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Taxonomic notes on the Misumenini (Araneae: Thomisidae: Thomisinae), primarily from the Palaearctic and Oriental regions

Таксономические заметки о Misumenini (Araneae: Thomisidae: Thomisinae), главным образом из Палеарктики и Ориентальной области

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ABSTRACT. The taxonomic limitation of Misumenini is revised. Four new genera are erected in the Misumenini (type species are given in parentheses): *Henriksenia* gen.n. (*Misumena hilaris* Thorell, 1877 from Indonesia and Sulawesi), *Ebelingia* gen.n. (*Misumenops kumadai* Ono, 1985 from north-east Asia), *Ledouxia* gen.n. (*Misumena alluaudi* Simon, 1898 from Mauritius) and *Ansiea* gen.n. (*Misumena tuckeri* Lessert, 1919 from Tanzania). Contrary to Simon [1897], *Mastira* Thorell, 1891 is removed from synonymy with *Epidius* Thorell, 1877. Two genera and 28 species are synonymized: *Platypyresthesis* Simon, 1903 with *Sylligma* Simon, 1895; *Diasterea* Shield et Strudwick, 2000 with *Zygometis* Simon, 1901; *Misumenops kumaonensis* Tikader, 1980 = *Heriaeus horridus* Tyschchenko, 1965; *Misumenoides kripalaniae* Tikader, 1965 = *Angaeus pentagonalis* Pocock, 1901; *Misumena personata* Simon, 1916 = *Misumena bicolor* Simon, 1875 [contra Roewer, 1955 and Platnick, 2003]; *Synema batjense* Simon, 1886 = *Mastira nitida* (Thorell, 1877); *Diaea subargentata* O. Pickard-Cambridge, 1885 [contra Marusik, 1993], *Misumenops dierythra* (Thorell, 1890), *Ebrechtella fruhstorferi* Dahl, 1907, *Misumena silveryi* Tikader, 1965, *Misumena gamma* Chrysanthus, 1964 and *Misumenops maygitgitus* Barrion et Litsinger, 1995 = *Ebrechtella concinna* (Thorell, 1877); *Massuria javana* Simon, 1895 and *Zygometis cristulata* Simon, 1901 = *Zygometis lactea* (L. Koch, 1876); *Misumena personata* Simon, 1916 = *M. bicolor* Simon, 1875 [contra Platnick, 2003]; *Misumena braminica* Simon, 1906, *Synema seranicum* Strand, 1913, *Misumenops* ? *bühleri* Schenkel, 1944, *Misumenoides shulli* Tikader, 1965, *Misumenoides deccanes* Tikader, 1965, *Diaea jaintious* Tikader, 1966, *Misumena decorata* Tikader, 1980, *Misumenoides matinikus* Barrion et Litsinger, 1995 and *Misumenoides pabilogus* Barrion et Litsinger, 1995 = *Henriksenia hilaris* (Thorell, 1877); *Runcinia annamita* Simon, 1903, *Runcinia albostriata* Bösenberg et Strand, 1906, *Plancinus advecticius* Simon, 1909, *Thomisus cherapunjeus* Tikader, 1966, *Runcinia chauhani* Sen et Basu, 1972 and *Runcinia sangasanga* Barrion et Litsinger, 1995 = *Runcinia affinis* Simon, 1897. *Misumena menoka* Tikader, 1963 from Mindanao was misidentified by Barrion & Litsinger [1995] and is unknown outside India.

The following 28 new combinations are proposed: *Sylligma cribrata* (Simon, 1903) comb.n. *ex. Platypyresthesis*; *Mastira menoka* (Tikader, 1963) comb.n., *Mastira nicobarensis* (Tikader, 1980) comb.n., all *ex. Misumena*; *Mastira flavens* (Thorell, 1877) comb.n., *Mastira nitida* (Thorell, 1877) comb.n., *Mastira bitaeniata* (Thorell, 1878) comb.n., *Mastira cimicina* (Thorell, 1881) comb.n., all *ex. Diaea*; *Demogenes andamanensis* (Tikader, 1980) comb.n. *ex. Misumenops*; *Philodamia semicincta* (Workman, 1896) comb.n. *ex. Misumena*; *Loxoporetes colcloughi* (Rainbow, 1912) comb.n. *ex. Diaea*; *Ebrechtella concinna* (Thorell, 1877) comb.n. *ex. Diaea*; *Ebrechtella tricusp-*

idata (Fabricius, 1775) comb.n. *ex. Misumenops*; *Ebrechtella timida* (Thorell, 1887) comb.n. *ex. Misumena*; *Ebrechtella margaritacea* (Simon, 1909), comb.n. *ex. Synaema*; *Ebrechtella sufflava* (O. Pickard-Cambridge, 1885) comb.n. *ex. Diaea*; *Ebrechtella pseudovatia* (Schenkel, 1936) comb.n. *ex. Misumenops*; *Ebrechtella forcipata* (Song et Zhu, 1993) comb.n. *ex. Misumenops*; *Ebrechtella hongkong* (Song, Zhu et Wu, 1997) comb.n. *ex. Misumenops*; *Ansiea tuckeri* (Lessert, 1919) comb.n. *ex. Misumena*; *Ansiea buettikeri* (Dippenaar-Schoeman, 1989) comb.n. *ex. Misumena*, *Henriksenia hilaris* (Thorell, 1877) comb.n. *ex. Misumena*; *Henriksenia thienemanni* (Reimoser, 1931) comb.n. *ex. Misumenops*; *Ebelingia kumadai* (Ono,1985) comb.n. *ex. Mecaphesa*; *Ebelingia hubeiensis* (Song et Zhao, 1994) comb.n. *ex. Misumenops*; *Ledouxia alluaudi* (Simon, 1898), comb.n. *ex. Misumena*; *Massuria sreepanchamii* (Tikader, 1962) comb.n. *ex. Pistius*; *Massuria roonwali* (Basu, 1964) comb.n. *ex. Pistius*; *Zygometis lactea* (L. Koch, 1876) comb.n. *ex. Diasterea*; and *Angaeus kripalaniae* Tikader, 1965 comb.n. *ex. Misumenoides*. *A. kripalaniae* is transferred from Thomisinae to Stephanopinae. *Misumena* Latreille, 1804 includes only three valid species: *M. vatia* (Clerck, 1757) (the type species), *M. bicolor* Simon, 1875 (incl. *M. personata*) and *M. grubei* (Simon, 1895). *Mastira* Thorell, 1891 is transferred from Stephanopinae (Stephanopini) to Thomisinae, *Ebrechtella* Dahl, 1907 and *Erissoides* Mello-Leitão, 1929 from Stephanopinae (Hedanini) to Thomisinae and all three genera are placed in Misumenini. *Misumenops morrisi* Barrion et Litsinger, 1995 is placed in Hedanini, but outside *Hedana* L. Koch, 1874 and other named genera. The tribe Hedanini is transferred from Stephanopinae to Thomisinae. *Misumena oblonga* O. Pickard-Cambridge, 1885 is congeneric with *Platythomisus bazarus* Tikader, 1970 from Sikkim, but does not belong with the genus *Platythomisus* Doleschall, 1859 and should be placed with the group of genera around *Pharta* Thorell, 1891. All the Palaearctic, Oriental and also Pacific species previously placed in the New World genera *Misumenops* F.O. Pickard-Cambridge, 1900 and *Misumenoides* F.O. Pickard-Cambridge, 1900 belong either to Old World genera, or fall outside known genera, some belong to a new genus (*Henriksenia*) with two distinct species groups and several undescribed taxa. *Loxoporetes* is recorded for the first time from the Oriental region (the Philippines).

РЕЗЮМЕ. Ревизован таксономический состав Misumenini. Описано четыре новых рода, восстановлена валидность одного рода (*Mastira* Thorell, 1891), два рода и 28 видов синонимизированы, предложено 28 новых комбинаций.

KEY WORDS: Thomisidae, Thomisinae, Misumenini, Hedanini, taxonomy, embolus, ultrastructure, Palaearctic, Oriental region.
КЛЮЧЕВЫЕ СЛОВА: Thomisidae, Thomisinae, Misumenini, Hedanini, таксономия, эмболюс, ультраструктура, Палеарктика, Ориентальная область.

Introduction

Simon [1895a, 1903] was the first to revise the thomisids of the world and to suggest new suprageneric taxa within Thomisidae. He established the Misumeneae and other new subfamilies and tribes. Since that time, a few studies have been undertaken on the systematics of the thomisids on a worldwide basis, viz., Petrunkevitch [1928], Roewer [1955] and Ono [1988], who made some changes to Simon's suprageneric classification. The Misumeninae was the name used for the largest subfamily of Thomisidae by the first three above-mentioned authors. Ono [1988] considered Thomisinae the nominate subfamily of the Thomisidae and this opinion was supported by myself [Lehtinen, 1993].

The type specimens of most exotic genera described by Simon, Thorell, O. & F.O. Pickard-Cambridge and some others were not studied by earlier authors. Recent extensive studies on the Oriental Thomisidae have been published, which includes works by local scientists such as Tikader [1962, 1963, 1965, 1966, 1970, 1971, 1980], Basu [1964, 1965] and their coworkers in India and Barrion & Litsinger [1995] in the Philippines, but unfortunately their work did not include the study of type species of genera or any type material kept in European, American or Australian museums, nor were foreign specialists consulted.

It has been known for a long time that many thomisid genera were originally placed far from their phylogenetic relatives, not only in incorrect tribes, but sometimes also in incorrect subfamilies. However, the subfamilies suggested to date have good diagnostic ultrastructural characters and some other character groups, which afford a quite useful basis for phylogenetic judgments. In the case of the present group of study, i.e., the tribe Misumenini in Thomisinae, some totally incorrect placements also extend to single species. A computerized phylogenetic analysis was not performed here, but it is hoped that the resulting corrected limitation of the Misumenini will constitute a reasonable working basis for such future work.

The main purpose of this study is to clarify the taxonomic composition of the tribe Misumenini. I also aim to review the Palaearctic and Oriental genera of the Misumenini, simultaneously clarifying the status of other genera of Misumenini, rather than a specific revision which would tend to scrutinize only some of the previously more obscure groups. This could not be done without a parallel, preliminary global taxonomic revision of thomisid genera, tribes, and subfamilies. The Oriental thomisid fauna is partly shared with Melanesia and some parts of Australia and some recent publications show that checking of Oriental type material would be necessary also for studies on Australian Thomisidae [Shield & Strudwick, 2000]. Only the results, which are directly connected to species and genera previously placed in Misumenini or which actually belong to Misumenini, are presented here. Large synonymy lists are mostly omitted.

Material and methods

The worldwide spider collection of the Zoological Museum, University of Turku (MZT; PTL for new material since my retirement) constitutes the basis of this work. Some of the identified material was compared with type material in the museums of Paris, Genoa, London, Hamburg and Honolulu during several visits to them, mostly before the realization of the currently limited research project on Thomisidae. Type specimens from the ZMB and QMB were studied through loans. Checking of all thomisid type material of exotic species was carried out in NHRS, MCSN, MNHN and IRRI during visits over the last four years of the work. Extensive material of Australian and New Zealandian Thomisidae in AMS, WAM, QMB, PTM and CMC was also studied.

Parallel to traditional light microscopy and when enough material of a species was available, the male palps and leg ultrastructural characters were analyzed using SEM. The ultrastructural modifications of the embolic tip of the type species of genera, at least, has been included whenever possible as a new method for thomisid taxonomy.

Acronyms of museums (with names of curators and/or other persons responsible for the use of collections, current ones without parentheses; museums without this information are listed as known depositories): AMS = Australian Museum, Sydney; Dr. M. Gray; BMNH = British Museum, Natural History, (Dr. K. Hyatt, Mr. F. Wanless, Dr. P. Hillyard), Ms J. Beccaloni; BPBM = Bernice P. Bishop Museum, Honoloulu, Hawaii, USA, (Dr. J. Tenorio) Dr. S. Miller; CMC = Canterbury Museum, Christchurch, New Zealand, the staff; DEHU = Department of Entomology, Hongkong University, China; HDE = Hope Entomology Collection, University of Oxford, UK (Dr. I. Lansbury) Mr. J. Hogan; IRRI = International Rice Research Institute, Los Baños, Philippines, Dr. A. Barrion and Mr. K. Schoenly; MCSN = Museo Civico di Storia Naturale 'Giacomo Doria', Genoa, Italy, (Dr. G. Arbocco), Dr. G. Doria; MHNG = Museum d'Histoire Naturelle, Geneva, Switzerland: Dr. W. Mahnert; MNHN = Muséum National d'Histoire Naturelle, Paris, France, (the late Prof. M. Vachon, Dr. M. Hubert, the late Dr. J. Heurtault) Dr. C. Rollard; MZT = Zoological Museum, University of Turku, Turku, Finland; MZUM = Museo de Zoologia, Universidad de Montevideo, Uruguay, Dr. R. Capocasale; NHRS = Naturhistoriska Riksmuseet, Stockholm, Sweden: Dr. T. Kronestedt; NSMT = National Science Museum, Tokyo, Japan, Dr H. Ono; PPRI = Plant Protection Research Institute, Pretoria, South Africa, Dr. A. Dippenaar-Schoeman; PTL = Personal temporary collection of Pekka T. Lehtinen after retirement; PTM = Museum of New Zealand Te Papa Tongarewa Museum, Wellington, New Zealand, Dr. L.J. Boutin and Dr. P. Sirvid; QMB = Queensland Museum, Brisbane, Australia, Dr. R. Raven and Dr. P. Lawless; RMNL = Rijksmuseum van Natuurlijke Historie, Leiden, Netherland (Dr. L. van der Hammen and Dr. P. van Helsdingen); SAM = South African Museum, Cape Town, South Africa, the staff; WAM = Western Australian Museum: Dr. M. Harvey; ZMB = Zoological Museum, Humboldt University, Berlin, Germany, (Dr. M. Moritz, Dr. S. Nawai) Dr. J. Dunlop; ZMH = Zoologisches Staatsinstitut und Zoologisches Museum, Hamburg, (Dr. G. Rack) Dr. H.

Dastych; ZMMU = Zoological Museum; University of Moscow, Russia, Dr. K. Mikhailov; ZSI = Zoological Survey of India, Calcutta, India, (the late B.K. Tikader) Dr. B. Biswas.

Other abbreviations used: D = described; MOT = median ocular trapezium; RTA = retrolateral palpal apophysis, ITA = intermediate palpal apophysis, VTA = ventral palpal apophysis. See also Schick [1965] for a detailed terminology of the crab spiders adopted here.

Taxonomic results

Limitation of the Misumenini

Simon [1895a] made the first attempt to use suprageneric taxa in Thomisidae, but erroneously named the subfamily including the type species of the family Thomisidae as Misumeninae. The tribe Misumeneae with a global range was then also established including both *Misumena* Latreille, 1804 and *Thomisus* Walckenaer, 1805. Petrunkevitch [1928] created the new subfamily Dietinae and Roewer [1955] placed the genera described after Simon's classification to tribes and subfamilies. He also made some minor changes to the limitation of Coriarachneae and Diaeae and still included *Thomisus* in Misumeneae. Ono [1988] showed that several Old World genera related to *Thomisus* were best separated as the tribe Thomisini, and he changed simultaneously the ending of all tribal names to correspond to common zoological nomenclatorial tradition. Ono [1988] correctly used Sundevall, 1833 as author of his Thomisini, thus referring to its status as the nominate tribe of the nominate subfamily. Simon's large tribe (Thomisini + Misumenini) is here called the Misumenini *s.lat.*

This group is characterized by strong sexual dimorphism, presence of brownish annulations on male legs I–II and sometimes the capability to change the body colour (green–yellow–grey–white) to fit the background coloration of the flower on which they rest. The abundance of green coloration both on the legs and also the body is striking also in two related tribes, Platyarachnini and especially Dietini [see Lehtinen, 2001], restricted to the Old World. Simon's [1895a] tribe Platyarachneae included three South American genera: *Platyarachne* Keyserling, 1880, *Deltoclita* Simon, 1877, and *Philogaeus* Simon, 1895, with a fourth one, *Plancinus* Simon, 1886 added here (see Table 1). All these genera (respective specimens are kept in the MNHN) have been thoroughly studied with two significant results. These four genera share some essential diagnostic characters, viz., the eye region more or less similar to *Runcinia*, uniformly coloured legs also in males, or at least without the annulation patterns typical for all Old World genera (Misumenini and Thomisini) and also different from New World Misumenini. As all the Thomisini are absent from the Neotropical region, Platyarachnini can be regarded as its vicariant group in the New World, but the detailed phylogeny of all 'green' Thomisinae is far from being finally resolved. The North American species described by Walckenaer [1837] according to Abbot's unpublished colour plates, as well as the South American *Thomisus guadahyrensis* Keyserling, 1880, are still listed by Platnick [2003] in *Thomisus*, but only because of the lack of a revision.

All genera assigned either to the Misumeneae by Simon [1895–1901] or to the Misumenini by Ono [1988] are listed in Table 1. The type genus of this tribe, *Misumena* (Figs 3, 21, 64) and its relatives constitute a group with more plesiomorphic character states with regard to somatic characters. Relatives of *Thomisus* usually have more apomorphic character states (Figs 2, 41, 63). The Misumenini *s.str.* excluding the latter genus (later simply called the Misumenini) have a more or less unmodified carapace and abdominal modifications are exceptional (*Cyriogonus* Simon, 1886 and *Loxoporetes* Kulczyński, 1911; see Figs 13, 17, 20), while the Thomisini includes the genera with a modified eye region (usually with lateral horns) and the male palpal tibia has curious additional modifications other than the clearcut RTA, ITA and VTA of the Misumenini. The females of Misumenini have a more or less distinct epigynal hood (cf. Figs 52, 53, 55), whereas the epigyne of Thomisini lacks this hood and sometimes lacks any distinct surface structures, but the large or coiled spermathecae are present. The typical Misumenini consists of the Thomisinae with green body and leg colour in fresh specimens. RTA, ITA and VTA are usually distinguishable as three separate pro-

Table 1.

Limitation of the Misumenini.

Таблица 1.

Границы Misumenini.

Genera	**Simon [1895–1901]**	**Ono [1988]**	**Present assignment**
Ansiea gen.n.	*	*	Misumenini
Cyriogonus Simon, 1886	Misumeneae	Misumenini	Misumenini
Demogenes Simon, 1895	'genus invisum'	Misumenini	¤not assigned
Diaea Thorell, 1869	Diaeae	Misumenini	Diaeini
Ebelingia gen.n.	*	*	Misumenini
Ebrechtella Dahl, 1907	Stephanopinae Hedanini	Stephanopinae	Misumenini
Erissoides (type species)	*	Stephanopinae	Misumenini
Firmicus Simon, 1895	Diaeae	Misumenini	Camaricini
Henriksenia gen.n.	*	*	Misumenini
Herbessus Simon, 1903 (monotypic, type lost)	Heriaeae	Misumenini	¤not assigned
Heriaeus Simon, 1875	Diaeae/Heriaeae	Misumenini	Heriaeini
Ledouxia gen.n.	*	*	Misumenini
Loxoporetes Kulczyński, 1911	*	Misumenini	Misumenini
Massuria Thorell, 1887	Misumeneae	Misumenini	Diaeini
Mastira Thorell, 1891	Stephanopinae (synonym of *Epidius* Thorell, 1877)	Stephanopinae (not separately listed)	Misumenini
Mecaphesa Simon, 1903	Diaeae	Misumenini	Misumenini
Metadiaea Mello-Leitão, 1929	*	(Misumenini: synonym)	Misumenini
Misumena Latreille, 1804	Misumeneae	Misumenini	Misumenini
Misumenoides F.O. Pickard-Cambridge, 1900	*	Misumenini	Misumenini
Misumenops F.O. Pickard-Cambridge, 1900	*	Misumenini	Misumenini
Parasynaema F.O. Pickard-Cambridge, 1900	Diaeae	Misumenini	Diaeini
Physoplatys Simon, 1895	Diaeae	Misumenini	¤not assigned
Pistius Simon, 1875	Misumenini	Misumenini	Misumenini
Platypyresthesis Simon, 1903	Diaeae	Misumenini	Apyretini
Runcinia Simon, 1875	Misumeneae	Thomisini	Misumenini
Runcinioides Mello-Leitão, 1929	*	Thomisini	Misumenini
Thomisus Walckenaer, 1805	Misumeneae	Thomisini	Thomisini
Saccodomus Rainbow, 1900	*	Misumenini	¤not assigned
Synaemops Mello-Leitão, 1929	*	Misumenini	Diaeini
Tharpyna L. Koch, 1874	Coriarachneae	Misumenini	Diaeini
Uraarachne Keyserling, 1880	'genus invisum'	Uraarachnini	Misumenini
Wechselia Dahl, 1907	*	Misumenini	¤not assigned
Whittickius Mello-Leitão, 1940	*	Misumenini	Tmarini
Zygometis Simon, 1901	Misumeneae	Thomisini	Misumenini
PLATYARACHNINI			
Deltoclita Simon, 1877	Platyarachneae	Platyarachnini	Platyarachnini
Philogaeus Simon, 1895	Platyarachneae	Platyarachnini	Platyarachnini
Plancinus Simon, 1886 (type species)	Misumeneae	Thomisini	Platyarachnini
Platyarachne Keyserling, 1880	Platyarachneae	Platyarachnini	Platyarachnini

* = not described prior to Simon's/Ono's work.

¤ = removed from the Misumenini, but the proper placement is to be discussed further elsewhere.

For the changed assignations given in Table 1, except material mentioned in the text, the following specimens were studied: *Deltoclita rubripes* (Keyserling, 1880): ♀ (MNHN), Peru; *Deltoclita* sp.: ♂♀ (PTL), Venezuela; *Diaea dorsata* (Fabricius, 1777) (Figs 1, 51): ♂♀ (MZT, PTL, MNHN), Finland and Austria; *Diaea subdola* O. Pickard-Cambridge, 1885: ♂♀ (MZT, PTL), Malaysia and Philippines; *Firmicus aurantiipes* Jézéquel, 1966: ♂♀ syntypes (MNHN), Ivory Coast; '*Firmicus*' *bivittatus* Simon, 1895: ♂ holotype, ♀ (MNHN), Algeria; *Firmicus bragantinus* (Brito Capello, 1866): ♂♀ (MNHN), Congo; *Firmicus lentiginosus* (Simon, 1886): juv. holotype (MNHN), Zimbabwe; *Loxobates ephippiatus* Thorell, 1877 (Figs 36–37, 72): ♂♀ (MCSN, PTL), Sulawesi and Philippines; *Massuria* sp.: ♂♀ (AMS, MCSN), Sumatra; *Parasynema cirripes* (O. Pickard-Cambridge, 1891): ♂ (MNHN), Mexico; *Philogaeus campestratus* Simon, 1895: ♀ holotype (MNHN), Brazil; *Physoplatys nitidus* Simon, 1895: juv. holotype (MNHN), Paraguay; *Physoplatys* sp.: ♂ (MNHN), Brazil; *Plancinus runcinioides* Simon, 1886: ♀ holotype and a subadult (MNHN), Uruguay; *Platyarachne* spp.: ♂♀ (MNHN), Brazil & Peru; *Platypyresthsis cribrata* (Simon, 1901): ♀ holotype (MNHN), Ethiopia; *Runcinioides argenteus* Mello-Leitão, 1929: ♂♀ (PTL), Brazil; *Saccodomus formivorus* Rainbow, 1900: ♀ (AMS), Australia, New South Wales; *Synaemops nigridorsi* Mello-Leitão, 1929: ♀ syntype (MNHN), Brazil; *Uraarachne longa* Keyserling, 1880 (Fig. 9): ♀ (MNHN), Brazil; *Sylligma hirsuta* Simon, 1895: ♀ holotype (MNHN), Sierra Leone; *Thomisus onustus* Walckenaer, 1805 (Figs 2, 41): Turkey; *Wechselia steinbachi* Dahl, 1907: ♂ holotype (ZMB), Argentina; *Wechselia* sp. (Fig. 18): ♂ (PTL), Peru.

