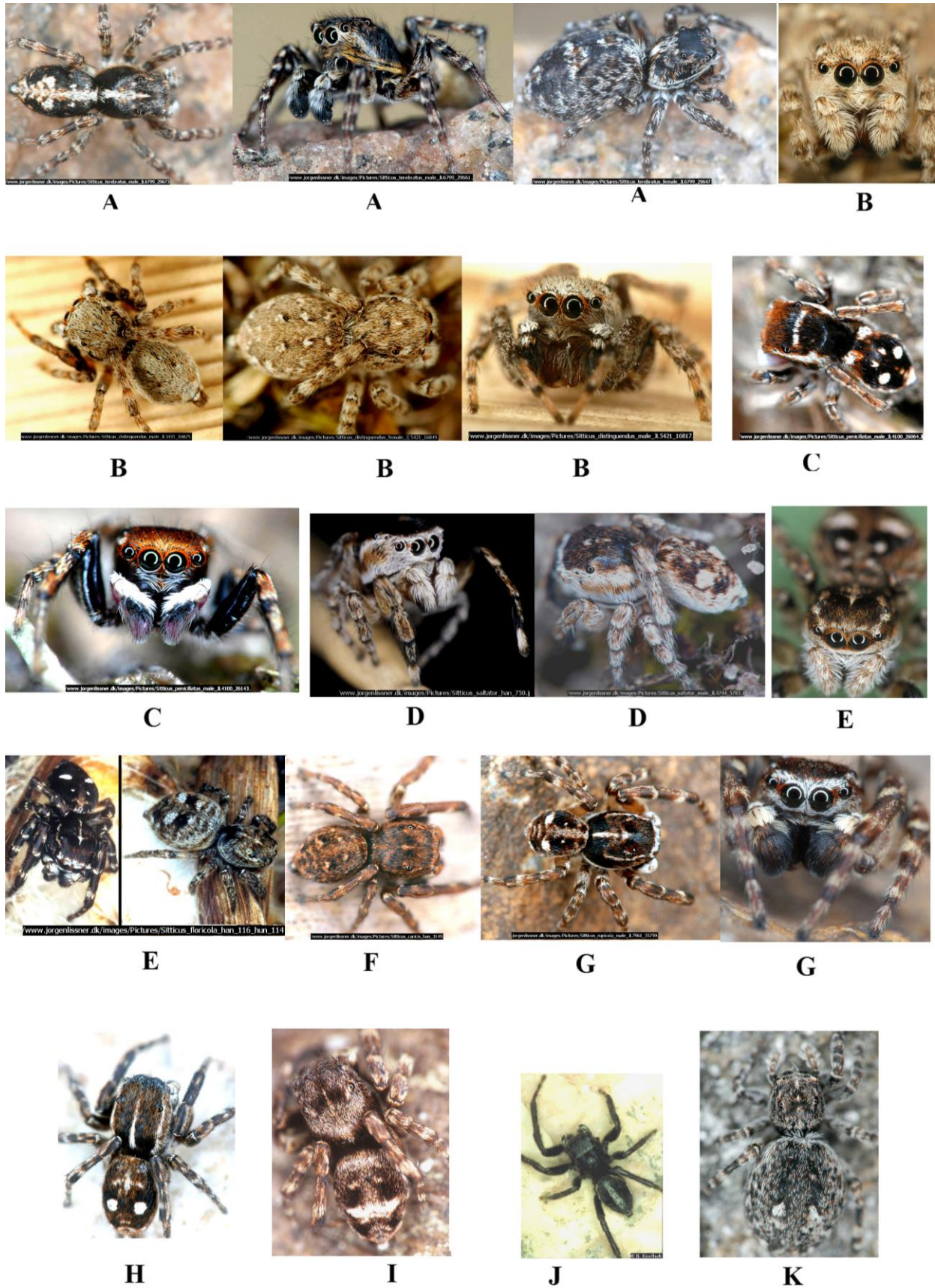


Figure 3. Diversity of color pattern in species related to *Sitticus*: **A** - *Sitticus terebratus*, male & female; **B** - *Attulus distinguendus*, male & female; **C** - *A. penicillatus*; **D** - *A. saltator*; **E** - *Sittiflor floricola*; **F** - *Sittiflor caricis*; **G** - *Sittiflor rupicola*; **H** - *Sittiflor zimmermanni*; **I** - *Sittisax saxicola*; **J** - *Sittilong longipalpis*; **K** - *Sittipub pubescens*. SOURCES: **A - I, K** - © Photo J. Lissner; **J** - © Photo B. Knoflach. All copyrights are retained by the original authors and copyright holders, used by their courtesy

Gen. *Sittisax* Prószyński, 2017 gen. n.

Figures 2A, A1-B4, 3I

Type species *Euophrys saxicola* C. L. Koch, 1846 = *Sitticus saxicola* (C. L. Koch, 1846) = *Sittisax saxicola* (C. L. Koch, 1846) comb. n.

Etymology. Name coined of the type species name "SITTI-cus-SAX-icola".

Documentation studied. Original research published by Prószyński (1971) and literature data summarized in Prószyński (2016a, b).

Diagnosis. Male palps and cheliceral dentition agree with other SITTICINES, epigyne with very short, broad ducts and double spherical chambers of spermathecae. Live males of *Sittisax saxicola* strike by ginger hue.

Description. Body shape and color pattern is shown on Fig. 3I, it seem significant that pair of white abdominal spots are not round but truncated anteriorly and stretch transversally across abdomen, their contrasting appearance is increased by pairs of black areas in front and behind. There is also black narrow area at the level of eyes III on carapace. Palp is shown on Fig. 1A, diversity of appearance of epigyne on Figs 1A, of spermathecae at series B1-B4. Body size about 5 mm, for detailed