* = еще не описано во время Симона и Оно.

¤ = выведено из Misumenini, но реальное положение будет обсуждено позже.

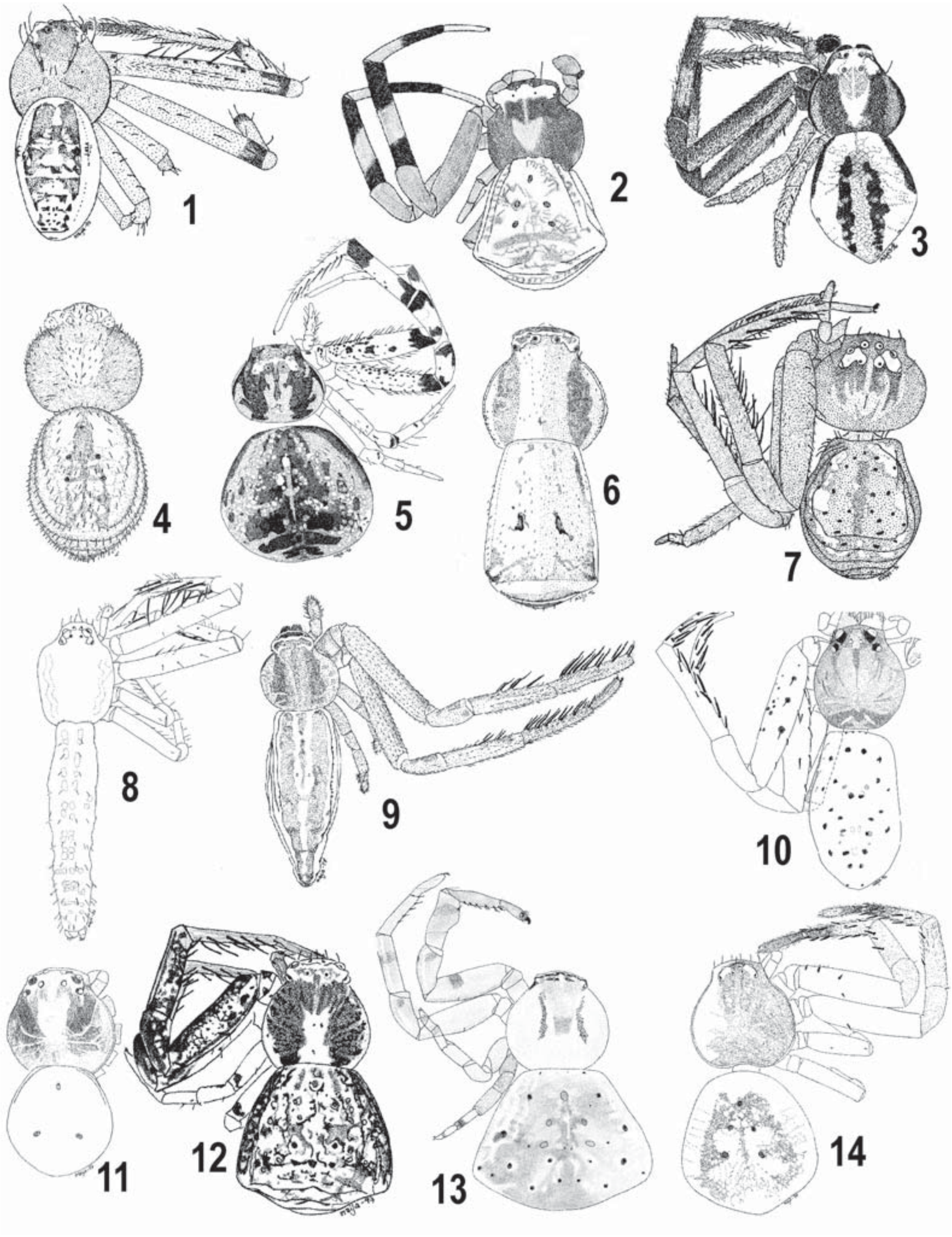
Для изменений приведенных в Таблице 1 и за исключением материалов, упомянутых в тексте, были изучены следующие виды: (список дан выше).

cesses in the male palpal tibia, as in many other Thomisinae. This Misumenini may be regarded as a sister group of the Thomisini and both of these tribes together with the Platyarachnini are also related to Diaeini and Dietini. The Diaeini has a more complex colour pattern than Thomisini and Misumenini, and the male tibial apophysis and/or tegular structures are more complex. The compositions of the Misumenini and the Thomisini were listed by Ono [1988], but his limitation of Misumenini was extremely large and actually included the majority of Simon's Thomisinae without special diagnostic somatic characters (see Table 1).

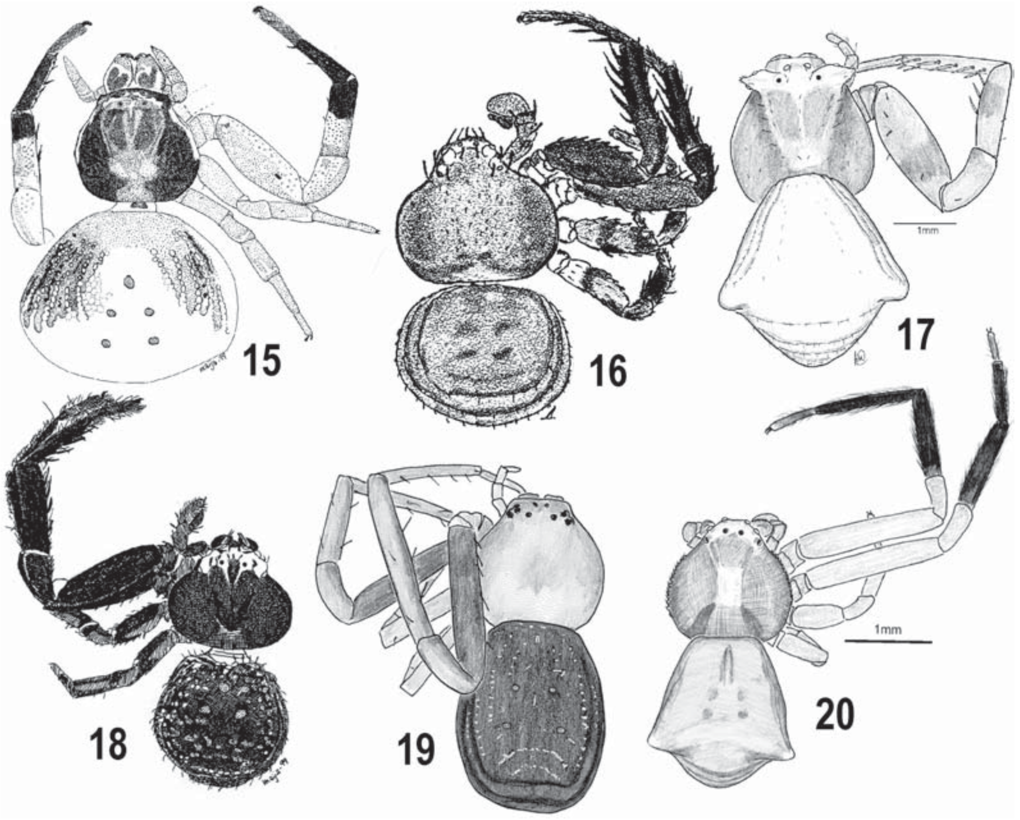
Ono [1988] included in the Misumenini many genera of the Diaeini, e.g., *Diaea* Thorell, 1869 (polyphyletic and in need of a worldwide revision), *Parasynaema* F.O. Pickard-Cambridge, 1900 and *Synaemops* Mello-Leitão, 1929, as well as both genera of the Heriaeini. He also included several genera of unknown assignment, though they had no key characters of either Thomisini or Misumenini: *Demogenes* Simon, 1895 (cf. Figs 16, 50, 62), *Saccodomus* Rainbow, 1900 and *Wechselia* Dahl, 1907 (Fig. 19). *Massuria* Thorell, 1887 is the only genus that was listed in Misumenini both by Simon [1895a] and Ono [1988], but is transferred here outside this tribe (for details see below under *Massuria*).

Platypyresthesis Simon, 1903 (type species *Pyresthesis cribrata* Simon, 1901 from Ethiopia) is a junior synonym of *Sylligma* Simon, 1895, **syn.n.**, because of the similar carapace shape and the identical type of epigyne, while the presence of strong outstanding sublateral setae on the carapace substantiates its transfer to Apyretini; cf. Lehtinen [2001]. The placement of *Firmicus* in his Coriarachnini by Roewer [1955] was based on the flat body shape of the well known Mediterranean species *F. bivittatus* Simon, 1895 and some related species [Lehtinen, 2002], but the type species, *F. bragantinus* (Brito Capello, 1866) from tropical Africa, is not congeneric with them. The transfer of *Firmicus* to the Misumenini was not qualified by Ono [1988], and he did not mention the study of any type material from the MNHN in support of his conclusions. *F. bragantinus* resembles *Cynathea* and *Camaricus* both in somatic and genitalic characters and is therefore transferred here to the Camaricini. Both transfers here are made according to the analysis of the type material of the type species of these genera kept in the MNHN.

Рис. 1–14. Внешний вид Misumenini и родственных родов. 1 — *Diaea dorsata* (Fabricius, 1777) (триба Diaeini); 2 — *Thomisus onustus* Walckenaer, 1805 (триба Thomisini); 3 — *Misumena vatia* (Clerck, 1757); 4 — *Runcinia tarabayevi* Marusik et Logunov, 1990 (с разрешения авторов); 5 — *Misumenops* aff. *maculissparsus*; 6 — *Misumenoides* sp. (Уругвай); 7 — *Mecaphesa* (*s.lat.*) sp. (Marquesas Islands); 8 — *Oxytate striatipes* L. Koch, 1878 (Taiwan; триба Dietini); 9 — *Uraarachne longa* Keyserling, 1880 (Бразилия); 10 — '*Misumenops*' *rapaensis* Berland, 1934 (Полинезия, Rapa); 11 — *Ebrechtella fruhstorferi* Dahl, 1907 (голотип); 12 — *Zygometis lactea* (L. Koch, 1876) (Малайзия); 13 — *Loxoporetes nouhyusii* Kulczyński, 1911 (Индонезия, Irian Barat); 14 — *Massuria* sp. (Индонезия, Sumatra; триба Diaeini).



Figs 1–14. Habitus of Misumenini and some related genera. 1 —*Diaea dorsata* (Fabricius, 1777) (the tribe Diaeini); 2 — *Thomisus onustus* Walckenaer, 1805 (the tribe Thomisini); 3 — *Misumena vatia* (Clerck, 1757); 4 — *Runcinia tarabayevi* Marusik et Logunov, 1990 (courtesy of the authors); 5 — *Misumenops* aff. *maculissparsus*; 6 — *Misumenoides* sp. (Uruguay); 7 — *Mecaphesa* (*s.lat.*) sp. (Marquesas Islands); 8 — *Oxytate striatipes* L. Koch, 1878 (Taiwan; the tribe Dietini); 9 — *Uraarachne longa* Keyserling, 1880 (Brazil); 10 — '*Misumenops*' *rapaensis* Berland, 1934 (Polynesia, Rapa); 11 — *Ebrechtella fruhstorferi* Dahl, 1907 (the holotype); 12 — *Zygometis lactea* (L. Koch, 1876) (Malaysia); 13 — *Loxoporetes nouhyusii* Kulczyński, 1911 (Indonesia, Irian Barat); 14 — *Massuria* sp. (Indonesia, Sumatra; the tribe Diaeini).



Figs 15–19. Habitus of some Misumenini and some genera excluded from this tribe. 15 — *Erissoides striatus* Mello-Leitão, 1929 (Brazil); 16 — *Demogenes lugens* (Thorell, 1881) (Malaya); 17 — *Cyriogonus* sp. (Madagascar, Nosy Mangabe), female; 18 — *Wechselia* sp. (Peru), male; 19 — *Henriksenia thienemanni* (Reimoser, 1931) (Indonesia, Sumatra); 20 — *Cyriogonus* sp. (Madagascar, Nosy Mangabe), male.

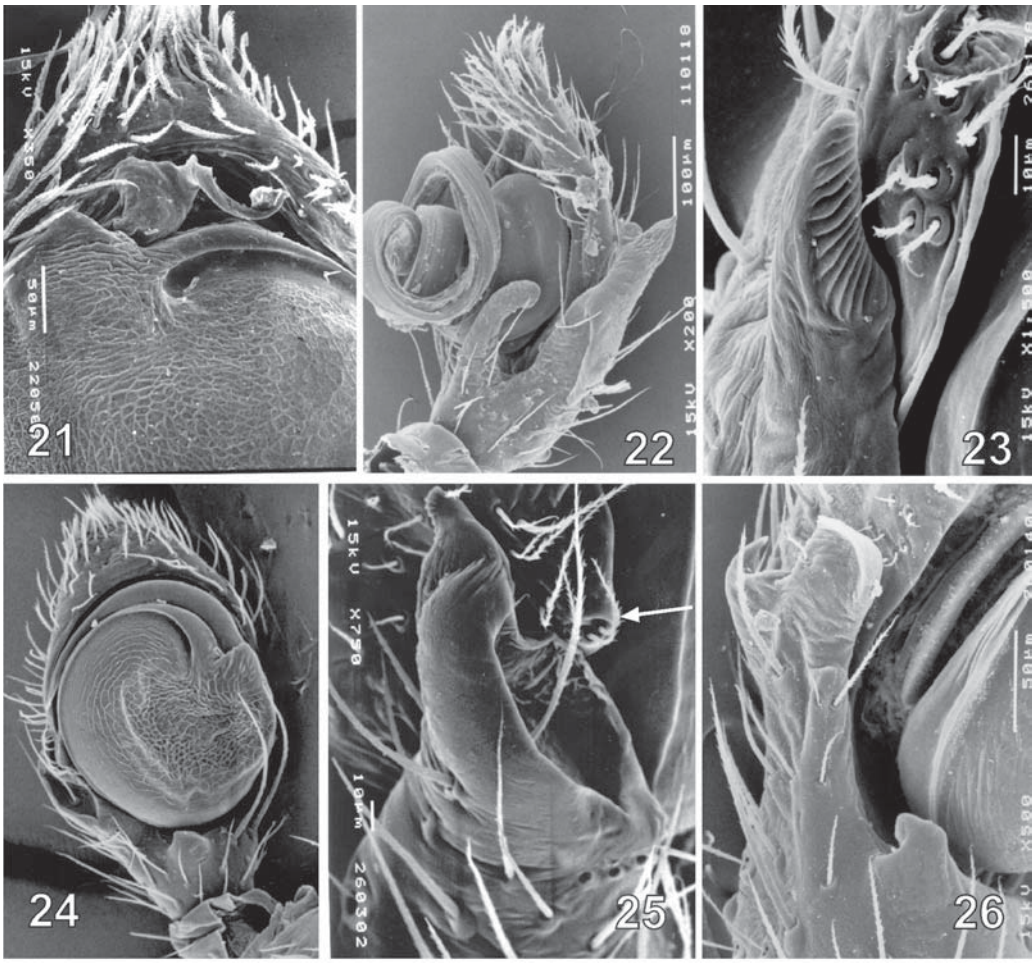
Рис. 15–19. Внешний вид Misumenini и некоторых родов, исключенных из трибы. 15 — *Erissoides striatus* Mello-Leitão, 1929 (Бразилия); 16 — *Demogenes lugens* (Thorell, 1881) (Malaya); 17 — *Cyriogonus* sp. (Мадагаскар, Nosy Mangabe), самка; 18 — *Wechselia* sp. (Перу), самец; 19 — *Henriksenia thienemanni* (Reimoser, 1931) (Индонезия, Sumatra); 20 — *Cyriogonus* sp. (Мадагаскар, Nosy Mangabe), самец.

Whittickius Mello-Leitão, 1940 was synonymized with *Acentrocelus* Simon, 1886 by Rinaldi [1984] and it is accordingly a member of the Tmarini *sensu* Ono [1988].

Obviously, Ono [1988] placed *Runcinia* Simon, 1975, *Odontoruncinia* Caporiacco, 1955 and *Zygometis* Simon, 1901 in his Thomisini due to the more or less dissimilar type of carapace compared to *Misumena* and related genera, and also because of the lack of available drawings. In addition, he did not examine any specimens.

Some authors, especially Tikader [1980], have confused species of *Runcinia* and *Thomisus* with one another. According to the structure of the copulatory organs, *Runcinia* more closely resembles the Misumenini than the Thomisini. Ono [1988] placed *Uraarachne* Keyserling, 1980 in a tribe of its own, while Rinaldi [1988] correctly synonymized *Odontoruncinia* with *Uraarachne.* They seem to constitute a specialized branch in the Misumenini *s.lat.* (see below).

The group Dietini has been generally listed in the subfamily Dietinae Petrunkevitch, 1928, but recently I proved that the Dietinae, as well as its nominate tribe Dietini, are polyphyletic [Lehtinen, 2001]. *Browningella* Mello-Leitão, 1948 was correctly synonymized with *Stephanopoides* by Bonaldo & Lise [2001] and the valid generic name for the flat species of '*Firmicus*' Simon, 1895 seems to be *Phaenopoma* Simon, 1895.



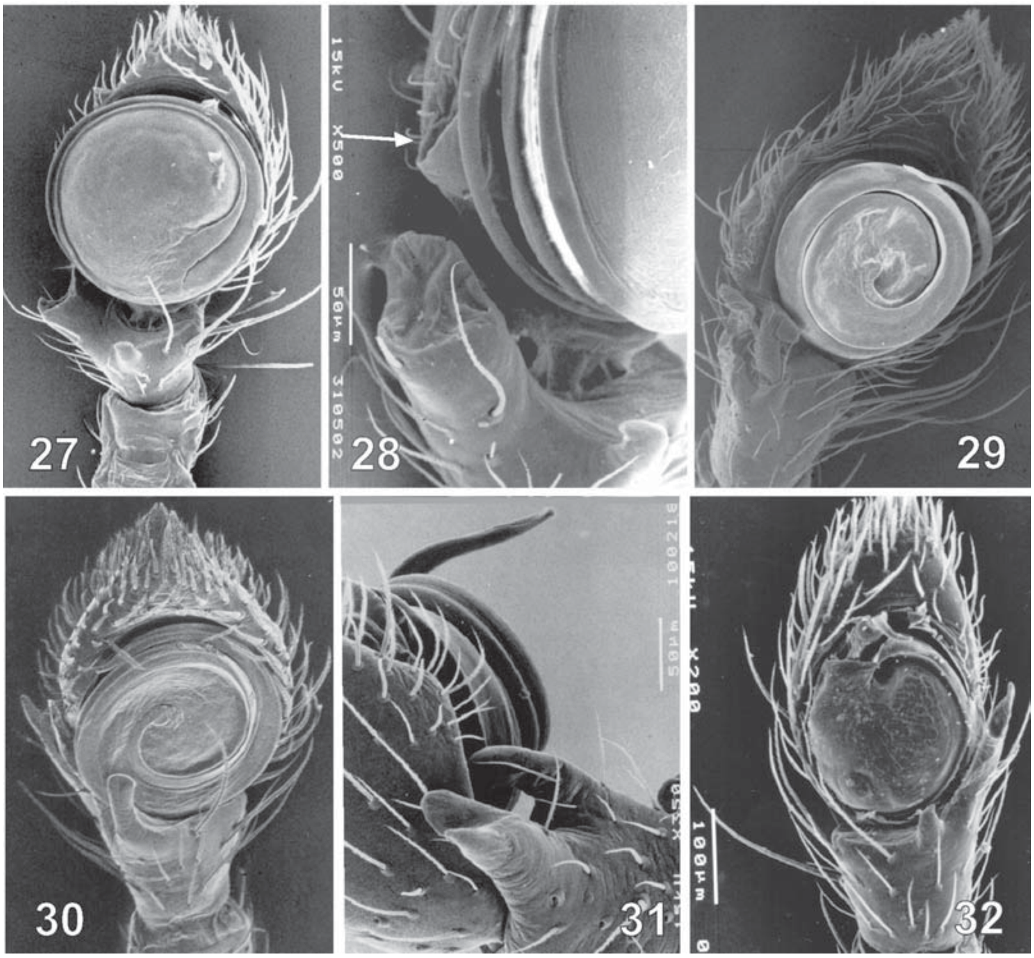
Figs 21–26. Misumenine palps. 21 — *Misumena vatia* (Clerck, 1757) (Finland); 22 — *Ansiea tuckeri* (Lessert, 1919) (South Africa); 23 — *Runcinia acuminata* (Thorell, 1881), tip of RTA; 24 — *Misumenops* aff. *maculissparsus* (Uruguay), palp; 25 — ditto, tibial apophyses and tutaculum (arrow); 26 — *Misumenoides formosipes* (Walckenaer, 1837) (Minnesota), tibial apophyses.

Рис. 21–26. Пальпы мизуменин. 21 — *Misumena vatia* (Clerck, 1757) (Финляндия); 22 — *Ansiea tuckeri* (Lessert, 1919) (ЮАР); 23 — *Runcinia acuminata* (Thorell, 1881) вершина RTA; 24 — *Misumenops* aff. *maculissparsus* (Уругвай), пальпа; 25 — то же, тибиальные отростки и тутакулюм (стрелка); 26 — *Misumenoides formosipes* (Walckenaer, 1837) (Миннесота), тибиальные отростки.

The Dietini *sensu* Lehtinen [2001] includes several Old World genera with all species bright green: *Oxytate* L. Koch, 1878 (Figs 8, 39), *Loxobates* Thorell, 1877 (Figs 36, 37, 72), *Lycopus* Thorell, 1895, *Pasias* Simon, 1895 (Fig. 40), *Scopticus* Simon, 1895, *Cetratus* Kulczyński, 1911, *Pasiasula* Roewer, 1942 and *Ostanes* Simon, 1895. In addition to similar habitus and coloration, the palpal and epigynal structures of these genera resemble each other and thus seem to justify the presence of a separate tribe.

Genera of the relimited and revised Misumenini

The Misumenini, in my opinion, consists of the following 19 named genera (see Table 1): *Ansiea* gen.n. (Afrotropical); *Cyriogonus* Simon, 1886 (Madagascar); *Ebelingia* gen.n. (Oriental, east Palaearctic); *Ebrechtella* Dahl, 1907



Figs 27–32. Misumenine palps. 27 — *Misumenops pallidus* (Keyserling, 1880), ventral view; 28 — ditto, tibial apophyses and tutaculum (arrow); 29 — '*Misumenops*' *rapaensis* Berland, 1934; 30 — *Ebrechtella tricuspidata* (Fabricius, 1775), ventral view; 31 — ditto, tibial apophyses; 32 — *Ebrechtella* sp. (the Canary Islands, Tenerife).

Рис. 27–32. Пальпы мизуменин. 27 — *Misumenops pallidus* (Keyserling, 1880), вид снизу; 28 — то же, тибиальные отросткии тутакулюм (стрелка); 29 — '*Misumenops*' *rapaensis* Berland, 1934; 30 — *Ebrechtella tricuspidata* (Fabricius, 1775), вид снизу; 31 — то же, тибиальные отростки; 32 — *Ebrechtella* sp. (Канарские о-ва, Tenerife).

(Oriental, Palaearctic); *Erissoides* Mello-Leitão, 1929 (Neotropical); *Henriksenia* gen.n. (Oriental, Melanesia); *Ledouxia* gen.n. (Madagascar, Mascarene Islands); *Loxoporetes* Kulczyński, 1911 (Oriental, Australian); *Mastira* Thorell, 1891 (Oriental); *Mecaphesa* Simon, 1900 (the Hawaiian, Pacific Islands); *Metadiaea* Mello-Leitão, 1929 (Neotropical);*Misumena* Latreille, 1804 (Palaearctic); *Misumenoides* F.O. Pickard-Cambridge (Nearctic, Neotropical); *Misumenops* F.O. Pickard-Cambridge, 1900 (Nearctic, Neotropical); *Pistius* Simon, 1875 (Palaearctic), *Runcinia* Simon, 1875 (Palaearctic, Old World tropical), *Runcinioides* Mello-Leitão, 1929 (Neotropical); *Uraarachne* Keyserling, 1880 (Neotropical); and *Zygometis* Simon, 1901 (Oriental, Australian). The species of *Misumessus* Banks, 1904 are now included in *Misumenops* [Platnick, 2003], but this name is also available for a supraspecific taxon. Some supraspecific taxa must still be erected for Pacific species or species groups not fitting the diagnoses of any of the above-mentioned genera.

Massuria Thorell, 1887 (Oriental) and *Plancinus* Simon, 1888 (Neotropical) are here removed from the Misumenini by removal of their type species.

The best known genera of Misumenini are *Misumena*, *Misumenops*, *Misumenoides* and *Runcinia*. Species from all major regions have been assigned to all of them, but many species must be transferred to other genera, either between these four or between those discussed here. The concepts and limitations of all the above-mentioned four genera have differed widely between different authors and none of them have ever been properly revised. *Loxoporetes* has not been used outside catalogues since the original description and *Cyriogonus* has appeared only once [Lessert, 1919], while *Mastira* and *Ebrechtella* have remained unknown, as they have been catalogued in the Stephanopinae and not used, although they include the dominant species of the Misumenini occurring in the Oriental Region and both are also rich in species. The New World genus *Erissoides* has also been catalogued in the Stephanopinae because of the characters of the better known species described later, whereas the type species has not been studied or discussed.

***Ansiea* gen.n.**

Type species: *Misumena tuckeri* Lessert, 1919 from Tanzania, SW Kilimanjaro (♂♀ syntypes in MHNG; not examined); ♂♀ from South Africa examined (PPRI; compared with the types by Dr. A. Dippenaar-Schoeman).

ETYMOLOGY. This genus is dedicated to Dr. Anna (Ansie) Dippenaar-Schoeman (Plant Protection Research Institute, Pretoria, South Africa) for her contributions to the study of African Thomisidae, including both species of this new genus. The gender is feminine.

DIAGNOSIS. Carapace exceptionally wide, femora, tibiae, and metatarsi of male legs I–II with a reddish-brown distal annulation. The females of *Ansiea* are further differentiated from all the other Misumenini by the presence of very long, irregularly coiled, thin insemination ducts in addition to thicker ducts attached directly to the spermathecae, and the males by a cymbial fold opposite to the distal part of the partly fused RTA–ITA. These characters of the copulatory organs were not described by Dippenaar-Schoeman [1983, 1989]. The tip of the embolus is obtusely rounded and enlarged (Fig. 80).

Although originally placed in *Misumena*, the species of this aberrant genus are not closely related to it.

Ansiea tuckeri (Lessert, 1919) **comb.n.**
Figs 22, 56, 80.

Misumena tuckeri Lessert, 1919: 133, f. 14–16 (D♂♀; types in MHNG; properly examined by Dippenaar-Schoeman [1983]).

Misumenops tuckeri: Millot, 1942: 35, f. 16a–c, 17e.

Misumena tuckeri: Dippenaar-Schoeman, 1983: 56, f. 34a–b, 36a–d.

DIAGNOSIS. RTA distally gradually narrowed; the embolus relatively thick, long and strongly coiled, its distal part straight (Figs 22, 80); ITA represented by a downwards directed hook attached to the central part of RTA [not drawn by Dippenaar-Schoeman, 1983: fig. 36d]; the thick ducts of the spermathecae with posterolateral extensions, inner part filled with strongly coiled irregular thinner ducts [see Dippenaar-Schoeman, 1983: fig. 36a; cf. Fig. 56].

The taxonomic status of *M. tuckeri thomensis* Bacelar, 1958, described from São Tomé and known from a single ♂ [Bacelar, 1958], remains uncertain.

DISTRIBUTION. Central, East and South Africa [Dippenaar-Schoeman, 1983].

Ansiea buettikeri (Dippenaar-Schoeman, 1989) **comb.n.**

Misumena buettikeri Dippenaar-Schoeman, 1989: 27, f. 7a–d (D♂♀; ♂ holotype and two ♀ paratypes from Saudi Arabia, Wadi Majarish; in NHMB; not examined).

DIAGNOSIS. RTA distally with a hump in Dippenaar-Schoeman [1989: fig. 7a–b; also in text on p. 29), this may actually be homologous with the hook-shaped ITA in *A tuckeri*. Spermathecal ducts without posterolateral extensions, the shape and length of the inner narrow ducts were not figured.

This species was assigned to *Ansiea* gen.n. solely on the basis of the original description and drawings by A. Dippenaar-Schoeman [1989].

DISTRIBUTION. Known from Saudi Arabia only [Dippenaar-Schoeman, 1989].

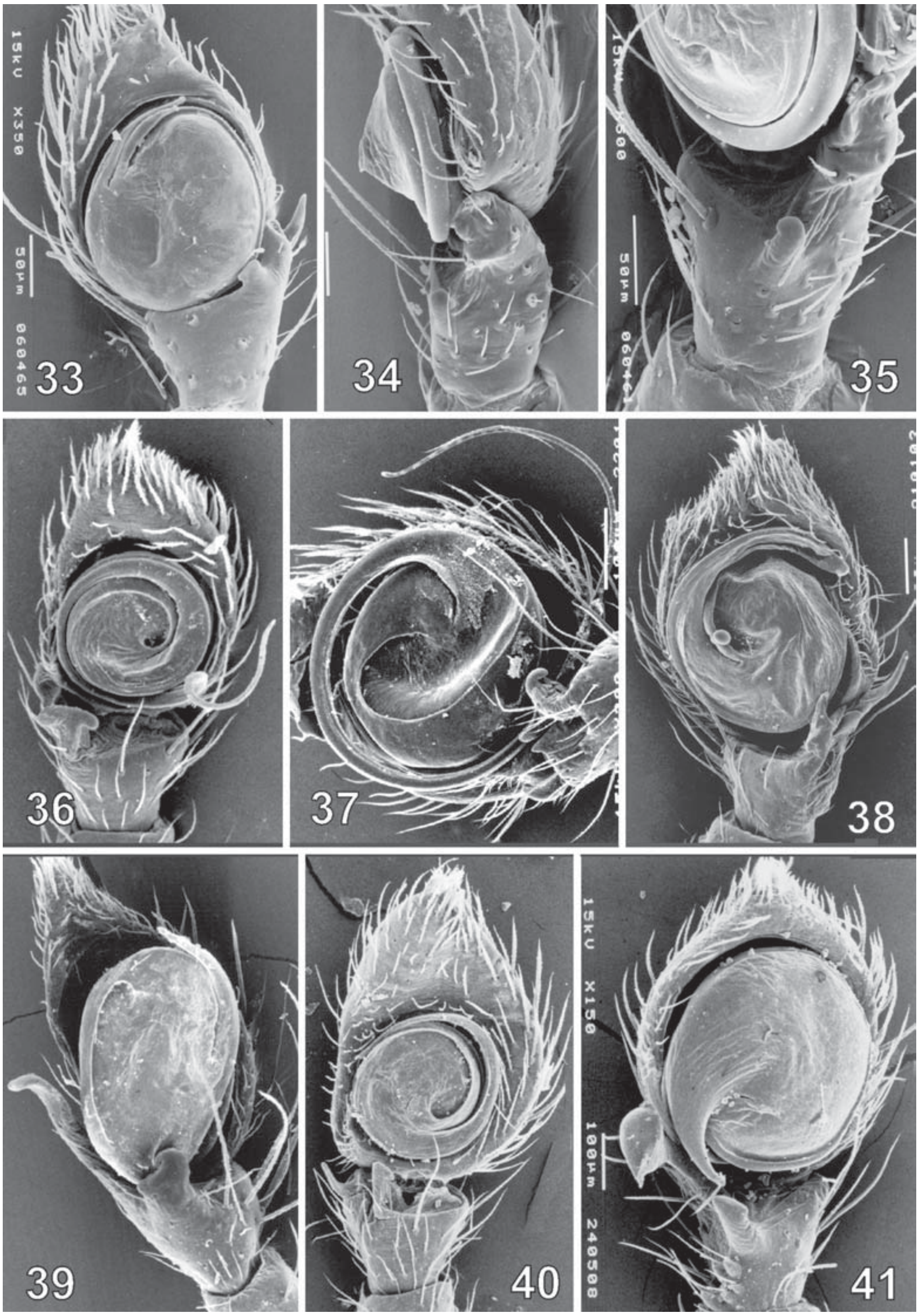
***Cyriogonus* Simon, 1886**

Cyriogonus Simon, 1886: 176.

Cyriogonus: Lessert, 1919: 170–171.

Type species: *Cyriogonus lactifer* Simon, 1886 from Madagascar (♀ holotype in MNHN; examined).

REMARKS. This is an endemic genus of the Misumenini, which is dominant in Madagascar (see Figs 17, 20, 48, 60), with six described and several



Figs 33–41. Male palps of misumenine and related genera. 33 — *Henriksenia hilaris* (Thorell, 1877); 34 — *Mastira flavens* (Thorell, 1877) (Taiwan), lateral view, previously undescribed male; 35 — ditto, tibial apophyses; 36 — *Loxobates ephippiatus* Thorell, 1877, ventral view; 37 — ditto, distal view showing the tibial apophyses; 38 — *Massuria* sp. (Sumatra; Diaeini); 39 — *Oxytate virens* (Thorell, 1891) (Singapore; Dietini); 40 — *Pasias luzonus* Simon, 1895 (Philippines, Luzon; Dietini); 41 — *Thomisus onustus* Walckenaer (1805) (Turkey; Thomisini).

undescribed species (in MNHN and PTL) occurring there, many of which are sympatric and even syntopic. Roewer [1955] erroneously transferred *C. vinsoni* (Thorell, 1875) (the holotype subadult♀ in NHRS; examined) and *C. rutenbergi* (Karsch, 1881) to *Cynathea*, a genus of Camaricini, which is not present in Madagascar. One species has been found also in the Mascarenes (juv.; kept in the MNHN). A revision of this genus is in progress.

DISTRIBUTION. Madagascar and Mascarene Islands.

Ebelingia gen.n.

Type species: *Misumenops kumadai* Ono, 1985 from the eastern Palaearctic.

ETYMOLOGY. This genus is dedicated to Mr. Kari Ebeling, the Director of Research of the Finnish Forest Technology Company (UPM-Kymmene Group), the company which supported my thomisid studies, especially those in Sumatra. The gender is feminine.

DIAGNOSIS. This genus differs from the sympatric *Mastira* and *Ebrechtella* and is exceptional in the Misumenini in having a distinct abdominal pattern in both sexes, in addition to the usual longitudinal pattern of the carapace. The male legs I–II are marmorous throughout, in addition to the presence of faint, darker distal annulations on the tibiae and metatarsi. The dorsal abdominal surface of the male is sclerotized, but the scutum is without distinct margins as in the genera *Henriksenia* and *Ledouxia.*

The male palps have a tibia with the branched apophysis consisting of an exceptional type of basal fusion of the RTA and ITA, whereas the VTA is of normal type for the Misumenini. The embolus tip is quite exceptional, having a gradually narrowed, grooved distal region and various modifications within this groove. The epigyne is characterized by the anterior plate with a central notch or concavity. The two pairs of receptacula are globular.

Ebelingia further differs from New World *Misumenops* and Pacific *Mecaphesa* by the entirely different colour pattern of the body and legs, as well as by the different type of copulatory organs in both sexes. The RTA and ITA in some groups of *Misumenops* are fused, but their fusion forms a tube with outstanding margins representing the tips of the RTA and ITA. These two genera also have more or less basic types of epigynal hoods in females, unless the homologous structure of the hood has not been completely reduced, as is the case in some groups of Oriental *Ebrechtella.*

In addition to the type species, the existence of another species of *Ebelingia* has been confirmed.

DISTRIBUTION. Eastern parts of the Palaearctic and Oriental regions.

Ebelingia kumadai (Ono, 1985) **comb.n.**
Fig. 79.

Misumenops kumadai Ono, 1985: 15, f. 1–8 (D♂♀; type series in NSMT; not examined).

Misumenops kumadai: Namkung, Paik & Lee, 1988: 27, f. 1–6; Chikuni, 1989: 193, f. 4; Logunov, 1992: 64, f. 9.

Mecaphesa kumadai: Lehtinen, 1993: 587 (transferred to *Mecaphesa*).

For a complete set of references see Platnick [2003].

MATERIAL. RUSSIA: 1 ♂, 1 ♀ (PTL), Khabarovsk, Bolshoi Khekhtsyr Reserve, 06.1987, D.V. Logunov.

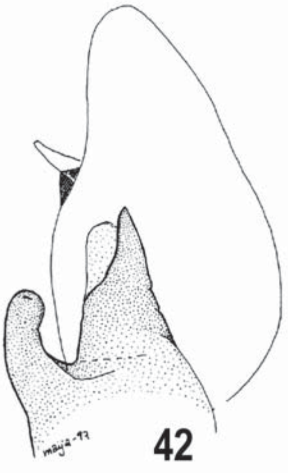
DESCRIPTION. Male and female *c*. 2.5–3 mm. The longitudinal dark submarginal bands of the carapace are wide and include some irregularly delimited light areas. Lateral eyes on moderate tubercles, MOT strongly trapezoidal, posteriorly wide. Male abdomen with a very distinct pattern of transverse light stripes on brown background, female pattern mainly in distal half, resembling the pattern of a juvenile *Nuctenea* sp. (Araneidae). The legs of males have only faint annulations, but are marmorous throughout, legs of female uniform pale brown. The leg spination is weak, but the pattern is similar to most Misumenini, with 2 + 2 ventral pairs on the tibiae and metatarsi.

In the forked tibial apophysis the RTA is distally obtuse and the ITA is pointed, the VTA is exceptionally long and distinct, the embolic tip has complicated subdistal structures within a gradually narrowed groove (Fig. 79), the epigyne has a deep notch in the anterior plate and two pairs of circular receptacula. For more detailed description and drawings of the copulatory organs see Ono [1985] and Logunov [1992].

REMARKS. This species was originally assigned to *Misumenops*, but then suggested to belong with the Pacific genus *Mecaphesa* Simon, 1900 [Lehtinen, 1993] based upon the comparison with *Mecaphesa velata* (Simon, 1900) by Ono [1988]. Study of both sexes has revealed that *M. kumadai* can be neither assigned to *Misumenops*, nor to *Mecaphesa* or to any other known genera in the Misumenini.

DISTRIBUTION. The Russian Far East, Korea, Japan, Okinawa.

Рис. 33–41. Пальпы мизуменин и родственных родов. 33 — *Henriksenia hilaris* (Thorell, 1877); 34–35 — *Mastira flavens* (Thorell, 1877) (Taiwan), вид сбоку, раннее самец был неизвестен; 35 — то же, тибиальные отростки; 36–37 — *Loxobates ephippiatus* Thorell, 1877, вид снизу; 37 — то же, тибиальные отростки; 38 — *Massuria* sp. (Суматра; Diaeini); 39 — *Oxytate virens* (Thorell, 1891) (Сингапур; Dietini); 40 — *Pasias luzonus* Simon, 1895 (Филиппины, Luzon; Dietini); 41 — *Thomisus onustus* Walckenaer (1805) (Турция; Thomisini).



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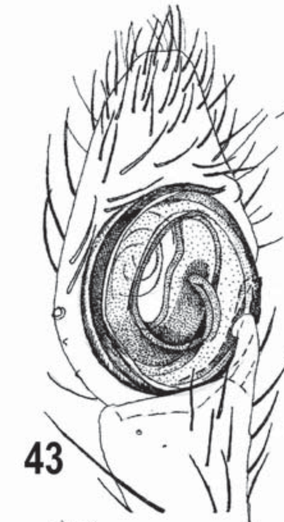

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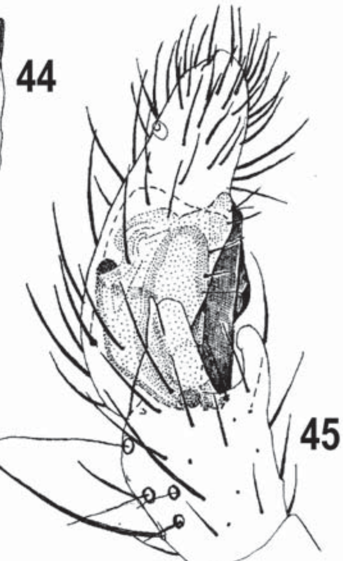

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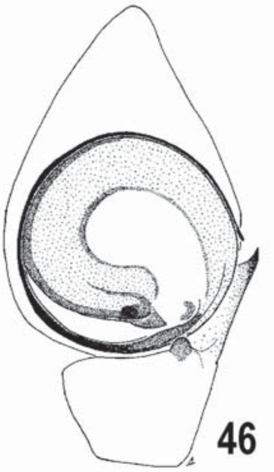

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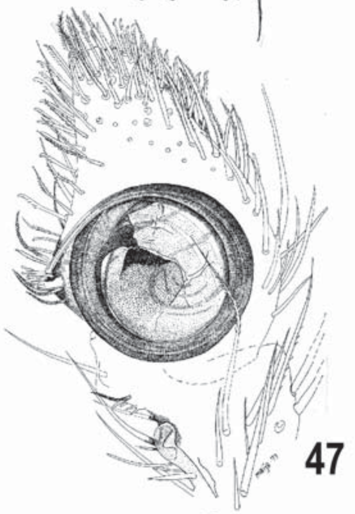

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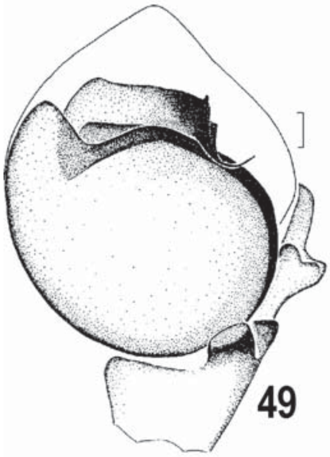

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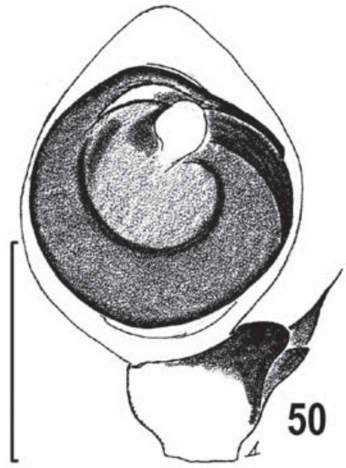

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Ebelingia hubeiensis (Song et Zhao, 1994) **comb.n.**

Misumenops hubeiensis Song et Zhao, 1994: 115, f. 4a–f (D♂♀; syntypes not examined).

For a complete set of references see Platnick [2003].

DIAGNOSIS. The differences in tibial apophyses of the male palp are small and difficult to interpret, as there may even be differences in drawing techniques. The anterior epigynal plate of *E. hubeiensis* is smoothly concave, while there is a distinct central notch in *E. kumadai*.

REMARKS. As I have been unable to re-examine the syntypes of this species, the conclusion on its taxonomic assignment was made on the basis of the drawings of the copulatory organs of both sexes by Song *et al*. [1999: fig. 279b,j].

DISTRIBUTION. China (Hubei).

***Ebrechtella* Dahl, 1907**

Ebrechtella Dahl, 1907: 376.

Ebrechtella: Petrunkevitch, 1928: 181.

Type species: *Ebrechtella fruhstorferi* Dahl, 1907 from Java (Figs 11, 43) (= *Diaea concinna* Thorell, 1877; ♀ holotype in MCSN; examined).

DIAGNOSIS. Thomisine taxa with a grey, green or silvery abdominal pattern and male legs I–II with distinct darker annulations on tibiae and metatarsi. Abdominal dorsum of male without a scutum. Epigyne usually with an anterior hood as in the majority of Thomisinae, the male tibial apophyses with well developed RTA, ITA distally pointed or obtuse, even reduced (Fig. 32), but never distally excavated as in *Henriksenia* gen.n. and in some groups of *Misumenops.* VTA always short and simple. Tegulum more or less flat when compared with the sympatric Misumenine genus *Mastira*. Further differs from the New World genus *Misumenops*, as well as from all the Pacific Misumenini (*Mecaphesa*), by the absence of brown, red and yellow body colours and of spotted patterns on the legs. Males of *Ebrechtella* further differ from the males of *Misumenops* by their simple (not screwed or otherwise modified) tegulum, simple curved embolus and distally pointed or obtuse ITA. The embolus tip is finely striated and the large orifice of the ejaculatory duct is situated subdistally (Figs 73, 74).

REMARKS. This genus is especially emphasized here, as it roughly corresponds to the concept of '*Misumenops*' of most Old World authors. Its real identity has remained obscure for two reasons. Firstly, it was placed in Stephanopinae (Hedanini) by Mello-Leitão [1929: 249, 252]. Roewer [1955] cited this placement without any checking. Actually, the original description by Dahl [1907; not 1905 as cited by Mello-Leitão] did not include any characters that could refer it to the Stephanopinae, but *Ebrechtella* was described as being close to *Reinickella* Dahl, 1907, undoubtedly a member of the Hedanini. The other reason for the obscurity of *Ebrechtella* is that the holotype of the type species *E. fruhstorferi* from Java has not been studied by any arachnologist since Dahl's original description until my present work. The holotype in ZMB was mounted in a thick layer of mounting medium, as all Dahl's types, but I obtained permission to extract it and to my surprise it is conspecific with one of the common and widespread species of the Misumenini in the Oriental region (Figs 11, 42). It has been described several times under different names and the oldest undoubted senior synonym is *Diaea concinna* Thorell, 1877 from Sulawesi (♀ holotype in MCSN; examined). *Diaea tumefacta* L. Koch, 1874 from Queensland is a possible older synonym, but its holotype and thus also its conspecifity with *D. concinna* could not be examined.