measurements - see Prószyński (1971). Enclosed illustrations are integral part of description. In *S. ranieri*[?] specimen from Mongolia spermatheca is a compact, sclerotized body with internal chambers - see Prószyński (1971, Figs 25, 30), also present paper Figs 2 A4, B4, above) and can be, perhaps, different species.

More diagnostic documentation of ALL recognizable species - see at: <http://www.peckhamia.com/salticidae/q29-Sit-sax.html>.

Distribution. Eurosiberian, *S. ranieri* also in North America, *S. cabellensis* [?] in Venezuela.

Composition. The following species are included: *Sittisax cabellensis* (Prószyński, 1971) comb. n., - female only, *S. dzieduszyckii* (L. Koch, 1870) comb. n., *S. ranieri* (Peckham & Peckham, 1909) comb. n., *S. saxicola* (C. L. Koch, 1846) comb. n., there is presumably more species, misidentified or pending description.

Corrections to list of synonyms

Ruiz et al. (2005c: 756) matched female *Sitticus cabellensis* Prószyński, 1971 (1971a: 198, f. 31-39) (Fig. 2E) with *Pseudattulus incertus* Caporiacco, 1955 and next with *Pseudattulus kratochvili* Caporiacco, 1947 (Ruiz et al, 2007: 377, f. 1-5), however, without any diagnostic documentation for females concerned, and without examining holotype specimen of *S. cabellensis* (Fig. 2C). The documentation provided is not sufficient for that matching, therefore female of *Sitticus cabellensis* should be removed from synonymy of both *Pseudattulus incertus* and *Pseudattulus kratochvili*. Matching of male *Sitticus cabellensis* with female is doubtful and pending revision. Therefore:

Pseudattulus kratochvili Caporiacco, 1955 (female only) = *Sitticus cabellensis* Prószyński, 1971 = *Sittisax cabellensis* (Prószyński, 1971) (female only) comb. n., reinstated.