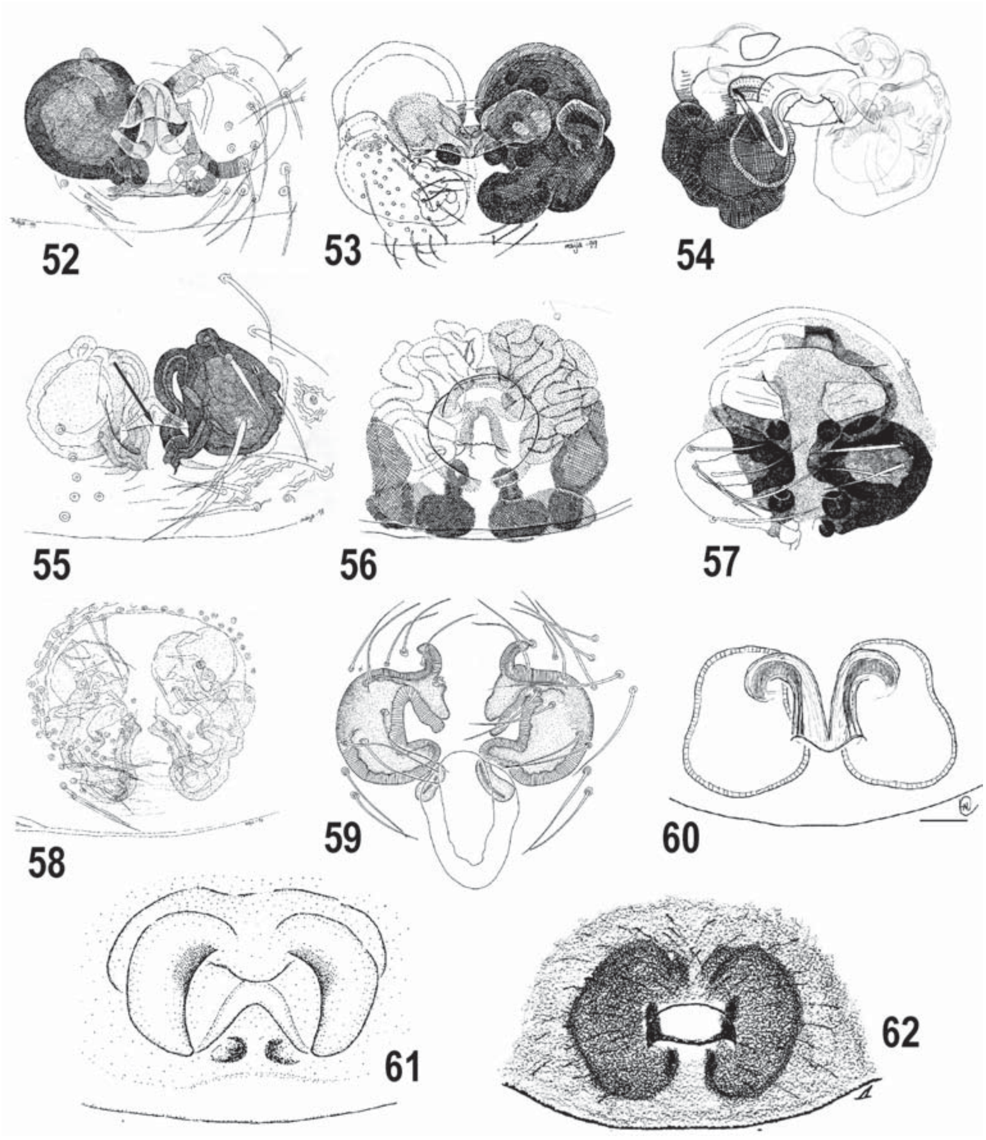
Three species groups of *Ebrechtella* are recognized.

The *concinna* species group

DIAGNOSIS. This group is characterized by the weak development of the epigynal hood in females and the distinctly bipartite tibial apophysis in males. ITA is small and more or less membranous. The embolus tip is finely striated and the orifice of the

Figs 42–51. Male palpi of the Misumenini *sensu novo* and *sensu* Ono [1988]. 42 — *Ebrechtella concinna* (Thorell, 1877) (Indonesia, Sumatra); 43 — *Ebrechtella fruhstorferi* Dahl, 1907 (holotype; Sumatra), ventral view; 44 — ditto, tip of palpal tibia; 45 — ditto, lateral view; 46 — *Runcinia tarabayevi* Marusik et Logunov, 1990 (Central Asia); 47 — *Mastira bipunctata* Thorell, 1891 (Indonesia, Sumatra); 48 — *Cyriogonus* sp. (Madagascar, Nosy Mangabe); 49 — *Pistius undulatus* Karsch, 1879 (east Siberia); 50 — '*Demogenes*' sp. (genus with a median apophysis) (Malaya); 51 — *Diaea dorsata* (Fabricius, 1777) (Austria; Diaeini).

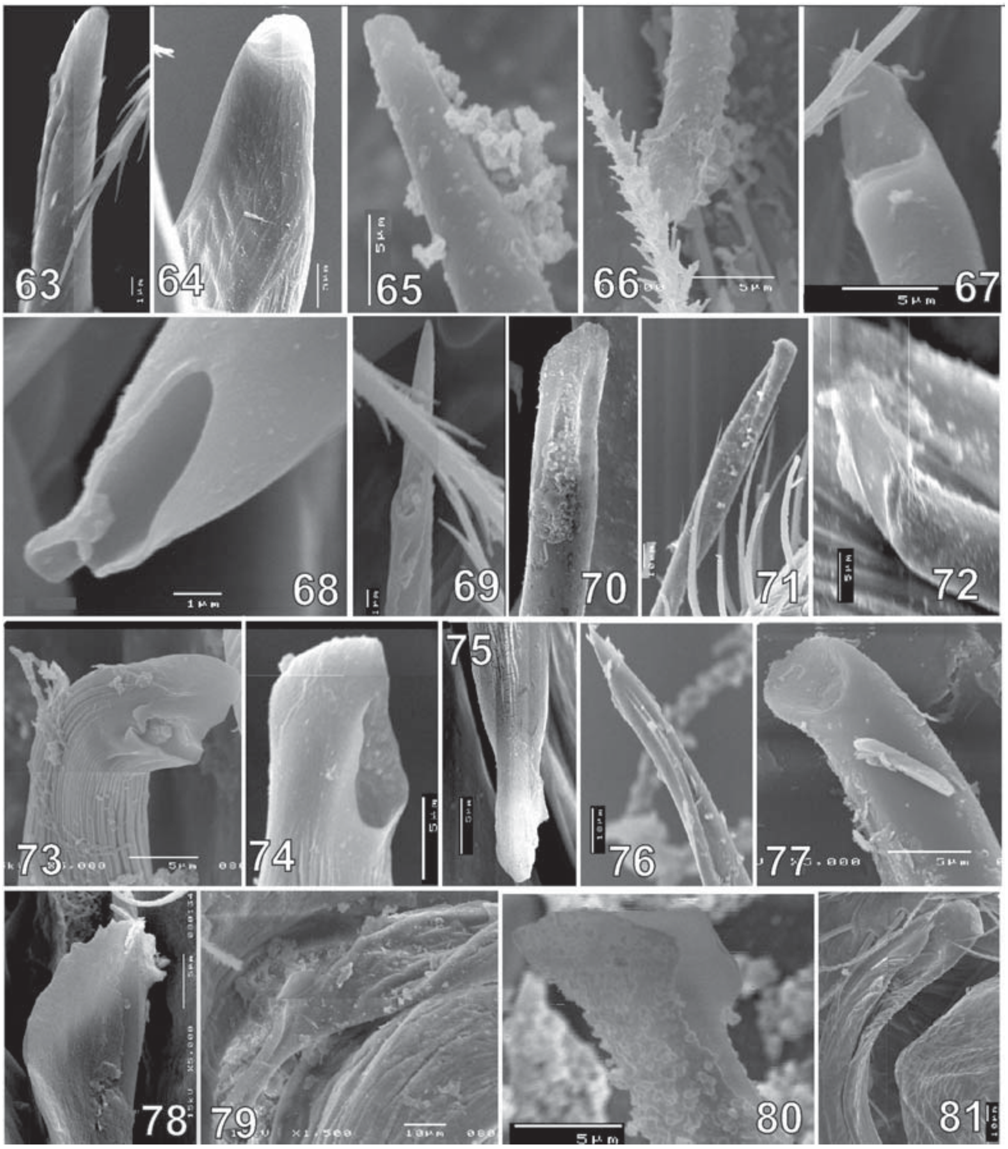
Рис. 42–51. Пальпы самцов Misumenini *sensu novo* и *sensu* Ono [1988]. 42 — *Ebrechtella concinna* (Thorell, 1877) (Индонезия, Sumatra); 43 — *Ebrechtella fruhstorferi* Dahl, 1907 (голотип; Sumatra), вид снизу; 44 — то же, вершина голени; 45 — то же, вид сбоку; 46 — *Runcinia tarabayevi* Marusik et Logunov, 1990 (Средняя Азия); 47 — *Mastira bipunctata* Thorell, 1891 (Индонезия, Sumatra); 48 — *Cyriogonus* sp. (Мадагаскар, Nosy Mangabe); 49 — *Pistius undulatus* Karsch, 1879 (восточная Сибирь); 50 — '*Demogenes*' sp. (род с медиальным апофизом) (Malaya); 51 — *Diaea dorsata* (Fabricius, 1777) (Австрия; Diaeini).



Figs 52–62. Epigynes and spermathecae of Misumenini and *Demogenes.* 52 — *Henriksenia hilaris* (Thorell, 1877) (Indonesia, Sumatra); 53 — *Loxoporetes nouhuysii* Kulczyński, 1911 (Papua New Guinea); 54 — *Massuria* sp. (Indonesia, Sumatra); 55 — *Runcinia acuminata* Thorell, 1881 (epigynal hood arrowed); 56 — *Ansiea tuckeri* Lessert, 1919 (South Africa); 57 — '*Mecaphesa*' (*s.lat.*) sp. (Polynesia); 58 — *Mastira bipunctata* Thorell, 1891; 59 — *Ledouxia alluaudi* (Simon, 1898) (Mauritius); 60 — *Cyriogonus* sp. (Madagascar, Ranomafana); 61 — *Pistius undulatus* Karsch, 1879 (Sakhalin); 62 — *Demogenes* sp. (Malaysia).

Рис. 52–62. Эпигина или вульва Misumenini и *Demogenes.* 52 — *Henriksenia hilaris* (Thorell, 1877) (Индонезия, Sumatra); 53 — *Loxoporetes nouhuysii* Kulczyński, 1911 (Папуа Новая Гвинея); 54 — *Massuria* sp. (Индонезия, Sumatra); 55 — *Runcinia acuminata* Thorell, 1881 (карман эпигины показан стрелкой); 56 — *Ansiea tuckeri* Lessert, 1919 (ЮАР); 57 — '*Mecaphesa*' (*s.lat.*) sp. (Полинезия); 58 — *Mastira bipunctata* Thorell, 1891; 59 — *Ledouxia alluaudi* (Simon, 1898) (Маврикий); 60 — *Cyriogonus* sp. (Мадагаскар, Ranomafana); 61 — *Pistius undulatus* Karsch, 1879 (Сахалин); 62 — *Demogenes* sp. (Малайзия).

1790) (Алтай); 75 — *Misumenops* aff. *maculissparsus* (Уругвай); 76 — *Misumenops pallidus* (Keyseling, 1880) (Чили); 77 — *Misumenoides formosipes* (Walckenaer, 1837) (США, Миннесота); 78 — *Mecaphesa vitellina* (Simon, 1900) (Гавайи, Мауи); 79 — *Ebelingia kumadai* (Ono, 1985) (Дальний Восток); 80 — *Ansiea tuckeri* (Lessert, 1919) (ЮАР); 81 — *Massuria* sp. (Индонезия, Sumatra).



Figs 63–81. SEM-micrographs of the embolic tip. 63: — *Thomisus* sp. (Thailand); 64 — *Misumena* sp. (Russia, the Altai); 65 — *Pistius truncatus* (Pallas, 1772) (Slovakia); 66 — *Runcinia acuminata* (Thorell, 1881); 67 — *Henriksenia* sp. (of the *nepenthicola* group) (Indonesia, Sumatra); 68 — *Henriksenia* sp. (of the *hilaris* group) (Sri Lanka); 69 — *Ledouxia alluaudi* (Simon, 1898) (Reunion); 70 — *Mastira menoka* Tikader, 1963 (India, Kerala); 71 — *Mastira cimicina* (Thorell, 1881) (Philippines, Luzon); 72 — *Loxobates ephippiatus* Thorell, 1877 (Philippines, Luzon); 73 — *Ebrechtella concinna* (Thorell, 1877) (Indonesia, Sumatra); 74 — *Ebrechtella tricuspidata* (Fabricius, 1790) (Russia, the Altai); 75 — *Misumenops* aff. *maculissparsus* (Uruguay); 76 — *Misumenops pallidus* (Keyseling, 1880) (Chile); 77 — *Misumenoides formosipes* (Walckenaer, 1837) (USA, Minnesota); 78 — *Mecaphesa vitellina* (Simon, 1900) (Hawaii, Maui); 79 — *Ebelingia kumadai* (Ono, 1985) (Far East); 80 — *Ansiea tuckeri* (Lessert, 1919) (South Africa); 81 — *Massuria* sp. (Indonesia, Sumatra).

Рис. 63–81. SEM-микрофотографии кончика эмболюса. 63 — *Thomisus* sp. (Таиланд); 64 — *Misumena* sp. (Россия, Алтай); 65 — *Pistius truncatus* (Pallas, 1772) (Словакия); 66 — *Runcinia acuminata* (Thorell, 1881); 67 — *Henriksenia* sp. (из группы *nepenthicola*) (Индонезия, Sumatra); 68 — *Henriksenia* sp. (из группы *hilaris*) (Шри Ланка); 69 — *Ledouxia alluaudi* (Simon, 1898) (Reunion); 70 — *Mastira menoka* Tikader, 1963 (Индия, Kerala); 71 — *Mastira cimicina* (Thorell, 1881) (Филиппины, Luzon); 72 — *Loxobates ephippiatus* Thorell, 1877 (Филиппины, Luzon); 73 — *Ebrechtella concinna* (Thorell, 1877) (Индонезия, Sumatra); 74 — *Ebrechtella tricuspidata* (Fabricius, lateral, subdistal ejaculatory duct has some marginal lobes around the orifice (Fig. 73).

REMARKS. In addition to the widespread type species, only two species from Central Asia are included here in this group; of these, the one from Hongkong might be a junior synonym of *E. concinna* (see below). Several Melanesian and north Australian species originally assigned to *Misumena* and *Diaea* by L. Koch, Thorell, and Chrysanthus are known from females only, but consideration of their exact taxonomic assignment, even to genus, is outside the scope of this study.

Ebrechtella concinna (Thorell, 1877) **comb.n.**
Figs 11, 42–45, 73.

Diaea concinna Thorell, 1877: 508 (D♀; ♀ holotype in MCSN; examined).

Diaea subargentata O. Pickard-Cambridge, 1885: 65 (D♂; ♂ lectotype in HDE; examined), **syn.n.**

Misumena dierythra Thorell, 1892: 152 (D♀; juv. ♀ holotype in NHRS; examined), **syn.n.**

Ebrechtella fruhstorferi Dahl, 1907: 76 (D♂; ♂ holotype in ZMB; examined, Figs 11, 43), **syn.n.**

Ebrechtella frustorferi: Mello-Leitão, 1929 (*lapsus calami*): 249.

Misumena silveryi Tikader, 1965: 281, f. 5 (D♀; ♀ holotype not examined), **syn.n.**

Misumena silveryi: Tikader 1971: 42, f. 12f–g; Tikader, 1980: 97, f. 136–137.

Misumena gamma Chrysanthus, 1964: 99, f. 40, 48–50 (D♀; ♀ holotype not examined), **syn.n.**

Misumenops subargentatus: Marusik, 1993: 46, f. 15–18 (transferred to *Misumenops*).

Misumenops maygitgitus Barrion et Litsinger 1995: 267, f. 156a–f (D♀; ♀ holotype in IRRI; examined), **syn.n.**

MATERIAL. INDONESIA: 1♀ (MCSN; the holotype of *Diaea concinna*), 'Celebes' (Sulawesi); 1♂ (ZMB; the holotype of *Ebrechtella fruhstorferi*, Figs 11, 43), east Java. PAKISTAN: 1 ♂ (HDE; the lectotype of *Diaea subargentata* designated by Marusik [1993]), Yarkand (north Pakistan). SINGAPORE: 1 juv. ♀ (NHRS; the holotype of *Misumena dierythra*), 'Singapore'. PHILIPPINES: 1♀ (IRRI; the holotype of *Misumenops maygitgitus*), Mindanao.

DIAGNOSIS. Males differ from *E. sufflava* in having a longer, more pointed RTA, a slightly larger ITA and a distally rounded VTA; females, in the absence of the central notch in the epigynal hood; for the structure of spermathecae, see Marusik [1993: figs 17, 18; sub *Misumenops subargentatus*].

REMARKS. I have been unable to re-examine the ♀ holotypes of *Misumena silveryi* (India: Maharashtra; kept in ZSI) and *Misumena gamma* (New Guinea; kept in RMNL). Nevertheless, as I examined some newly collected specimens from both regions (PTL), which clearly belonged to *E. concinna* and also fit the descriptions of the two above species, there is no doubt that both former names should be synonymized with *E. concinna*.

The ♀ holotype of *Diaea tumefacta* L. Koch, 1874 from Queensland (ZMH) was studied by myself a long time ago and it was not directly compared with that of *E. concinna*. This name seems to be a senior synonym of *E. concinna* and hence the oldest name for this species. This matter needs further attention in the future.

DISTRIBUTION. Most of the Oriental region, from Pakistan to Mindanao and northern parts of Irian Jaya in Melanesia

Ebrechtella sufflava (O. Pickard-Cambridge, 1885) **comb.n.**

Diaea sufflava O. Pickad-Cambridge, 1885: 63 (D♂; ♂ holotype in HDE; examined).

Diaea sufflava: Marusik, 1993: 462, f. 13–14.

?*Misumena expallidata* O. Pickard-Cambridge, 1885: 58 (D♀; ♀ holotype in HDE; examined), **syn.n.**

Diaea expallidata: Marusik, 1993: 459, f. 7–8 (transferred to *Diaea*).

MATERIAL. PAKISTAN: 1 ♂ (HDE; the holotype of *Diaea sufflava*), Murri (north Pakistan); 1♀ (HDE; the holotype of *Diaea expallidata*), Murri (north Pakistan); see also Marusik [1993].

DIAGNOSIS. See above under *E. concinna*.

REMARKS. A strong additional argument for conspecifity of *D. sufflava* and *D. expallidata* is that they were collected in the same mountain locality. For simultaneously published names the name of the male is here selected as the valid name of this species.

Ebrechtella xinjie (Song, Zhu et Wu, 1997) **comb.n.**

Misumenops xinjie Song, Zhu et Wu, 1997: 84, f. 5a,b (D♂; ♂ holotype not examined).

Misumenops xinjie: Song, Zhu et Chen, 1999: 483, f. 280e.

REMARKS. As the holotype ♂ of *Misumenops xinjie* nor any other material was available for study, an exact comparison with *E. concinna* was impossible. Judging solely from the original description of *M. xinjie*, it is very likely that this species may be a junior synonym of the latter species. This matter needs further attention in the future.

The *tricuspidata* species group

DIAGNOSIS. The RTA distally striated and elongate, all apophyses distinct, the epigynal hood lacking or indistinct.

Four valid species are included in this group.

Ebrechtella tricuspidata (Fabricius, 1775) **comb.n.**

Figs 30, 31, 74.

Aranea tricuspidata Fabricius, 1775: 433 (the type no longer exists).

Misumenops tricuspidatus Simon, 1932: 791, 869, f. 1157–1159.

For a complete synonymy list see Platnick [2003]; cf. the assignments to different genera above.

MATERIAL. Numerous specimens from France and Switzerland in the west to Korea and Taiwan in the east (in PTL, MNHN and MZT).

DIAGNOSIS. The abdominal pattern is variable, but usually includes a V-shaped dark folium on a silvery background. In the male palp VTA is short, distally rounded, while the RTA and ITA form a distal fork and the distal part of the RTA has longitudinal ridges (Figs 30, 31). Embolus tip finely striated, but modifications around the orifice of the ejaculatory duct are simpler than in *E. concinna* (Fig. 74). Female epigyne is completely lacking a hood and the simple spermathecae consist of two lateral concave sausage-like structures shining through the integument.

REMARKS. Specimens from Switzerland, Germany, Moldova, central and eastern Siberia, Korea, Japan and Taiwan (PTL) have been carefully compared with each other, for large populations the intraspecific variation was studied in detail. The variation of coloration and spination within single populations, both from central Europe and from Taiwan, exceeds that of the average difference between samples from different regions and no geographic variation has been found in the structure of the copulatory organs. In spite of an exceptionally large distribution range, no differentiation to subspecies was found.

DISTRIBUTION. From south-west Europe (rare) throughout the whole of Palaearctic Asia to Korea and Taiwan. This species appears more abundant in the eastern part of its range.

Ebrechtella margaritacea (Simon, 1909) **comb.n.**

Synaema margaritaceum Simon, 1909: 143 (D♂♀; syntypes in MNHN; examined).

MATERIAL. VIETNAM: 1 ♂ (MNHN; the syntype of *Synaema margaritaceum*), no exact locality.

Ebrechtella xinjiangensis (Hu et Wu, 1989) **comb.n.**

Misumena xinjiangensis Hu et Wu, 1989: 333, f. 265.1–6 (D♂♀; the holotype not examined).

For a complete synonymy list see Platnick [2003].

REMARKS. This species is recorded from China (Xinjiang) [Song *et al*., 1999]. I cannot support the proposal of Marusik & Logunov [2002] and others about the possible relationship of *M. xinjiangensis* to *Misumena,* as its embolus is not screwed and the tibial apophyses do not resemble the complex apophyses of *M. vatia*.

Ebrechtella timida (Thorell, 1887) **comb.n.**

Misumena timida Thorell, 1887: 281 (D♀; ♀ holotype in NHRS; examined).

For a complete synonymy list see Platnick [2003].

MATERIAL. MYANMAR (BURMA): 1 ♂ (NHRS; the holotype of *Misumena timida*), no exact locality. THAILAND: 1 ♂ (PTL), north Thailand.

The *pseudovatia* species group

DIAGNOSIS. The RTA without striated tip, embolus thick, epigynal hood narrow [see Song *et al*., 1999].

REMARKS. For all the species included in the *pseudovatia* group I have been unable to (re)examine the type or other material. All taxonomic changes have been made based on the available published drawings of the copulatory organs [see Song *et al*., 1999; Tikader, 1980]. Three species are included in this group.

Ebrechtella pseudovatia (Schenkel, 1936), **comb.n.**

Misumena pseudovatia Schenkel, 1936: 132, f. 48 (D♂; ♂ holotype in MNHN; not examined).

For a complete synonymy list see Platnick [2003].

REMARKS. This species is known from China (Shanxi, Hebei and Gansu) [Song *et al*., 1999: fig. 279c,k].

Ebrechtella forcipata (Song et Zhu, 1993) **comb.n.**

Misumenops forcipatus Song et Zhu in Song, Zhu et Li, 1993: 879, f. 50a–c (D♂; ♂ holotype not examined).

For a complete synonymy list, see Platnick [2003].

REMARKS. This species is known from China (Fujian) [Song *et al*., 1999: fig. 279h].

Ebrechtella hongkong (Song, Zhu et Wu, 1997) **comb.n.**

Misumenops hongkong Song, Zhu et Wu, 1997: 83, f. 4a–b (D♂; ♂ holotype not examined).

For a complete synonymy list see Platnick [2003].

REMARKS. This species is known from China (Hongkong) [Song *et al*. 1999: fig. 279i].

***Erissoides* Mello-Leitão, 1929**

Erissoides Mello-Leitão, 1929: 49.

Type species: *Erissoides striatus* Mello-Leitão, 1929 from Brazil, Amazonas (Fig. 15) (♀ syntype in MNHN; examined).

MATERIAL. The ♀ syntype of *E. striatus* (in MNHN); no material of the two other *Erissoides* species was available for study.

DIAGNOSIS. This genus contains three species, all known only from females. I have studied the type species, *Erissoides striatus*. The structure of the carapace, abdomen, and chelicerae are typical for the Thomisinae and the ultrastructure of the leg surface and trichobothria are typical for *Misumenops* [pers. obs.]. It is easily distinguished from all the other Neotropical Misumenini by the strict contrast in the coloration of legs I–II, viz., the femora, patellae and basal half of the tibiae are pale brown (in preserved specimens), the distal half of the tibiae and all more distal segments is blackish-brown. Carapace has a central light stripe and the anterior half of the abdomen has ridged furrows corresponding to the longitudinal ridges of tubercles in *Runcinia* and *Henriksenia* (Fig. 15). The epigynal hood is a wide arch. Males of *Erissoides* are unknown.

DISTRIBUTION. The Neotropical region.

REMARKS. *Erissoides* was originally described from a single female and was placed between *Stephanopoides* and *Stephanopis* [see Mello-Leitão, 1929]; it was also compared with *Misumenoides, Erissus* and *Misumena.* Two other species assigned to *Erissoides* were described later. In my opinion, *Erissoides* is related to *Misumenops* auct. It was originally placed in Stephanopinae (Hedanini), but is here transferred to Thomisinae (Misumenini). The taxonomic position of the other *Erissoides* species remains uncertain.

***Henriksenia* gen.n.**

Type species: *Misumena hilaris* Thorell, 1877 from Sulawesi (♀ holotype in MCSN; examined).

ETYMOLOGY. This genus is dedicated to Mr. Olav Henriksen, the Vice President of Foreign Affairs in the Finnish Forest technology company, UPM-Kymmene Group, whose company supported my work on Thomisidae, especially in Sumatra. The gender is feminine.

DIAGNOSIS. Species of this genus differ from all other misumenine genera, except for *Ledouxia* gen.n. (see below) and *Ebelingia* gen.n. (see above), by the presence of an abdominal scutum in males. The male palpal tibia has a simple, distally weakly striated RTA and a small, distally rounded VTA, the ITA is distally excavated (Fig. 33); the embolic tip as in Fig. 68. The female epigyne has large receptacula, whereas the spermathecae of the type species (Fig. 52) are similar to those of *Runcinia.* The general habitus (relative length of legs and coloration of body) are rather different in the two species groups included, but this may be due to very different microhabitats (lower vegetation or flowers/pitchers of *Nepenthes*).

The species included in this genus belong to two different species groups. As I have got a number of undescribed relatives of the type species of *Henriksenia* (e.g., from Melanesia and New Caledonia; in PTL), which have not yet been thoroughly studied, and as the concept of the widely used invalid name '*Misumenops nepenthicola*' includes several species, two of which are mentioned below, diagnoses of these species groups will be formalized elsewhere.

DISTRIBUTION. The Oriental region and Melanesia.

Henriksenia hilaris (Thorell, 1877) **comb.n.**
Figs 33, 52.

Misumena hilaris Thorell, 1877: 511 (D♀; ♀ holotype in MCSN; examined).

Misumena braminica Simon, 1906: 288 (D♀; ♀ holotype in MNHN; examined), **syn.n.**

Synaema seranicum Strand, 1913: 118 (D♀; ♀ holotype not examined), **syn.n.**

Synaema seranicum: Strand, 1915: 238, pl. 18, f. 87a–b.

Misumenops ? *bühleri* Schenkel, 1944: 190, f. 9a–e (D♂♀; type series not examined), **syn.n.**

Misumenoides deccanes Tikader, 1965: 279, f. 3a–b (D♀; ♀ holotype in ZSI; not examined), **syn.n.**

Misumenoides deccanes: Tikader, 1971: 59, f. 16j–k; 1980: 152, f. 216–217.

Misumenoides shulli Tikader, 1965: 280, f. 4a–b (D♀; ♀ holotype in ZSI; not examined), **syn.n.**

Misumenoides shulli: Tikader, 1971: 59, f. 16r–s; 1980: 154, f. 218–219.

Diaea jaintious Tikader, 1966: 59, f. 5a–b (D♀; ♀ holotype in ZSI; not examined), **syn.n.**

Diaea jaintious: Tikader, 1971: 44, f. 13c–d; 1980: 105, f. 147–148.

Misumena decorata Tikader, 1980: 103, f. 145–146 (D♀; ♀ holotype in ZSI; not examined), **syn.n.**

Misumenoides matinikus Barrion et Litsinger, 1995: 241, f. 140a–d (D♂; ♂ holotype in IRRI; examined), **syn.n.**

Misumenoides pabilogus Barrion et Litsinger, 1995: 242, f. 141a–c (D♀; ♀ holotype in IRRI; examined), **syn.n.**

For other references see Platnick [2003].

MATERIAL. INDONESIA: 1♀ (MCSN; the holotype of *Misumena hilaris*), Sulawesi. INDIA: 1 ♀ (MNHN; the holotype of *Misumena braminica*), 'India'. PHILIPPINES: 1 ♂ (IRRI; the holotype of *Misumenoides matinikus*), Luzon; 1 ♀ (IRRI; the holotype of *Misumenoides pabilo-*

gus), Mindanao. Also numerous specimens of both sexes from India, Sri Lanka, Thailand, Malaysia, Indonesia and the Philippines (kept in MZT and PTL) were examined.

DIAGNOSIS. The abdomen of female *H. hilaris* has longitudinal rows of minute tubercles, thus resembling *Runcinia*. Distally, the ITA has a hollow (Fig. 33). Epigynal and spermathecal structures (Fig. 52) are close to those of *Runcinia*.

DISTRIBUTION. This species is widespread from India and Sri Lanka to the Philippines and is one of the dominant thomisids in most parts of the Oriental region.

REMARKS. For the following species: *Synaema seranicum* from New Guinea, *Misumenops* (?) *bühleri* from Indonesia (Timor), *Misumenoides shulli* from India, *Misumenoides deccanes* from India, *Diaea jaintious* from India (Meghalaya) and *Misumena decorata* from India (Maharashtra), I have been unable to re-examine the types. However, the originally published illustrations are sufficient to conclude that all of these names should be synonymized with *H. hilaris*.

There is at least one species (*Diaea velata* L. Koch, 1876 described from Queensland), which might be conspecific (a senior synonym, Sic!) with *H. hilaris*. This problem needs special attention in the future.

Henriksenia thienemanni (Reimoser, 1931) **comb.n.**

Fig. 19.

Misumenops thienemanni Reimoser, 1931: 766 (D♀; ♀ holotype in ZMB; examined).

MATERIAL. INDONESIA: 1 ♀ (ZMB; the holotype of *Misumenops thienemanni*), Sumatra.

REMARKS. The non-taxonomic concept of '*Misumenops nepenthicola*' includes at least three additional, morphologically different species from Borneo, Singapore and Sumatra; all related to *H. thienemanni*. Furthermore, *Misumenops nepenthicola* Pocock, 1898 from Labuan Island does not exist and is an invalid name. It was not based on a description nor any type material, but only on notes on its habitat and locality (ICZN 1999 § 12.3) given to Pocock by another person, viz., Mr. Everett. The BMNH holds one ♂ and three ♀ from Labuan Island (examined by myself). The present label for the sample is "BMNH 1894.6.27.2.5 Loc. Labuan Coll. Everett *Misumenops nepenthicola* (Poc.) TYPE", thus also including a reference to the type. This label cannot have been written neither by Pocock, nor by the museum staff at the time Pocock [1898] published his discussion of this concept, because he used the generic name *Misumena.* This label was most probably made in connection with the description of this material by Bristowe [1930], who stressed that his description was the first one available for this species and that it was actually based on the material from Labuan. *M. nepenthicola* Bristowe, 1930 is however a junior homonym of *M. nepenthicola* Fage, 1928, a different species described from Singapore. A decision by the Commission is necessary to stabilize the type locality, author, and year of description for the valid species *Misumenops nepenthicola* and an application for such a solution is in preparation.

The nepenthicolous Misumenini have been discussed by Pocock [1898] and Koh [2000], and three specific descriptions were presented by Fage [1928], Bristowe [1930] and Reimoser [1931]. In addition, a large number of ecological studies concerning the ecosystems within the pitchers of *Nepenthes* spp. have been published.

Additional new combinations can only be proposed when more material from different parts of the range of this genus become available. However, it is obvious [pers. obs.] that a number of species related to *H. thienemanni* occur in Singapore (description with drawings checked), Thailand (in BMNH), Sarawak and Sabah (ecological studies), Labuan Island outside Sabah and different parts of Sumatra (in PTL). Therefore, there is a separate group of *Henriksenia* species (see Figs 67, 83) occurring in *Nepenthes* spp. rather than a single species.

The females of this group are distinctly larger than those of *H. hilaris* and related species (see above) and all pairs of legs in both sexes are relatively longer. Their body is more or less uniform green and the male legs have only insignificantly darker areas in the place of the annulations of other Misumenini. The male palpal apophyses are more or less similar to those of *H. hilaris*, with the ITA distally concave. The female spermathecae have a pair of large receptacula as in *H. hilaris* (cf. Fig. 52), but the epigynal hood of the latter species seems to be homologous to a central transverse cavity with well sclerotized lateral arches in the nepenthicolous *Henriksenia* species.

The taxonomic problem of the nepenthicolous Misumenini and their revision will be considered elsewhere and the corresponding list of references by Platnick [2003] can only be corrected after that.

***Ledouxia* gen.n.**

Type species: *Misumena alluaudi* Simon, 1898 from Mauritius (♀ holotype in MNHN; examined).

ETYMOLOGY. This genus is dedicated to Dr. Jean-Claude Ledoux, Solignac-sur-Loire, France for his contributions to the study of the spiders of the

Mascarene Islands and for providing important information about this genus in Reunion. The gender is feminine.

DIAGNOSIS. Males with a dorsal abdominal scutum as *Henriksenia*, but can be distinguished from it by the presence of a concave subdistal plate on the RTA. Female epigyne with a short scape. Both sexes are separated from the partly sympatric *Cyriogonus* by the unmodified abdomen.

DISTRIBUTION. Mascarene Islands, Madagascar and Reunion (overseas department of France).

DESCRIPTION. Male with a dorsal abdominal scutum as *Henriksenia.* The male abdomen is pale brown dorsally and ventrally, but with wide blackish-brown margins. In males, legs I–II have dark brown femora and patellae, but the tibiae and metatarsi are basally light and distally dark brown, giving the impression of dark legs with light annulations and not *vice versa* as in other Old World Misumenini (*Misumena*, *Ebrechtella*, and *Mastira*), including also the partly sympatric *Cyriogonus*. Females lack the lines of minute tubercles on the abdominal dorsum. Female abdomen dorsally with silvery background due to rich subcutaneous guanine. The extent of dark areas is very different between the two species in the Mascarenes. MOT quadrangular. Female tibiae I–II with only two pairs of ventral spines, but corresponding metatarsi with four pairs of strong spines. The RTA and ITA are fused, but the ITA is not excavated as in *Henriksenia,* VTA simple, distal part of the embolus with the orifice far from the distal, pointed tip. Epigyne with a scape, receptaculae large.

REMARKS. Apart from the type species, there is one undescribed species (♂♂♀♀) from Mauritius and Reunion and another undescribed species (♂) from Madagascar (all kept in PTL). A complete account of these species will be provided elsewhere.

Ledouxia alluaudi (Simon, 1898) **comb.n.**
Figs 59, 69, 82.

Misumena alluaudi Simon, 1898: 279 (D♀; ♀ holotype in MNHN; examined).

MATERIAL. MAURITIUS: 1 ♀ (MNHN; the holotype of *Misumena alluaudi*), no exact locality. Additional specimens of both sexes from several localities in Mauritius (in PTL) and Reunion [Ledoux, pers. comm.].

DIAGNOSIS. The colour pattern of this species includes a very conspicuous blackish zone around the anterior and lateral sides of the abdomen. The male palpal tibia with a subdistal rounded cavity in the distally pointed RTA, but the ITA is distally obtuse (Fig. 82). The embolic orifice oval, some oblique ridges present behind this orifice, distal unmodified point very long (Fig. 69). Epigyne with a scape, conspicuous in mounted condition (Fig. 59), but less so in specimens preserved in alcohol.

DISTRIBUTION. Mauritius and Reunion.

REMARKS. Another *Ledouxia* species from the Mascarene Islands is much more common and has a dorsal abdominal pattern consisting of only a few black spots (as in *Diaea suspiciosa* and *D. decorata*) and a shorter epigynal scape, while a detailed comparison with the undescribed Malagasy species has not yet been done.

The Misumenini of the more northern and western parts of Africa have not been revised, but are close to *Ebrechtella* and some of them may be congeneric. The specimens of '*Misumenops*' *rubrodecoratus* Millot, 1941 (♂♀; in PPRI) were compared with the types by Dippenaar-Schoeman [1983: 51, fig. 33a–f]. This species does not belong to *Misumenops, Ebrechtella* or *Ansiea*, but the structure of its epigyne suggests some relationship with *Ansiea* rather than with any other known genera.

Loxoporetes Kulczyński, 1911

Type species: *Loxoporetes nouhuysii* Kulczyński, 1911 from New Guinea (♀ holotype probably in RMNL; not examined).

DIAGNOSIS. This genus has a very characteristic abdominal shape with protruding posterolateral cones (Fig. 13). The epigyne consists of two rounded lobes and a central hood. The epigynal structure and the presence of abdominal modifications suggest relationships with *Runcinia*. Unfortunately, males are unknown.

Two species are currently included in this genus, but there is at least one undescribed species from the Philippines (Luzon), of which a female specimen was found in the collection of IRRI [pers. obs.].

DISTRIBUTION. The Oriental and Australian regions.

Loxoporetes nouhuysii Kulczyński, 1911
Figs 13, 53.

Loxoporetes nouhuysii Kulczyński, 1911: 131, pl. 4, f. 16–17 (D♀; ♀ holotype from SW New Guinea [now Irian Barat], River Lorentz, Sabang, probably in RMNL; not examined).

MATERIAL. NEW GUINEA: 1 ♀ (MNHN), no exact locality.

Loxoporetes colcloughi (Rainbow, 1912) **comb.n.**

Diaea colcloughi Rainbow, 1912: 205, f. 1–2 (D♀; ♀ holotype in QMB; examined).

MATERIAL. AUSTRALIA: 1♀ (QMB; the holotype of *Diaea colcloughi*), Queensland.

REMARKS. The transfer to *Loxoporetes* is based on the similar type of modification of the abdomen, as well as the epigynal structure similar to, but not identical with the type species [see Rainbow, 1912: figs 1, 2].

Mastira Thorell, 1891

Mastira Thorell, 1891: 87.

Epidius: Simon, 1897: 8; Roewer, 1955: 756; Bonnet, 1956: 1715.

Type species: *Mastira bipunctata* Thorell, 1891 from Singapore (♂ holotype in NHRS; examined).

DIAGNOSIS. Average size and general habitus as in the widely sympatric *Ebrechtella*. Some species have a dorsal abdominal pattern, e.g., *M. menoka* and *M. menoka sensu* Barrion & Litsinger [1995]. Males of all *Mastira* spp. have central modifications of the tegulum, varying from the presence of one or two tegular apophyses to a conical shape of the whole tegulum. The palpal apophyses are variable in form, but the VTA is often the most complex. A group of tightly spaced sensory hairs on the cymbial margin at the level of the tip of the RTA (Figs 34, 88) has not been found in other Misumenini genera. The structure of the embolus has been studied in this genus for six species and is always groove-like (Fig. 70), sometimes weakly screwed (Fig. 71). For comparison, see wide groove in the embolic tip of *Loxobates ephippiatus* in the Dietini (Fig. 72). The annulations of the male legs are usually wide, tibiae and metatarsi sometimes completely dark. The female epigyne has a posterior excavation, while the hood is quite wide, insignificant, or even absent. The distinct pair of more or less conical projections in the epigynal area of most specimens seems to be dried sperm.

DISTRIBUTION. The Oriental region and Melanesia.

REMARKS. Most species of *Mastira* from southeast Asia and Melanesia were described from females only and mostly listed in *Diaea* by Roewer [1955] and Platnick [2003]. *Mastira* was synonymized with *Epidius* Thorell, 1877 by Simon [1897] and accordingly placed in the Stephanopinae (Stephanopseae) in all subsequent catalogues. This action is difficult to understand; no specimens of the type species of *Mastira* have been checked by other specialists to date, possibly not even by Simon when he made his synonymy. Besides, although *Mastira* has two teeth on the posterior cheliceral margin (the main criterium of the Stephanopinae by Simon), its habitus is of the typical misumenine type. The genus *Epidius* must also be removed from the Stephanopinae, where it was placed by Simon [1897] only because of the presence of more than one tooth on the posterior cheliceral margin. *Epidius* belongs to a new, mainly Oriental subfamily (to be described elsewhere). *Mastira* is here removed from synonymy with *Epidius* and transferred back to the Thomisinae (Misumenini). Furthermore, *Mastira* (with many species, some of which are widespread, some undescribed), is at least one of the dominant genera of the Misumenini in the Oriental region and extends its range to Melanesia. Names of some species of *Mastira* may in theory be changed when additional topotypical material from Aru and Sulawesi becomes available. The current results are partly based on specimens outside the type series but identified by their original authors and deposited in the museum (MCSN) where all the specimens from those expeditions are preserved.

All the species listed below, apart from the type species, should be transferred to *Mastira* reasoning from the conformation of their copulatory organs, which fits the above given diagnosis (e.g., Figs 34, 35, 70–72).

Mastira bipunctata Thorell, 1891
Figs 47, 58.

Mastira bipunctata Thorell, 1891: 87 (D♂♀; ♂ holotype in NHRS; examined).

Epidius bipunctata: Simon, 1897: 8; Roewer, 1955: 756; Bonnet, 1956: 1715; Platnick, 2003: www.

MATERIAL. INDONESIA: ♂♂♀♀ (PTL), Sumatra Barat. PHILIPPINES: ♂♂♀♀ (PTL), Luzon. SINGAPORE: 1 ♂ (NHRS; the holotype of *M. bipunctata*), no exact locality. TAIWAN: ♂♂♀♀ (PTL), no exact locality.

Mastira bitaeniata (Thorell, 1878) **comb.n.**

Misumena bitaeniata Thorell, 1878: 199 (D♀; ♀ lectotype in MCSN; designated here).

Diaea bitaeniata: Thorell, 1881: 340 (transferred from *Misumena*).

MATERIAL. INDONESIA: 2 ♀♀ (MCSN; the syntypes of *Misumena bitaeniata*, the smaller one is here designated as the lectotype), ‘Amboina’ (Maluku, Ambon).

Mastira cimicina (Thorell, 1881) **comb.n.**
Fig. 71.

Diaea cimicina Thorell, 1881: 342 (D♀; ♀ holotype in MCSN; not examined).

MATERIAL. NEW GUINEA (now INDONESIA): 1 ♀ (MCSN; the ♀ identified by Thorell as *Diaea cimicina*), Aru Islands. AUSTRALIA: 1 ♀ (MCSN; the ♀ identified as *Diaea cimicina*), Queensland. Also examined ♂♀ from the Philippines (in PTL).

Mastira flavens (Thorell, 1877) **comb.n.**
Figs 34, 35.

Misumena flavens Thorell, 1877: 510 (Djuv.; holotype in MCSN; not examined).

Misumena flavens: Merian, 1911: 249.

Diaea flavens: Roewer, 1955: 868 (transferred from *Misumena*).

MATERIAL. INDONESIA: 1♀ (MCSN; the ♀ identified by Thorell as *Misumena flavens*), Sulawesi. PHILIPPINES: ♂♂♀♀ (PTL), Luzon. TAIWAN: ♂♂♀♀ (PTL), no exact locality.

Mastira menoka (Tikader, 1963) **comb.n.**
Fig. 70.

Misumena menoka Tikader, 1963: 254, f. 5a–b (D♂; ♂ holotype not examined).

Misumena menoka: Tikader, 1971: 38, f. 12h–j; 1980: 91, f. 127–128.

MATERIAL. INDIA: ♂♂♀♀ (PTL), Kerala.

REMARKS. The juvenile, incorrectly identified specimen of '*Misumena menoka*' reported by Barrion & Litsinger [1955] from the Philippines (Mindanao: Misamis Oriental) is an undescribed *Mastira* species. I also examined ♂♂♀♀ (in PTL) from the type locality.

Mastira nicobarensis (Tikader, 1980) **comb.n.**

Misumena nicobarensis Tikader, 1980: 102, f. 143–144 (D♀; ♀ holotype not examined).

REMARKS. This species was described from the Nicobar Islands.

Mastira nitida (Thorell, 1877) **comb.n.**
Fig. 71.

Misumena nitida Thorell, 1877: 508 (D♀; ♀ syntypes in MCSN; examined), from Celebes.

Misumena nitida: Thorell, 1878: 199.

Diaea nitida: Thorell, 1881: 340 (transferred from *Misumena*); Roewer, 1954: 869; Bonnet, 1956: 1414; Platnick, 2003: www.

Synaema batjense Simon, 1886: 179 (D♀; ♀ holotype in MNHN; examined), **syn.n.**

Synaema batjense: Roewer, 1954: 890; Bonnet, 1958: 4204; Platnick, 2003: www.

MATERIAL. INDONESIA: 2 ♀♀ (MCSN; the syntypes of *Misumena nitida*), Sulawesi; 1 ♀ (MCSN), 'Amboina' (Maluku, Ambon); 1 ♀ (MNHN; the holotype of *Synaema batjense*), Moluccas, Batjan Island. PHILIPPINES: ♂♂♀♀ (PTL), Luzon.

DIAGNOSIS. This species is easily distinguished from all other Oriental Thomisini by the striking pattern on the carapace: the wide reddish-brown marginal bands include three pairs of large pale patches.

***Mecaphesa* Simon, 1900**
Figs 10, 29, 57, 78.

Mecaphesa Simon, 1900: 495.

Type species: *Mecaphesa cincta* Simon, 1900 from Hawaii (♀ holotype from Hawaii, Maui, in BMNH; examined). Also examined additional ♀♀ kept in BPBM.

DIAGNOSIS. All species of *Mecaphesa* (e.g., Fig. 7) differ both from true New World *Misumenops* and from the genera, to which Old World '*Misumenops*' were placed (*Ebrechtella, Henriksenia, Ebelingia* and *Mastira*), by possessing a continuous lateral plate on the tibia of the male palp (Fig. 84). The RTA, ITA and VTA represent three projections from a single plate, rather than being independently originating apophyses. The distal part of the embolus lies in a tutacular furrow of variable shape and the tip is swollen distally and usually has a dentate margin (Fig. 78). The tip of the cymbium is more rounded than in the other genera discussed above. The epigyne is variable, with or without a distinct hood, and the spermathecae are characterized by a pair of large receptacula (Fig. 57).