Discussion

As illustrated by the above diagram, major species radiation of *Sitticus* s. lato took place in the Eurosiberian zone of Palaearctic Region, with representative of several lines undertaking later migration to North America, apparently to its forest zone. Judging from present distribution some species maintaining now areals on both continents, could possibly migrate by old Bering Strait bridge opened during glacial periods. However, some East Palaearctic species arrived quite recently - I have learned from Bruce Cutler (personal communication) that *Sitticus fasciger* arrived to North America around 1959 and was observed first in neighborhood of New York, but within ten years spread northwest as far as St. Paul, Minnesota, where outnumbered 10 to 1 an earlier immigrant - *Salticus scenicus* (Clerck, 1757) on walls of the local university. That opinion was corroborated by Dr. W.J. Gertsch, who collected intensively in that area in 1930-1932 (personal communication, see also Prószyński 1968: 394-395). Additional interesting information was given to me by B. Cutler - within subsequent 10 years the number of *S. fasciger* specimens decreased significantly on the same university, a good illustration to dynamics of colonization processes. Other species of *Sitticus* s. lato arrived using trans Atlantic cargo and ballast sailings (Lindroth - The faunal connections between Europe and North America, (1957; 344 Wiley, 1957, 344 pp.). Broader perspectives to Palaearctic radiation of *Sitticus* s. lato was supplied by Maddison (2015 and other papers) finding out, by gene sequencing methods, a large group of related genera he has classified as clade Amycoida.

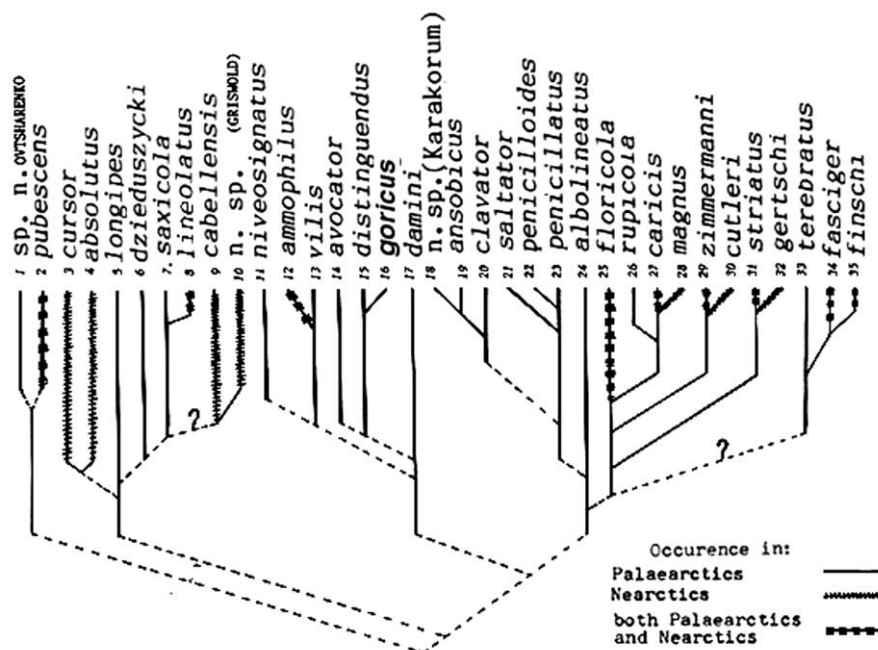


Figure 4. Phylogenetic tree and geographical distribution of 35 species of *Sitticus* sensu lato, as it was understood in 1983. Source: Prószyński J. 1983a. Veröffentlichungen Naturwiss. Vereins, Hamburg, 26: 161-179, f 4. By courtesy.

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³ Attention: only selected references are listed here, other references can be found in the Internet database of Salticidae at <http://www.peckhamia.com/salticidae/>, or in the WSC at <http://www.wsc.nmbe.ch/>

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