DISTRIBUTION. The Hawaiian Islands and Polynesia.

REMARKS. Contrary to my previous opinion [Lehtinen, 1993], no Palaearctic or Oriental species are members of *Mecaphesa*. The Polynesian [Lehtinen, in prep.] and Hawaiian [Simon, 1900; Suman, 1967, 1970; Lehtinen, 1993; Roth, 1995; Garb & Gillespie, 2003] Misumenini have been repeatedly studied with quite variable results. Simon [1900] placed the Hawaiian species in five genera: *Misumena, Synaema, Diaea, Misumenops* and *Mecaphesa*, while Lehtinen [1993] transferred most species to *Mecaphesa*. Garb & Gillespie [2003] recently claimed, according to molecular sequence data, that there has been only a single invasion by the Hawaiian Misumenini. If this claim is true, *Mecaphesa* would be the correct name for all of them.

'*Misumenops*' *rapaensis* Berland, 1934 (♂♀ from southern Polynesia, Rapa Island; Figs 10, 29) is not related to the other Polynesian species of the Misumenini. Furthermore, all Polynesian species assigned so far to *Mecaphesa s.lat.* (Fig. 57) will be treated in a currently undescribed genus [Lehtinen, in prep.].

Apart from the species described by Simon (*Mecaphesa cincta*; *M. semispinosa* Simon, 1900 and *M. perkinsi* Simon, 1904; types of all the Hawaiian species are kept in BPBM; examined), this genus currently includes the Hawaiian species treated as *Misumenops* by Suman [1970] and Californian species treated as members of the *celer* group of *Misumenops* by Schick [1965]; the latter may represent a taxon of its own. A complete synopsis of all the *Mecaphesa* species will be provided elsewhere.

***Misumena* Latreille, 1804**

Misumena Latreille, 1804: 135.

Type species: *Aranea citrea* DeGeer, 1778 from Sweden (= *Araneus vatius* Clerck, 1757 from Sweden) (Figs 3, 21), with numerous previously published synonyms [see Platnick 2003: sub *M. vatia*].

DIAGNOSIS. Males differ from all other Misumenini except *Pistius* in having a spirally screwed, distally unmodified embolus; from *Pistius* they can be separated by their pale (not brownish) coloration. Females differ from the sympatric *Runcinia* by the wider abdomen and the more widely spaced receptaculae; from other sympatric Old World genera they differ in the presence of violet parts in the abdominal pattern and the relatively simple epigyne.

DESCRIPTION. Carapace centrally pale, laterally brown, lateral eyes on moderately raised tubercles, female abdomen pale colour that can change (white–grey–pale or green–yellow) according to the colour of the flower or leaf, where the spider sits. Male abdomen with two dark longitudinal stripes on a light background, margins of dorsum and central stripe on the ventral side also dark. Female tibiae and metatarsi with numerous ventral spines, the spines of the male are much weaker. Female legs uniformly light, male legs I–II mainly dark green (brown in preserved specimens), tibiae, metatarsi and tarsi with light basal or subbasal annulations. Male legs III–IV uniformly light. The male palp (Fig. 21) with the embolic base thick and its distal part screwed (Fig. 85), the embolic tip is more or less unmodified (Fig. 64); the epigynal hood narrow, an anterior sclerotized arch also present, a pair of the large spermathecae with variable connecting ducts.

DISTRIBUTION. The Holarctic region.

REMARKS. *Misumena* is the oldest genus of the Misumenini and for a long time the single genus of the tribe. That is why species from all parts of the world have been assigned to it. Subsequently, many of them have been transferred to *Diaea, Misumenops,* etc.

Platnick [2003] listed the 54 Palaearctic and Oriental species and one subspecies, but all of them, except for the three species listed below, should be transferred to other genera of the Misumenini or remain *nomina dubia*, or could not be checked because the corresponding types were not available (e.g., the ZSI in Calcutta) and/or the descriptions are not sufficient for reliable placement. The following three Palaearctic species belong to *Misumena*.

Misumena vatia (Clerck, 1757)
Figs 3, 21, 85.

Araneus vatius Clerck, 1757: 128, pl. 6, f. 5 (D♀; the type material from Sweden; not preserved).

For a complete list of synonyms see Platnick [2003].

MATERIAL. Numerous identified ♂♂♀♀ of *M. vatia* from Europe (Finland, Sweden, Switzerland, France, Italy), Asia (Russia and China) and N America (Colorado), kept in MZT, NHRS, MNHN, and PTL.

DIAGNOSIS. The central part of the embolus is less screwed (cf. Fig. 85 and Figs 86, 87) than in *M. bicolor*; the male of *M. grubei* is unknown. For the structure of the epigyne and spermathecae, see Ono [1988: figs 181, 182].

REMARKS. This is the type species of the type genus of the tribe Misumenini, not closely related to other pale coloured members of the other genera of this tribe. The conformation of the copulatory organs is unique and as such is sufficient proof that the numerous unrevised and insufficiently known Neotropical and non-European species originally assigned to *Misumena*, must be transferred from it.

DISTRIBUTION. Holarctic; amongst the Misumenini, it is also the species with the largest range. All speciation of this group has taken place strictly outside the tropical and subtropical regions.

Misumena bicolor Simon, 1875
Figs 86, 87.

Misumena bicolor Simon, 1875: 246, pl. 7, f. 2 (D♂; ♂ holotype in MNHN; examined).

Misumena personata Simon, 1916: 209 (D♂; ♂ holotype in MNHN; examined).

MATERIAL. FRANCE: ♂ (MNHN; the holotype of *M. bicolor*), Corsica; ♂♂ (PTL), Corsica; ♂ (MNHN; the holotype of *M. personata*), Banyuls.

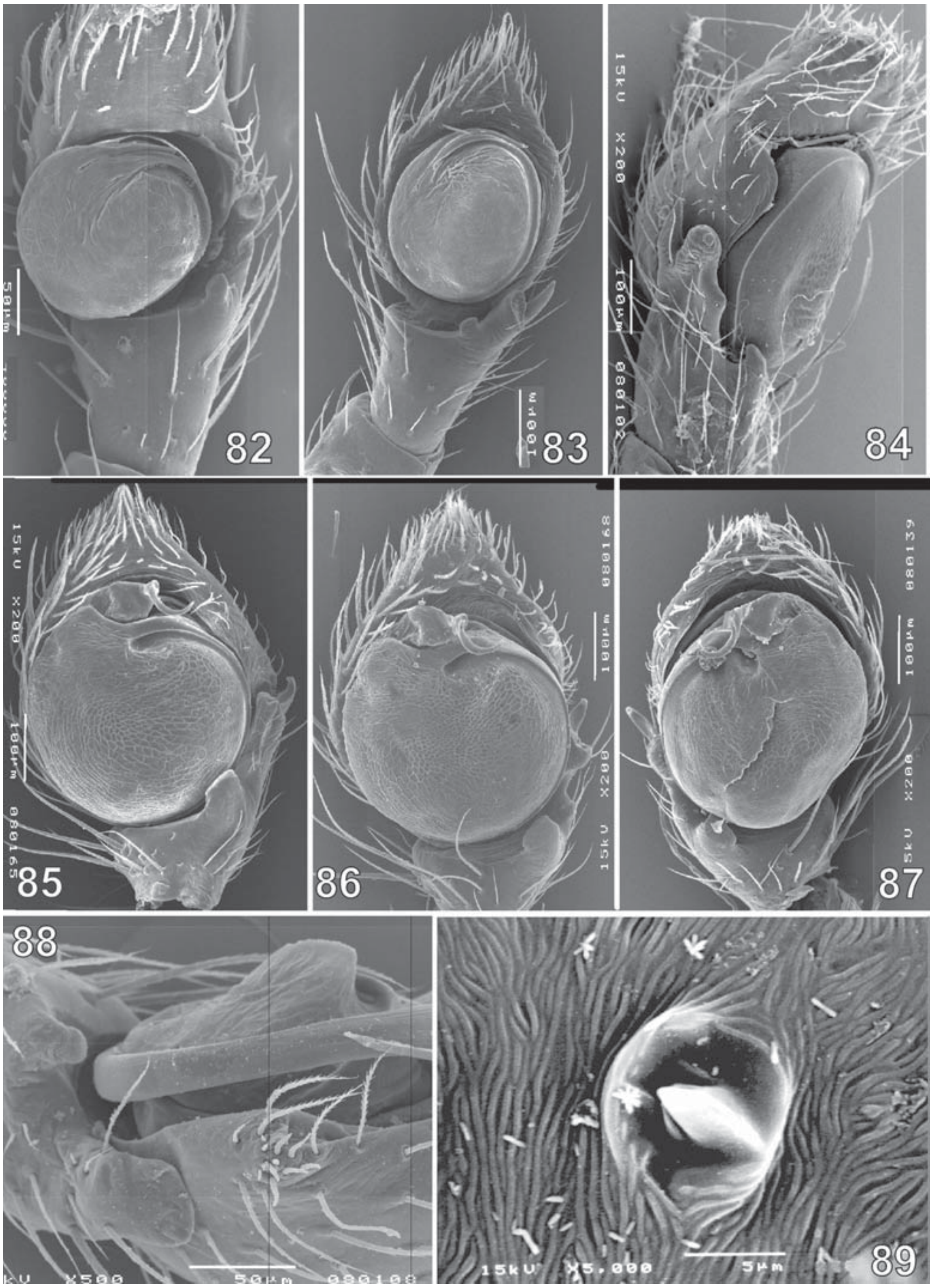
DIAGNOSIS. Differs from *M. vatia* by the more strongly coiled embolus (cf. Figs 86, 87 and Fig. 85) and details of the RTA; the female is unknown. The embolic coil is more abrupt in the holotype of *M. bicolor* than in that of *M. personata*, but I consider these differences insignificant.

REMARKS. Unfortunately, the female of this species remains unknown. *M. personata* has long been regarded as a synonym of *M. vatia* and is still catalogued as such by Platnick [2003]. Some of the specimens from the MNHN identified as *M. personata* actually belong to *Ebrechtella tricuspidata*.

Misumena grubei (Simon, 1895)

Thomisus grubei Simon, 1895b: 337 (D♀; ♀ holotype in MNHN; properly examined by Marusik & Logunov [2002]).

Misumena rosea Hu et Wu, 1989: 335, f. 266.1–3 (D♀; ♀ holotype not examined). Synonymized with *M. grubei* by Marusik & Logunov [2002].



Figs 82–89. Male palps of Misumenini and the tibial skin organ. 82 — *Ledouxia alluaudi* (Simon, 1898) (Reunion); 83 — *Henriksenia* sp. (of the *nepenthicola* group) (Indonesia, Sumatra); 84 — *Mecaphesa vitellina* (Simon, 1900) (Hawaii, Maui); 85 — *Misumena vatia* (Clerck, 1757) (Finland), the screwed embolus; 86 — *Misumena personata* Simon, 1916 (France, Banyuls), the screwed embolus; 87 — *Misumena bicolor* Simon, 1875 (Corsica), the screwed embolus; 88 — *Mastira* sp. (Indonesia, Sumatra), palp laterally; 89 — a genus related to *Pharta* Thorell, 1891 (Sabah), tibial skin organ.

Misumena grubei: Marusik & Logunov, 2002: 318, f. 15–17. Transferred from *Thomisus*.

REMARKS. This species, which occurs in Mongolia and China, was properly described and diagnosed by Marusik & Logunov [2002]; it differs from *M. vatia* in the structure of the spermathecae, its male remains undescribed. The embolic tip illustrated in Fig. 64 belongs to a *Misumena* species from the Altai (Russia) unknown to me, but it might be that of *M. grubei*; further studies and more specimens are required to resolve this problem.

Misumenoides F.O. Pickard-Cambridge, 1900

Misumenoides F.O. Pickard-Cambridge, 1900: 140.

Type species: *Runcinia magna* Keyserling, 1880 from Mexico and Colombia (♀ syntypes in BMNH; examined).

MATERIAL. Apart from the syntypes of *Runcinia magna* (in BMNH), ♂♂♀♀ of several (un)identified species (in BMNH, MNHN, MZT, ZMUM) and the ♂♀ of *M. formosipes* (Walckenaer, 1837) from North America (in PTL; Figs 26, 77) were studied.

DIAGNOSIS. Members of this genus differ from *Misumenops* by possessing a chalk-white transverse carina in the ocular area, the posteriorly truncate abdomen (Fig. 6) and the fused RTA–ITA that is long, basally simple, but distally variously modified (Fig. 26). The female epigyne has a hood.

DISTRIBUTION. This genus is confined to the New World.

REMARKS. Old World species were first assigned to *Misumenoides* by Tikader [1963, 1965] and Barrion & Litsinger [1995]. The Hawaiian species of Misumenini transferred to *Misumenoides* by Roewer [1955] were later listed either in *Misumenops* [Suman, 1970] or in *Mecaphesa* [Lehtinen, 1993]. Many species of *Misumenoides* were originally assigned to *Runcinia* [Keyserling, 1880; O. Pickard-Cambridge, 1891, 1898], which is actually absent from the New World; this was mainly due to the posteriorly truncate shape of the body. A specific revision of Neotropical *Misumenoides* is currently underway by Lise and his team [Lise, pers. comm.].

Misumenops F.O. Pickard-Cambridge, 1900

Misumenops F.O. Pickard-Cambridge, 1900: 141.

Type species: *Misumena maculis-sparsa* Keyserling, 1891 from Brazil (Figs 5, 24, 25, 75); the orthography was corrected to *maculissparsus* [ICZN, 1999 §32.5.2.3] when the genus was erected (♂♀ syntypes in BMNH; examined).

MATERIAL. The type material of *Misumena maculis-sparsa* Keyserling, 1891 from Brazil (Taquara) (kept in BMNH) became available during the checking of the final version of the manuscript, but the original drawings and redescription by Mello-Leitão [1929: pl. 10, fig. 186] are close to the male of a related species from Uruguay (courtesy of F. Perez Miles) examined by myself (in PTL). This species is figured as *Misumenops* aff. *maculissparsus*, as there was no time available to check whether it is a previously described species, but it certainly belongs to the same species group as the type species. Also examined were numerous samples of *Misumenops pallidus* (Keyserling, 1880) from Venezuela to southern Chile (in MZT, MZUM and PTL; Figs 27, 28, 76), *M. coloradensis* Gertsch, 1933, *M. celer* (Hentz, 1847), and *M. asperatus* (Hentz, 1847) from North America (all in PTL), as well as samples of *M. (Misumessus) oblongus* (Keyserling, 1880) from the USA (in PTL), *M. pallens* (Keyserling, 1880) from Brazil and Peru (in PTL), *M. croceus* (Keyserling, 1880) from Uruguay (in MZUM), *M. callinurus* Mello-Leitão, 1929 from Brazil and Uruguay (in MZUM and PTL). Numerous South American samples of *Misumenops* (in MZT and PTL) have not been identified to species. For material of species transferred here to other genera of Misumenini, see under *Ebelingia*, *Ebrechtella, Henriksenia* and *Mastira*.

DIAGNOSIS. The body colour of most *Misumenops* is brighter than that of any of the Old World genera of Misumenini (Fig. 5), and especially reddish, brownish and yellowish patterns predominate in contrast to the abundance of the green or greenish grey colour in the Old World groups. The male legs are less slender than in typical Old World Misumenini and their coloration may include various patterns of spots and short transverse stripes in contrast to the regular dark annulations of Old World Misumenini, though the males of the *maculissparsus* group have wide, brown annulations on the metatarsi and tibiae.

The best diagnostic characters for the males of true *Misumenops* are the presence of a small (almost reduced) tutaculum at the base of the tegulum (Figs 25, 28) and the fusion of the RTA and ITA of the palpal tibia (Figs 24, 25, 27, 28) instead of distinctly separate RTA and ITA in most (but not all) Old World genera. The embolus tip gradually tapers and is striated (Figs 75, 76) in the *maculissparsus*-group, at least, while other modifications are species or species-group specific (Fig. 76).

Рис. 82–89. Пальпы Misumenini и кутикулярный орган голени. 82 — *Ledouxia alluaudi* (Simon, 1898) (Reunion); 83 — *Henriksenia* sp. (из группы *nepenthicola*) (Индонезия, Суматра); 84 — *Mecaphesa vitellina* (Simon, 1900) (Гавайи, Мауи); 85 — *Misumena vatia* (Clerck, 1757) (Финляндия), штопоровидный эмболюс; 86 — *Misumena personata* Simon, 1916 (Франция, Banyuls), штопоровидный эмболюс; 87 — *Misumena bicolor* Simon, 1875 (Корсика), штопоровидный эмболюс; 88 — *Mastira* sp. (Индонезия, Суматра), пальпа ретролатеральн; 89 — род близкий к *Pharta* Thorell, 1891 (Сабах), кутикулярный орган голени.

The female epigyne has an anterior hood, as in most of the Misumenini, while the anterolateral pair and the additional small basal pair of spermathecae are present rather than the large spermathecae which more or less embrace the hood in the species transferred to Old World genera. The presence of stiff hairs on the carapace is not a diagnostic character for *Misumenops* or any genus of the Misumenini as has previously been suggested by different authors [cf. Lehtinen, 1993].

DISTRIBUTION. Numerous South American and some Nearctic species share several characters with the type species, while no species from the Old World could be considered congeneric with *M. maculissparsus. Misumenops pallidus* (Keyserling, 1880) (Figs 27, 28, 76) is an extremely widespread and common Neotropical species of the genus and an excellent model for people who cannot make their comparisons with correctly identified material of *M. maculissparsus* (see Figs 5, 24, 25, 75). For the Old World species previously placed in *Misumenops*, see discussion under *Ebrechtella.*

REMARKS. *Misumenops* and *Misumenoides* were described at the same time [F.O. Pickard-Cambridge, 1900]. Since then, numerous species from different parts of the world have been listed in *Misumenops.* In spite of several transfers and synonymes by earlier authors, 124 species and three subspecies are still assigned to this genus [Platnick, 2003]. A traditional model of this genus among European and Chinese arachnologists has been '*M.*' *tricuspidatus* (Fabricius, 1775). Lehtinen [1993] first suggested that *Misumenops* species are absent in the Pacific Islands and are mainly confined to the Neotropical Region.

The 76 species of *Misumenops* from South and North America are listed by Platnick [2003]. A revision of New World *Misumenops* has not yet been done and the taxonomic status of *Chorizopsis* Simon, 1864 and *Metadiaea* Mello-Leitão, 1929 remains obscure, though Rinaldi [1983, 1988] claimed the synonymy of the latter genus with *Misumenops*. The type species of *Chorizopsis* is the North American *Thomisus purpuratus* Walckenaer, 1837, one of the species described by Walckenaer [1837] according to the colour plates by Abbot from Georgia, but at least the other five of these species must be deemed as *nomina dubia*, thus removing the genus *Thomisus* from the New World crab spider fauna. The name *Chorizopsis* possibly remains available for a group of *Misumenops*.

Misumessus Banks, 1904 represents a North American group of species, usually regarded as a subgenus of *Misumenops*. Its limitation has not been finally checked, but *Misumena oblonga* Keyserling, 1880 from North America, Mexico and Cuba is its originally designated type species. The epigyne of the type species is a tongue-shaped flap, while the male palpal tibia has a distally unmodified ITA and a distinct tutaculum. The *celer*-group from North America was transferred to *Mecaphesa s.lat.* [Lehtinen, 1993] and certainly belongs outside true *Misumenops*, although it may represent a separate taxon of its own.

Metadiaea Mello-Leitao, 1929 was synonymized with *Misumenops* by Rinaldi [1983], but this cannot be accepted [see Lehtinen, 1993]. There is a possibility that Rinaldi based her synonymy on a comparison with some '*Misumenops*' sp. unknown to me, but according to drawings of *Metadiaea* spp. they are not congeneric with the type species *M. maculissparsus* (Figs 5, 24, 25, 75). No additionally published records are available for the type species listed only in catalogues since the redescription by Mello-Leitão [1929]. Often the presence of setae on the carapace has been used as a characteristic for *Misumenops* and the absence of them for *Misumena*, but this is not a valid generic character for any thomisid; cf. Lehtinen [1993].

A complete account of *Misumenops* will be published elsewhere.

***Pistius* Simon, 1875**

Pistius Simon, 1875: 257.

Type species: *Aranea truncata* Pallas, 1772 from Europe. Additionally, only the east Asian *Pistius undulatus* Karsch, 1879 seems to belong to this genus.

MATERIAL. *Pistius truncatus* (Fig. 65): ♀ and numerous juveniles (MZT, PTL), Finland; ♂ (PTL), Slovakia. *P. undulatus* (Figs 49, 61): ♂♀ (PTL), Russia, Khabarovsk territory.

DIAGNOSIS. All species of this genus are characterized by the flat, predominantly brown (not green or grey as in other Old World Misumenini) body and legs, with pale (instead of dark) annulations. Males with weakly sclerotized abdominal dorsum, not a real scutum. The male palpal tibia has a transverse lobe. Epigyne with a rounded quadrangular plate instead of a distinct hood in most relatives. Embolus basally very thick, its tip without ultrastructural modifications as in the pale-coloured *Misumena*, but typical of the dominant misumenine genera of most areas (*Ebrechtella*, *Mastira*, and *Henriksenia*).

DISTRIBUTION. The Palaearctic region.

DESCRIPTION. Body colour predominantly brown, not green or grey as in other Old World Misumenini, legs brown, male legs I–II with pale spots and light basal annulations on metatarsi and tarsi, in contrast to the dark annulations in other Old World genera, femora and basal parts of tibiae of legs II–IV also light. Abdomen pentagonal, flattened, with submarginal rows of lines of minute tubercles as in *Runcinia* and *Henriksenia* gen.n., male with a weakly sclerotized scutum. Lateral eyes on raised tubercles as in *Misumena.* Male palpal tibia with ITA as a transverse lobe on the RTA (Fig. 49), embolus basally very thick, distally curved, tip unmodified (Fig. 65). The epigynal hood continuous with large lateral plates (Fig. 61). *Pistius* and *Misumena* are the only genera of the Misumenini sharing the unmodified embolus tip. A similar structure of the embolic tip has also been observed in *Thomisus* sp. from the Oriental region (Fig. 63). The type species of *Thomisus* (*T. onustus*; Figs 2, 41) has not been studied yet, as the embolic tip of the only mounted specimens available were concealed behind other structures.

REMARKS. The genera *Massuria* Thorell, 1887 and *Pistius* have been systematically confused by most Indian authors. The six species of *Pistius* from India (Uttar Pradesh) described by Basu [1964, 1965] from single females (viz., *P. kanikae*, *P. roonwali*, *P. bhadurii,* P. *gangulyi, P. robustus* and *P. barchensis*), and maybe also the species described by Kumari & Mittal [1999] (viz., *P. tikaderi*), belong to *Massuria* and most probably represent the single species *Massuria roonwali* (Basu, 1964) **comb.n.** A detailed revision of the Indian *Pistius* species is excluded here, as *Massuria* is excluded from the Misumenini (see below). The female of *Pistius sreepanchamii* Tikader, 1962 from Meghalaya also belongs to *Massuria*. The male of *P. sreepanchamii* Tikader, 1962 was not originally described together with the female holotype, but the male palp was depicted later without description of any somatic characters [see Tikader, 1971]. This male palp certainly belongs neither to a species of *Massuria* nor of *Pistius*, but rather to *Diaea suspiciosa* O. Pickard-Cambridge, 1885 or a related species. Tikader [1980] further emphasized that the description of this species in that book was based on a single female specimen only. *Pistius kalimpus* Tikader, 1970 [fig. 10f–g in Tikader, 1971] with the green carapace and legs, and chalky white abdomen with submarginal dark line must also be removed from *Pistius*, but its generic placement can only be confirmed when the type material (kept in the ZSI) is made available for study.

Runcinia Simon, 1875

Runcinia Simon, 1875: 254.

Type species: *Xysticus grammicus* C.L. Koch, 1837 (= *Thomisus lateralis* C.L. Koch, 1837; a junior homonym of *T. lateralis* Hahn, 1831) from Europe.

DIAGNOSIS. The ocular region is raised and its lateral corners bulge outwards, but there are no acute lateral projections characteristic of *Thomisus*. The shape of the abdomen varies from short-oval (Fig. 4) to elongate-oval and the lateral parts have longitudinal rows of small tubercles, thus resembling the *hilaris*-group of *Henriksenia* gen.n. The epigyne with large receptacula embracing the anterior hood (Figs 52, 55) and striated tips of the RTA (Figs 23, 33) are also similar. *Runcinia* is differentiated from species of the *hilaris*-group of *Henriksenia* by the structure of the ocular region, the lack of a scutum in males and also by the unmodified embolus tip (Figs 66, 68).

DISTRIBUTION. The Old World.

REMARKS. *Runcinia* is the only genus of the Misumenini that has been properly revised in east Asia [Ono, 1988; Song *et al*., 1999] and in Africa [Dippenaar-Schoeman, 1980, 1983]. Taxonomic comments on this genus have been restricted here to the most widespread species, *R. affinis* Simon, 1897. In the Palaearctic and Oriental regions there are at least three other *Runcinia* species: *R. grammica* (C.L. Koch, 1837), *R. elongata* (Stoliczka, 1869) and *R. acuminata* (Thorell, 1881) (Figs 23, 55, 66); the last seems to be a junior synonym of *Diaea insecta* (L. Koch, 1875). In addition, there are certainly several other names, representing a few additional *Runcinia* species.

The Palaearctic and Oriental species include a lot of obscure names introduced especially by Tikader [1965, 1980], Sen & Basu [1972] and Barrion & Litsinger [1995]. For instance, Tikader [1966, 1971, 1980] confused *Runcinia* and *Thomisus* by placing a synonym of the common *R. affinis* to *Thomisus.* All New World species originally assigned to *Runcinia* have later been transferred to *Misumenoides* F.O. Pickard-Cambridge, 1900.

Runcinia affinis Simon, 1897

Runcinia affinis Simon, 1897: 289 (D♀; ♀ holotype in MNHN; examined).

Runcinia affinis: Reimoser, 1919: 118; Dippenaar-Schoeman, 1980: 317.

Runcinia annamita Simon, 1903: 728 (D♀; ♀ holotype in MNHN; examined), **syn.n.**

Runcinia albostriata Bösenberg et Strand, 1906: 252, pl. 10, f. 162 (D♂♀; the type series not examined, but see comments under ‘Material’ below), **syn.n.**

Runcinia albostriata: Ono, 1988: 186, f. 187–192; Barrion & Litsinger, 1995: 224, f. 128a–e, 129a–e.

Plancinus advecticius Simon, 1909: 140 (D♀; ♀ holotype in MNHN; examined), **syn.n.**

Runcinia cataracta Lawrence, 1927: (D♀; ♀ holotype not examined).

Runcinia cataracta: Dippenaar-Schoeman, 1980: 317; 1983: 46.

Thomisus cherapunjeus Tikader, 1966: 53, f. 1a–b (D♀; ♀ holotype not examined), **syn.n.**

Thomisus cherapunjeus: Tikader, 1980: 54, f. 82–83.

Runcinia chauhani Sen et Basu, 1972: 103, f. 1a–b (D♀; ♀ holotype not examined), **syn.n.**

Runcinia chauhani: Tikader, 1980: 60, f. 89–90.

Runcinia sangasanga Barrion et Litsinger, 1995: 22, f. 127a–h (D♀; ♀ holotype in IRRI; examined), **syn.n.**

For other references see Platnick [2003].

MATERIAL. INDIA: 1 ♀ (MNHN; the holotype of *Runcinia affinis*), 'Kurrachee'. VIETNAM: 1 ♀ (MNHN; the holotype of *Runcinia annamita*), Annam; 1 ♀ (MNHN; the holotype of *Plancinus advecticius*), Tonkin. PHILIPPINES: 1 ♀ (IRRI; the holotype of *Runcinia sangasanga*), Mindanao. In addition, I examined the material kept in the MNHN identified as *Runcinia albostriata*, also numerous newly collected specimens from Pakistan, India, Nepal, China (Yunnan), Sri Lanka, Thailand, Malaysia (Johor and Sabah), Vietnam, the Philippines (Luzon), Indonesia (Kalimantan, Sulawesi and Sumbava) and Taiwan (all are kept in MZT and PTL).

DIAGNOSIS. Chrysanthus [1964] and Ono [1988] reliably redescribed and diagnosed this species under the name *R. albostriata*, as did Dippenaar-Schoeman [1980] under the name *R. affinis.*

REMARKS. The type material of *R. cataracta* from Namibia (Kunene River; kept in SAM) was compared by Dippenaar-Schoeman [1980] with specimens from Egypt (Alexandria; kept in MNHN) identified as *R. affinis* by Simon. Thus, there is no doubt that both species names should be synonymized. The type material of *T. chauhani* and *T. cherapunjeus* (both from India: Meghalaya) is held in the ZSI and is not available for study; both these names are synonymized here with *R. affinis* on the basis of the original illustrations by Sen & Basu [1972: fig. 1a–b] and Tikader [1980: figs 89, 90].

The possible synonymy of *R. affinis* with *Diaea spinosula* O. Pickard-Cambridge, 1885 could not be confirmed, although it is probable [cf. Marusik, 1993]. If so, *R. spinosula* would be the oldest name for this species.

The existence of numerous synonyms of this widespread and common species can be partly explained by the wide variation of leg spination (ventral spines of tibiae/metatarsi I: 4–7/5–11). There seems to be some geographic variation, but also considerable variation within single populations. No geographic variation has been found in the structure of the copulatory organs.

***Uraarachne* Keyserling, 1880**

Fig. 9.

Uraarachne Keyserling, 1880: 130.

Odontoruncinia Caporiacco, 1954: 142. Synonymized by Rinaldi [1988].

Type species: *Uraarachne longa* Keyserling, 1880 (Fig. 9) from Brazil, Porto Alegre (♀ holotype originally in the University of Berlin, present depository unknown; not examined).

MATERIAL. Some ♀ specimens identified by Simon as *Uraarachne longa* Keyserling, 1880 (in MNHN).

DIAGNOSIS. The *Runcinia*-type ocular region and the long, distally pointed abdomen distinguish this genus from other Neotropical Misumenini, as well as from any genus of the Old World. Unfortunately, males are unknown.

DISTRIBUTION. The Neotropical region.

REMARKS. Only two species of *Uraarachne* have been described, both from single females. *Uraarachne* (Fig. 9) is regarded here as belonging in the Misumenini (for further discussion and a comparison with *Plancinus* see below).

***Zygometis* Simon, 1901**

Zygometis Simon, 1901: 63.

Diasterea Shield et Strudwick, 2000: 273; type species: *Misumena lactea* L. Koch, 1876, **syn.n.**

Type species: *Zygometis cristulata* Simon, 1901 from Malaysia (described from a juvenile).

DIAGNOSIS. Small thomisids inhabiting the low vegetation and ground layer. Carapace with dark marginal bands, abdomen and basal segments of legs with a spotted pattern (Fig. 12). Tibiae and metatarsi I–II heavily spined ventrally. For diagnostic characters of the copulatory organs of both sexes see Shield & Strudwick [2000: sub *Diasterea lactea*]. To date, the genus should be regarded as monotypic, as there are no detectable differences between the females from the Oriental region and the drawings and description by Shield & Strudwick [2000]. Unfortunately, no males are known from Asia, although juveniles are quite common and several identical females are also known, including the type of *Massuria javana*.

DISTRIBUTION. The Oriental and Australian regions.

Zygometis lactea (L. Koch, 1876) **comb.n.**

Fig. 12.

Misumena lactea L. Koch, 1876: 799, pl. 69, f. 5 (D♀; ♀ holotype in ZMH; examined).

Massuria javana Simon, 1895a: 437 (Djuv.; juv. holotype in MNHN; examined), **syn.n.**

Zygometis cristulata Simon, 1901: 63 (Djuv.; juv. holotype in MNHN; examined), **syn.n.**

Diasterea lactea Shield et Strudwick, 2000: 273, f. 1–7 (transferred from *Diaea*, D♂).

For a complete set of references see Platnick [2003].

MATERIAL. AUSTRALIA: 1♀(ZMH; the holotype of *Misumena lactea*), no exact locality. INDONESIA: 1 juv. (MNHN; the holotype of *Massuria javana*), Java. MALAYSIA: 1 juv. (MNHN; the holotype of *Zygometis cristulata*), no exact locality. Also examined were a female and numerous juveniles from various localities in Malaysia and Thailand (kept in MZT and PTL).

REMARKS. Shield & Strudwick [2000] did not examine the type species of *Zygometis* and therefore created a new genus, *Diasterea*, which is synonymized here with the former genus.

Incertae sedis and *Nomina dubia*

For the eleven species names listed below, descriptions, drawings or even specimens are sometimes available, but nevertheless all of them remain uninterpretable. See also discussion under *M. vatia.*

1. *Misumena saitoi* Roewer, 1951 *nomen novum* for *Misumena oblonga* Saito, 1939; ♀ holotype from Japan (Iwate Prefecture, Morioka City) considered lost [Ono, 1988]; epigyne: Saito [1939: 82, fig. 10.4].

2. *Misumena munitissima* Dönitz et Strand, 1906; ♀ holotype from Japan (Aomori Prefecture, Hirosaki City), depository unknown [Ono, 1988]; epigyne: Saito [1939: fig. 10.2.].

3. *Misumena annapurna* Tikader, 1963; ♀ holotype from India (Karnataka, Kotigehara), in ZSI; unavailable for study.

4. *Misumena indra* Tikader, 1963; ♀ holotype from India (Karnataka, Kotigehara), in ZSI; unavailable for study.

5. *Misumena mridulai* Tikader, 1962; ♀ holotype from India (Meghalaya, Shillong), in ZSI; unavailable for study.

6. *Misumena greenae* Tikader, 1965; ♂ holotype from India (Maharashtra, Poona), in ZSI; unavailable for study.

7. *Misumena ganpatii* Kumari et Mittal, 1994; ♀ holotype from India, in ZSI; unavailable for study, description not seen.

8. *Misumena tapyasuka* Barrion et Litsinger, 1995; ♀ holotype from Indonesia (Java, Magelang, Blabak), in IRRI; examined, but remains uninterpretable due to the poor condition of the vulval mount.

9. *Misumena maputiyana* Barrion et Litsinger, 1995; ♀ holotype from the Philippines (Luzon, Quezon Prov., Real, Llavac), in IRRI; examined, but remains uninterpretable due to its poor condition.

10. *Misumena lutea* Peelle et Saito, 1933. The ♂♀ syntypes from the Kuril Islands (Shikotan) were lost. This species was regarded as *incertae sedis* by Ono [1988]. Later, Marusik *et al*. [1993] listed *Ebrechtella tricuspidata* (as *Misumenops t.*), *Ebelingia kumadai* (as *Misumenops k.*) and *Diaea subdola* from the Kuril Islands, and therefore *M. lutea* most probably represents one of these species. However, the details must be checked by comparison of local specimens with the original description.

11. *Misumena frenata* Simon, 1909. The ♀ holotype from Vietnam, originally in MHNH, was lost; the original description is inadequate to interpret the taxonomic status of the species.

For the Palaearctic and Oriental species of *Misumena* transferred to *Mastira*, *Ebrechtella* and *Henriksenia*, see above under the corresponding genera. For species from the Mascarenes, see under *Ledouxia*. The fifteen species of *Misumena* from the Neotropical region [see Platnick, 2003] have not been revised, but the presence of true *Misumena* among them is not expected.

The following six species are definitely not members of *Misumenops*, but their proper placement is currently impossible.

1. *Misumenops armatus* Spassky, 1952; the ♂♀ syntypes from Central Asia, not examined; this species is most probably conspecific with some of the few misumenine species known from Central Asia (topotypical material is needed for confirmation of its identity), but it is certainly not congeneric with the type of *Misumenops*. This species may be a senior synonym of *Runcinia tarabayevi* Marusik et Logunov, 1990 (Figs 4, 46) [D. Logunov, pers. comm.].

2. *Misumenops turanicus* Charitonov, 1946; ♀ holotype from Uzbekistan (not examined); this might be a member of *Runcinia*.

3. *Misumenops khandalaensis* Tikader, 1965; ♀ holotype from India (Maharashtra), kept in ZSI, but unavailable; the abdominal pattern as in *Diaea* spp., but the copulatory organs are different from any known species [see Tikader, 1965: fig. 11a–c].

4. *Misumenops xiushanensis* Song et Chai, 1990; type series from China (Sichuan); the male palp as illustrated by Song *et al*. [1999: figs 279n, 280g] shows a quite exceptional VTA and RTA, and the drawing of the epigyne is possibly made from a subadult specimen and can hardly be interpreted.

5. *Misumenops forcatus* Song et Chai, 1990; ♂ holotype from China (Hubei) has a distally obtuse RTA, but the possible colour pattern is unknown to me.

6. *Misumenops zhangmuensis* (Hu et Li, 1987); ♀ holotype from China (Tibet); this seems to be a member of *Ebrechtella* [see Song *et al*. 1999: fig. 279o].

Taxa excluded from the Misumenini

Massuria Thorell, 1887

Massuria Thorell, 1887: 278.

Type species: *Massuria angulata* Thorell, 1887 from Myanmar (Burma).

MATERIAL. Unidentified ♂♂♀♀ of *Massuria* sp. (possibly *M. angulata* or a closely related species; Figs 14, 38, 54, 81) from Indonesia, Sumatra (in MNHN, AMS) and Myanmar (Burma) (in MCSN). The type specimens of all species of '*Pistius*' species described by Tikader and Basu (see above under *Pistius* for a discussion) are kept in the ZSI and are not available for study by foreign arachnologists according to recent information provided by Dr. Biswas.

DIAGNOSIS. Species of *Massuria* are exceptionally heavily built compared to the Oriental Misumenini (Fig. 14) and the short erect setae on the carapace and the submarginal abdominal pattern [cf. Tikader 1980: figs 96, 98, 100, 102, 105, 109] are also characteristic. The male palpal tibia has a large thick basal part (Fig. 38). RTA is represented by a pointed distal process, while the homology of the ITA and VTA is uncertain. There is a thin pointed apophysis far from the RTA (possibly VTA), while the lateral surface of the tibia has various modifications in the only confirmed male of this genus. The epigyne of all the named Indian 'species' consists of a subcircular pit.

DISTRIBUTION. The Oriental region.

REMARKS. The description of Thorell [1887] fits the specimens from Sumatra and it is probable that the Sumatran specimens studied by myself belong to the type species. It is possible that all species from Uttar Pradesh are conspecific and just colour variants of one species, viz., *Massuria roonwali* (Basu, 1964) comb.n. (see above under *Pistius*). For *Massuria javana* Simon, 1895 see above under *Zygometis*.

The structure and conformation of the male palp in *Massuria* is fundamentally different from all the Misumenini known to me, and as the colour pattern of the robust abdomen resembles tropical representatives of the Diaeini (most of them still unrevised and without a proper generic placement) this genus is now treated as a member of the Diaeini.

Plancinus **Simon, 1886**

Plancinus Simon, 1886: 174.

Type species: *Plancinus runcinioides* Simon, 1886 from Uruguay (juv. holotype in MNHN; examined).

MATERIAL. The juvenile holotype of *Plancinus runcinioides* Simon, 1886, the ♀ holotype of *P. cornutus* Simon, 1886, and the holotype juvenile of *P. brevipes* Simon, 1886, (all from Uruguay and all kept in MNHN). Also studied for comparative purposes were the ♂♂♀♀ of *Runcinioides argenteus* from Brazil (Romero; in PTL). No specimens of *Metadiaea* Mello-Leitão, 1929 were available.

DIAGNOSIS. Differs from *Uraarachne* by the normal (not posteriorly narrowed) shape of the abdomen. A detailed comparison with other genera cannot be made, as the only specimen available for study lacked the copulatory organs. The carapace and ocular pattern most resemble *Deltoclita*, but the abdomen is more flat and dorsally has ridges of the *Runcinia*-type.

DISTRIBUTION. The Neotropical region. The only species (*Plancinus advecticius*) described from Vietnam is a junior synonym of *Runcinia affinis* (see above).

REMARKS. The originally strictly Neotropical genus *Plancinus* Simon, 1886 was claimed to be the New World sister group of *Runcinia* by Dippenaar-Schoeman [1983], but examination of the type specimens of the four species in MNHN revealed that this genus is polyphyletic. There are no real *Runcinia* in the Neotropical region, but *Uraarachne* Keyserling, 1880 from Brazil (= *Odontoruncinia* Caporiacco, 1954 from Venezuela; synonymized by Rinaldi [1988]) and the type species of *Plancinus* share many characters with it.

Plancinus runcinioides and the Oriental *P. advecticius* Simon, 1909 (see above under *Runcinia affinis*) are members of the Thomisinae, but are not congeneric or even members of the same tribe, while *P. cornutus* and *P. brevipes* must be placed in the Stephanopinae. *Plancinus* must be transferred to the Platyarachnini (for futher comments see above under 'Limitation of the Misumenini'). *Uraarachne* (Fig. 9) is regarded here as a member of the Misumenini and does not constitute a separate tribe (see above).

During the course of this study, I have found that five species treated earlier as members of the Misumenini in fact belong to distantly related tribes or even subfamilies (in one case); actually many of them were mistakenly described in the wrong genera. The species transferred from other groups to Misumenini are listed in Table 1. For a synopsis of the findings for excluded species see Table 2. Further details as follows:

Angaeus pentagonalis Pocock, 1901

Angaeus pentagonalis Pocock, 1901: 497 (D♀; ♀ holotype in BMNH; examined).

Misumenoides kripalaniae Tikader, 1965: 257, f. 8a–b (D♀; juv. ♀ holotype in ZSI, inaccessible; not examined), **syn.n.**

For a complete set of references see Platnick [2003].

MATERIAL. INDIA: 1 ♀ (BMNH; the holotype of *Angaeus pentagonalis*), no exact locality. INDONESIA: 1 ♂ (MCSN; the holotype of *Angaeus pudicus* Thorell, 1881; the generotype), Moluccas, Ceram.

Also studied were the numerous *Angaeus* spp. from the Oriental region (in MCSN, MNHN, MZT and PTL); all with a similar colour pattern both in adults and in

Table 2.

Species transferred from the Misumenini.

Таблица 2.

Виды, выведенные из Misumenini.

Species	**Simon [1895–1903]**	**Ono [1988]**	**Present classification**
Misumenoides kripalaniae Tikader, 1965	*	**	Stephanopinae: *Angaeus pentagonalis* Pocock, 1901
Misumenops kumaonensis Tikader, 1980	*	**	Thomisinae: *Heriaeus horridus* Tyshchenko, 1963
Misumenops andamanensis Tikader, 1980	*	**	Thomisinae: *Demogenes andamanensis*
*Misumenops morris*i Barrion et Litsinger, 1995	*	*	Thomisinae: Hedanini, aff. ‘*Hedana*’ *ocellata* Thorell,1890
Misumena oblonga O. Pickard-Cambridge, 1885	**	**	A new group and genus aff. *Platythomisus bazarus* Tikader, 1970
Misumena semicincta Workman, 1896	**	**	Thomisinae: *Philodamia* sp.
Plancinus cornutus Simon, 1886	** (Misumenini)	** (Misumenini)	Stephanopinae: unknown tribe
Plancinus brevis Simon, 1886	** (Misumenini)	** (Misumenini)	Stephanopinae: unknown tribe
Pistius spp. (all Indian species)	*	**	Diaeini (*Massuria*, etc.)
Erissoides spp. (non type species)	Stephanopinae: Hedanini	** (Stephanopinae)	Stephanopinae: unknown tribe

* = not yet described.
** = not separately discussed.
* = еще не описан.
** = отдельно не обсуждался.

juveniles. For comparative purposes I studied the ♂♀ of *Misumenoides formosipes* (Walckenaer, 1837) from North America (in PTL), as well as numerous *Misumenoides* spp. from the New World (in PTL); all had chalk-white tranverse bands in the ocular area and on the clypeal margin.

REMARKS. The colour pattern of the juveniles of *Angaeus* I studied from Sumatra, the Philippines, Taiwan, etc., was compared with Tikader’s [1980: fig. 214] description of the colour pattern of the juveniles of *M. kripalaniae*. This species was described from a juvenile female from India (Andaman Islands and Karnataka); the type is kept in the ZSI but is inaccessible and therefore was not examined. Tikader [1980: fig. 215] claimed that he figured the female holotype, but in fact he depicted two darker patches above the epigastric fold of the juvenile. Tikader often confused juvenile spiders with adults and figured non-existent ‘epigynes’. The comparison of Tikader’s [1980] description and figures of *M. kripalaniae* with the holotype *Angaeus pentagonalis* leaves no doubt that both names should be synonymized; the latter was described from India and is the only species of *Angaeus* recorded from there.

According to the results of my work [unpubl. data], the Stephanopinae cannot be diagnosed by the cheliceral armature [cf. Simon, 1895a], but they can be based on the ultrastructural patterns of the leg surfaces and sensory hairs, and the characteristic patterns of tarsal and metatarsal trichobothria. *Angaeus* is a member of a still unnamed group within the Stephanopinae that in addition to differences in ultrastructure also possesses a median apophysis in the male palp.

Heriaeus horridus Tyshchenko, 1965

Heriaeus horridus Tyshchenko, 1965: 698, f. 4 (D♂♀; type series in the Zoological Institute in St. Petersburg, Russia; not examined). This species was properly redescribed by Marusik & Logunov [1995].

Misumenops kumaonensis Tikader, 1980: 157, f. 223–224 (D♀ from Kumaon District, Uttar Pradesh, western slopes of Himalaya in India; ♀ holotype in ZSI; unavailable for study; not examined), **syn.n.**

For a complete set of references see Platnick [2003].

MATERIAL. INDIA: 1 subadult ♀ (PTL), Kumaon District. CHINA: 1 ♂ (PTL), Yunnan.

REMARKS. The topotypical subadult specimen from Kumaon District (India) conforms with all the details of Tikader's description of *M. kumaonensis*. The drawing of the epigyne by Tikader [1980] is misleading, presenting a longitudinal furrow above the epigastric furrow, but only describes the poor observational ability of Tikader, repeatedly criticized by subsequent researchers, e.g., Brignoli [1976].

The male palp of the specimen collected by myself from south-east China completely corresponds with the drawings and description of *H. sareptanus* by Loerbroeks [1983]. *H. sareptanus* was recently synonymized with *H. horridus* by Marusik & Logunov [1995]. Thus, the species seems to be widespread eastwards of India. Having consulted Yuri Marusik (Magadan, Russia), who re-examined the holotype and numerous comparative specimens of *H. horridus*, I conclude that the name *M. kumaonensis* is a junior synonym of *H. horridus*.

Demogenes andamanensis (Tikader, 1980) **comb.n.**

Misumenops andamanensis Tikader, 1980: 159, f. 225 (Djuv.; type series of juveniles in ZSI; inaccessible; not examined).

MATERIAL. NEW GUINEA: 1 ♂, 1 ♀ (MCSN; the syntypes of *Demonax lugens* Thorell, 1881; the type species of *Demogenes*; Fig. 16), no exact locality.

Also studied were numerous ♂♂♀♀ and juveniles of several undescribed, ground-living species of *Demogenes* (in MZT and PTL) from different parts of the Oriental region and Melanesia. For comparative purposes the ♀ holotype of *Narcaeus picinus* Thorell, 1890 from Java (in MCSN), undescribed Oriental and Melanesian *Narcaeus* spp. (in PTL) and drawings of the incorrectly assigned species from New Guinea [Balogh, 1936] were also studied.

REMARKS. *Demogenes andamanensis* was described from juveniles of both sexes from India (the Andaman Islands); the type series is kept in the ZSI, but is unavailable for study. The description and figure given by Tikader [1980: fig. 225] certainly refer to a representative of the genus *Demogenes* Simon, 1895. *D. andamanensis* is not considered a *nomen dubium*, though adult specimens have not yet been collected from the Andaman Islands.

The species of *Demogenes* and *Narcaeus* Thorell, 1890 resemble the ground-living Coriarachnini (especially *Ozyptila*) in general habitus and the presence of spatulate or club-shaped body hairs. Both are the dominant thomisid genera of the ground layer in the Oriental region and Melanesia. The correct placement of *Demogenes* is still uncertain, but it seems to be the sister group of *Narcaeus* and does not belong with the Misumenini, although Ono [1988] placed it there and *Narcaeus* in the Coriarachnini without checking of the type material.

'*Misumenops*' *morrisi* Barrion et Litsinger, 1995

Misumenops morrisi Barrion et Litsinger, 1995: 266, f. 155a–e (D♀; ♀ holotype in IRRI; examined).

MATERIAL. PHILIPPINES: 1 ♀ (IRRI; the holotype of *Misumenops morrisi*), Luzon, Mt. Makiling; 1 ♀ subadult (PTL), the same locality.

COMPARATIVE MATERIAL. AUSTRALIA: 1 ♂ (ZMH; the holotype of *Hedana gracilis* L. Koch, 1874), New South Wales. MYANMAR (BURMA): 1 ♀ (NHRS; the holotype of '*Hedana*' *ocellata* Thorell, 1890), no exact locality. VENEZUELA: 1 ♀ (MNHN; the holotype of '*Hedana*' *octoperlata* Simon, 1895), no exact locality. INDONESIA: 1 ♀ (ZMB; the holotype of *Reinickella xysticoides* Dahl, 1907), east Java. AUSTRALIA: 1 ♂, ♀♀ (MZH; the syntypes of *Tharrhalea albipes* L. Koch, 1875), Queensland, Cape York. PHILIPPINES: 1 juv. (MNHN; the juvenile holotype of *Pycnaxis guttata* Simon, 1895), Luzon.

Also studied were numerous samples of '*Hedana*' spp. (in PTL) related to '*H.*' *ocellata* from the Oriental region and adult topotypical specimens of *Pycnaxis guttata* (in PTL), as well as a large number of other species of the Hedanini from the Philippines (in PTL), mostly misplaced by Barrion & Litsinger [1995]. The description of '*H.*' *bonneti* Chrysanthus, 1964 from New Guinea was also examined.

REMARKS. *M. morrisi* belongs to an undescribed genus of the Hedanini (=*H. ocellata* group). Simon [1895a] placed his tribe Hedaneae in the Stephanopinae based on the cheliceral armature. However, the structure of the copulatory organs of both sexes and especially the typical thomisine type of simple ultrastructure of the leg surfaces, trichobothrial bases and other ultrastructural characters [pers. obs.] support the transfer of all the Hedanini from the Stephanopinae, except for some species of *Erissus* Simon, 1895. Many of the genera of Simon's [1895a] Hedaneae are unrelated to *Hedana*, but all species of the Hedanini *sensu* Ono [1988] examined to date belong either outside the Stephanopinae, or within the Thomisinae (or to unnamed groups). Species of the '*ocellata*-group' are characterized by the presence of numerous silvery spots on the dorsal surface of the abdomen and the characteristic basal tutaculum in the male palp.

'*Misumena*' *oblonga* O. Pickard-Cambridge, 1885

Misumena oblonga O. Pickard-Cambridge, 1885: 459, f. 5–6 (D♀; ♀ holotype in HDE; not examined). Examined and illustrated by Marusik [1993].

REMARKS. *M. oblonga* is not a member of the Misumenini and does not belong in the genus *Misumena*. It is congeneric with '*Platythomisus*' *bazarus* from India as well as with an undescribed species from Sri Lanka (♂; in PTL); none of these species are congeneric, in my opinion, with the type species of *Platythomisus*. On the other hand, *Platythomisus sudeepi* Biswas, 1977 [see Tikader, 1980: figs 240–242] (also from India) belongs to *Platythomisus*. The genus to which '*Platythomisus*' *bazarus* and related species (including *M. oblonga*) belongs, is not a member of the Misumenini or even the subfamily Thomisinae, but should be assigned to a new subfamily together with *Pharta* Thorell, 1891, *Epidius* Thorell, 1877 and *Cupa* Strand, 1906, etc. [pers. obs.]. It will be diagnosed and described elsewhere.

Furthermore, *M. oblonga* is a primary junior homonym of *Misumena oblonga* Keyserling, 1880 from North America and the Caribbean, but a *nomen novum* is not necessary, as these species will not remain in the same genus.

Philodamia semicincta (Workman, 1896), **comb.n.**

Misumena semicincta Workman, 1896: 1896: 94, pl. 94 (D♂ from Singapore; ♂ holotype not examined, only the description and drawings, by courtesy of the High Commissioner of Singapore in Canberra, Mr. Joseph Koh).

COMPARATIVE MATERIAL. MYANMAR (BURMA): 1 ♀ (BMNH; the holotype of *Philodamia armillata* Thorell, 1895), no exact locality.

Also examined were ♂♂♀♀ of *P. armillata* from Vietnam (in PTL), specimens of four species of *Philodamia* (♂♀; ♀) from Sri Lanka, Malaysia, Indonesia, Vietnam, Thailand and China (all in PTL). The depository of the type material of the type species of *Philodamia* Thorell, 1894 (i.e., *P. hilaris* Thorell, 1894) from Singapore could not be located. Nevertheless, I examined some material originally identified by Thorell as *P. hilaris* (in MCSN).

DIAGNOSIS. The presence of numerous long hairs on a flat carapace, distally pointed tibial apophysis in the male palp and the large pear-shaped epigynal cavity are clear characteristics of the genus *Philodamia*. All these characters are present in *M. semicincta*, therefore a new combination is proposed here. The abdominal pattern of *P. armillata* is different from other species.

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References

Balogh J.I. 1936. Neue Spinnen aus Neuguinea // Zool. Anz. Bd.113. Hft.9–10. S.237–245.

Barrion A.T. & Litsinger J.A. 1995. Riceland spiders of South and Southeast Asia. CAB International. 700 p.

Basu B.D. 1964. Diagnosis of two new species of *Pistius* (Thomisidae: Araneae: Arachnida) from India // J. Beng. Nat. Hist. Soc. Vol.32. P.104–109.

Basu B.D. 1965. Four new species of the spider genus *Pistius* Simon (Arachnida: Araneae: Thomisidae) from India // Proc. Zool. Soc. (Calcutta). Vol.18. P.71–77.

Bacelar A. 1958. Alguns araneideos das ilhas de São Tomé e do Principe // Conf. Int. Afr. Occid. Sess. Vol.6. N.4. P.37–46.

Bonnet P. 1956. Bibliographia Araneorum. Toulouse: Douladoure. Vol.2. Pt.2 (C–E). P.919–1926.

Brignoli P.M. 1976. On some recent papers about Indian spiders // Bull. Br. Arachnol. Soc. Vol.3. P.211–213.

Bristowe W.S. 1930. Notes on the Biology of Spiders. II. Aquatic Spiders // Ann. Mag. Nat. Hist. Vol.6. No.10. P.343–347.

Caporiacco L. di 1951. Aracnidi pugliesi raccolti dai Signori Conci, Giordani-Soika, Gridelli, Ruffo e dall'autore // Mem. Biogeogr. Adriat. Vol.2. P.63–94.

Chikuni Y. 1989. [Pictorial Encyclopedia of Spiders in Japan]. Tokyo: Kaisei-sha Publ. Co. 310 p. [in Japanese].

Chrysanthus P. 1964. Spiders from south New Guinea VI // Nova Guinea (N.S., Zool.) Vol.28. P.87–104.

Dahl F. 1907. *Synaema marlothi*, eine neue Laterigraden-Art und ihre Stellung in System // Mitt. Zool. Mus. Berl. Bd.3. S.369–395.

Dippenaar-Schoeman A.S. 1980. The crab-spiders of southern Africa (Araneae: Thomisidae). 1. The genus *Runcinia* Simon, 1875 // J. Ent. Soc. Sth. Afr. Vol.43. P.303–326.

Dippenaar-Schoeman A.S. 1983. The spider genera *Misumena*, *Misumenops*, *Runcinia* and *Thomisus* (Araneae: Thomisidae) of southern Africa // Entomol. Mem. Dep. S. Afr. Dep. Agric. Vol.55. P.1–66.

Dippenaar-Schoeman A.S. 1989. An annotated check list of crab spiders (Araneae: Thomisidae) of Saudi Arabia // Fauna Saudi Arabia. Vol.10. P.20–30.

Fabricius J.C. 1775. Systema entomologiae, sistens insectorum classes, ordines, genera, species, adiectis, synonymis, locis descriptionibus observationibus. Flensburg and Lipsiae. 832 p. (Araneae, P.431–441).

Fage L. 1928. Araneae. Notes on the fauna of pitcher plants // J. Malay. Branch Roy. Asiatic Soc. Vol.6. No.3. P.13–19.

Framenau V.W. & Vink C.J. 2001. Revision of the wolf spider genus *Venatrix* Roewer (Araneae: Lycosidae) // Inverteb. Taxon. Vol.15. P.927–970.

Garb J. & Gillespie R. 2003. Polynesian voyagers: phylogenetic relationships among Hawaiian crab spiders (Araneae: Thomisidae) // Am. Arachnol. No.66. P.7.

Grube A.E. 1861. Beschreibung neuer, von den Herren L. v. Schrenck, Maack, C. v. Ditmar u. a. im Amurlande und in Ostsibirien gesammelter Araneiden // Bull. Acad. Imp. Sci. St.-Pétersb. Tom.4. S.161–180.

Hu J.L. & Wu W.G. 1989. Spiders from agricultural regions of Xinjiang Uygur Autonomous Region, China. Jinan: Shandong Univ. Publ. House. 435 p.

ICZN 1999. International Code of Zoological Nomenclature (4. Ed.). London: The International Trust for Zoological Nomenclature. 306 p.

Keyserling E. 1880. Die Spinnen Amerikas, vol.1 Laterigradae. Nürnberg. 283 S.

Koch L. 1874. Die Arachniden Australiens, nach der Natur beschrieben und abgebildet, 1. S.473–576.

Koch L. 1876. Die Arachniden Australiens, nach der Natur beschrieben und abgebildet, 1. S.741–888

Koh J.K.H. 2000. A Guide to Common Singapore Spiders. The Singapore Science Centre. 160 p.

Kumari M. & Mittal O.P. 1994. A new species of crab spiders of the genus *Misumena* (Family: Thomisidae) from India // Bionature. Vol.14. P.29–31.

Kumari M. & Mittal O.P. 1999. A new species of crab spiders of the genus *Pistius* (Araneae: Thomisidae) from India. Res // Bull. Punjab Univ. Vol.48. P.17–19.

Lehtinen P.T. 1993. Polynesian Thomisidae — a meeting of Old and New World groups // Mem. Queensland Mus. Vol.33. P.585–591.

Lehtinen P.T. 2001. Polyphyly of Thomisidae: Dietinae auct. // Abstract. 15th Int. Congr. Arachnol., Badplaas, South Africa. P.105.

Lehtinen P.T. 2002. Generic revision of some thomisids related to *Xysticus* C.L. Koch and *Ozyptila* Simon, 1864. // Toft S. & Scharff N. (eds.). European Arachnology 2000. Proc. 19th European Coll. Arachnol., Århus. Aarhus: Aarhus University Pressame locality. P.315–327.

Lehtinen P.T. (in prep.) Taxonomic revision of the Polynesian spiders (Arachnida, Araneae). VIII. Thomisidae // Mem. Mus. Hist. Nat. Paris.

Lessert R. de. 1919. Araignées du Kilimandjaro et du Merou (suite). 3. Thomisidae // Rev. Suisse Zool. Vol.27. P.99–234.

Logunov D.V. 1992. [On the spider fauna of the Bolshekhekhtsyrski State Reserve (Khabarovsk Province). I. Families Araneidae, Lycosidae, Philodromidae, Tetragnathidae and Thomisidae] // Siberian Biol. J. Vol.4. P.56–68 [in Russian].

Marusik Yu.M. 1993. [Redescription of spiders of the families Heteropodidae and Thomisidae (Aranei), described by O. Pickard-Cambridge from the material of the second Yarkand mission] // Ent. Obozr. Vol.72. P.456–468 [in Russian].

Marusik Yu.M., Eskov K.Yu., Logunov D.V. & Basarukin A.M. 1993. A check-list of spiders (Arachnida Aranei) from Sakhalin and the Kurile Islands // Arthropoda Sel. Vol.1. No.4. P.73–85.

Marusik Yu.M. & Logunov D.V. 1995 (for 1994). The crab spiders of Middle Asia (Aranei, Thomisidae) //

Beitr. Araneol. Bd.4. S.133–175.

Marusik Yu.M. & Logunov D.V. 2002. New and poorly known species of crab spiders (Aranei: Thomisidae) from south Siberia and Mongolia // Arthropoda Sel. Vol.10. P.315–322.

Mello-Leitão C.F. de. 1929. Aphantochilidas e Thomisidas do Brasil // Arch. Mus. Nac. Rio de Janeiro. Vol.31. P.9–359.

Millot J. 1942. Les araignées de l'Afrique Occidentale Français: Thomisidae // Mém. Ac. Sci. Inst. Fr. Vol.65. P.1–82.

Namkung J., Paik N.K. & Lee M.C. 1988. Spiders from the southern region of DMZ in Kangwon-do, Korea // Korean Arachnol. Vol.4. P.15–34.

Ono H. 1985. Eine Neue Art der Gattung *Misumenops* F.O. Pickard-Cambridge 1900, aus Japan (Araneae: Thomisidae) // Proc. Jpn. Soc. Syst. Zool. Vol.31. P.14–19.

Ono H. 1988. A revisional study of the spider family Thomisidae (Arachnida, Araneae) of Japan. Tokyo: National Science Museum. 252 p.

Petrunkevitch A. 1928. Systema Aranearum. // Trans. Conn. Acad. Arts Sci. Vol.29. P.1–270.

Pickard-Cambridge F.O. 1900. Arachnida. Araneida and Opiliones // Biol. Centr. Amer., Zool. Vol.2. P.89–192.

Pickard-Cambridge O. 1873. On some new species of European spiders. // J. Linn. Soc. Lond. Vol.11. P.530–547.

Pickard-Cambridge O. 1885. Araneida. Scientific results of the second Yarkand mission. Calcutta. 115 p.

Pickard-Cambridge O. 1891. Arachnida. Araneida // Biol. Centr. Amer., Zool. Vol.1. P.73–88.

Pickard-Cambridge O. 1898. Arachnida. Araneida // Biol. Centr. Amer., Zool. Vol.1. P.233–288.

Platnick N.I. 2003. The world spider catalog, version 4.0. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog/index.html

Pocock R.I. 1898. Spiders and pitcher plants // Nature. Vol.58. P.274–275.

Rainbow W.J. 1911. A census of Australian Araneidae // Rec. Aust. Mus. Vol.9. P.107–319.

Rinaldi I.M.P. 1983. Contribuição ao estudo das Misumeninae do Brasil (Araneae, Thomisidae) // Rev. Bras. Entomol. Vol.27. P.147–153.

Rinaldi I.M.P. 1984. Contribuição ao estudo de *Acentroscelus* Simon, 1886 (Araneae, Thomisidae, Misumeninae) // Rev. Bras. Entomol. Vol.28. P.109–114.

Rinaldi I.M.P. 1988. *Misumenops* Cambridge and *Uraarachne* Keyserling (Araneae: Thomisidae: Thomisinae. Sinonímias, novas combinações e redescrições // Rev. Bras. Entomol. Vol.32. No.1. P.19–30

Roewer C.F. 1951. Neue Namen einiger Araneen-Arten // Abh. Naturwiss. Ver. Bremen. Bd.32. S.437–456.

Roewer C.F. 1955 (for 1954). Katalog der Araneae von 1758 bis 1940, bzw. 1954. Bruxelles. Bd.2b. S.927-1751. (A thorough argumentation for corrected publication dates of three main works of Roewer was presented by Framenau & Vink [2001: p. 928]; see above for the full reference).

Roth V.D. 1995. Karsch's 1880 paper on Hawaiian spiders: ignored or overlooked? // Bishop Mus. Occ. Pap. Vol.42. P.44–48.

Saito S. 1939. On the spiders from Tohoku (northernmost part of the main island) // Japan. Saito Ho-on Kai Mus., Res. Bull. Vol.18. No.6. P.1–91.

Schenkel E. 1944. Arachnoidea aus Timor und China aus den Sammlungen des Basler Museums // Rev. Suisse Zool. Vol.51. P.173–206

Schick R.X. 1965. The crab spiders of California (Araneida: Thomisidae) // Bull. Am. Mus. Nat. Hist. Vol.129. No.1. P.1–180.

Sen J.K. & Basu K.C. 1972. A new spider of the genus *Runcinia* Simon, 1875 (Thomisidae: Archanida [sic], from India // J. Zool. Soc. India. Vol.24. P.103–104.

Shield J.M. & Strudwick J. 2000. *Diasterea*, a new genus of flower spider (Thomisidae; Thomisinae) from eastern Australia and a description of the male *Diasterea lactea* // Proc. Soc. Vict. Vol.111. P.271–281.

Simon E. 1864. Histoire naturelle des araignées (aranéides). Paris. 540 p.

Simon E. 1875. Les arachnides de France. Paris. T.2. 350 p.

Simon E. 1895a. Histoire naturelle des Araignées. Paris. Pt.1. No.4. P.761–1084.

Simon E. 1895b. Arachnides recueillis par M. G. Potanine en Chine et en Mongolie (1876–1879) // Bull. Acad. Imp. Sci. St.-Pétersb. Vol.5. No.2. P.331–345.

Simon E. 1897. Histoire naturelle des araignées. Paris. Vol.2. P.1–192.

Simon E. 1901. On the Arachnida collected during the Skeat expedition to the Malay Peninsula // Proc. Zool. Soc. Lond. Vol.2. P.45–84.

Simon E. 1903 Etudes arachnologiques. 33e Mémoire. LIII. Arachnides recueillis à Phuc-Son (Annam) par M. H. Fruhstorfer (nov–dec. 1899) // Ann. Soc. Ent. Fr. Vol.71. P.725–736.

Simon E. 1906. Arachnides (2e partie). In, Voyage de M. Maurice Maindron dans l'Inde méridionale. 8e Mémoire // Ann. Soc. Ent. Fr. Vol.75. P.279–314.

Simon E. 1909. Etude sur les arachnides du Tonkin (1re partie) // Bull. Sci. Fr. Belg. Vol.42. P.69–147.

Song D.X. & Zhao J.Z. 1994. Four new species of crab spiders from China // Acta Arachnol. Sin. Vol.3. P.113–118.

Song, D.X., Chen J. & Zhu M.S. 1997. Arachnida: Araneae // Yang X.K. (ed.). Insects of the Three Gorge Reservoir area of Yangtze River. Chongqing Publ. House. Vol.2. P.1704–1743.

Song D.X., Zhu M.S. & Wu K.Y. 1997. Some new species of the spiders from Hong Kong // Acta Arachnol. Sin. Vol.6. P.81–86

Song D.X., Zhu M.S. & Chen J. 1999. The Spiders of China. Shijiazhuang: Hebei Science Technol. Publ. House. 640 p.

Spassky S. 1952. [Spiders of the Turanian zoogeographical province] // Ent. Obozr. Vol.32. P.192–205 [in Russian].

Strand E. 1913. Neue indoaustralische und polynesische Spinnen des senckenbergischen Museums // Arch. Naturg. Bd.79. Hft.6. S.113–123.

Strand E. 1915. Indoaustralische, papuanische und polynesische Spinnen des sencken-bergischen Museums, gesammelt von Dr E. Wolf, Dr J. Elbert u. a.// Wissenschaftliche Ergebnisse der Hanseatischen Südsee-Expedition 1909 / Abh. Senckenb. Naturf. Ges. Bd.36. Ht.2. S.179–274.

Suman T.W. 1970. Spiders of the family Thomisidae in Hawaii // Pac. Insects. Vol.12. P.773–864.

Thorell T. 1870. On European spiders // Nova Acta Regiae Soc. Sci. Ups. C Vol.3. No.7. P.109–242.

Thorell T. 1877. Studi sui Ragni Malesi e Papuani. I. Ragni di Selebes raccolti nel 1874 dal Dott. O. Beccari // Ann. Mus. Civ. Stor. Nat. Genova. Vol.10. P.341–634.

Thorell T. 1887. Viaggio di L. Fea in Birmania e regioni vicine. II. Primo saggio sui Ragni birmani. Ann. Mus. Civ. Stor. Nat. Genova. Ser.2. Vol.5. P.5–417.

Thorell T. 1892. Novae species Aranearum a Cel. Th.Workman in ins. Singapore collectae // Boll. Soc. Ent. Ital. Vol.24. No.3. P.211–252.

Tikader B.K. 1962. Studies on some Indian spiders (Araneae: Arachnida) // Zool. J. Linn. Soc. Vol.44. P.561–584.

Tikader B.K. 1963. Studies on interesting south Indian crab-spiders (Family: Thomisidae) // Proc. Indian Acad. Sci. Vol.58. P.249–262.

Tikader B.K. 1965. On some new species of spiders of the family Thomisidae from India // Proc. Indian Acad. Sci. Vol.61. P.277–289.

Tikader B.K. 1970. Spider fauna of Sikkim // Rec. Zool. Surv. India. Vol.64. P.1–83.

Tikader B.K. 1971. Revision of Indian crab spiders (Araneae, Thomisidae) // Mem. Zool. Surv. India. Vol.15. No.3. P.1–90.

Tikader B.K. 1980. Thomisidae (Crab-spiders) // Fauna India (Araneae). Vol.1. 247 p.

Walckenaer C.A. 1802. Faune parisienne. Insectes. Ou Histoire abrégée des insectes d'environs de Paris. Vol.2. P.187–250.

Walckenaer C.A. 1805. Tableau des aranéides ou caractères essentiels des tribus, genres, familles et races que renferme le genre Aranea de Linné, avec la désignation des espèces comprises dans chacune de ces divisions. Paris. 88 p.

Walckenaer C.A. 1837. Histoire naturelles des Insectes. Aptères 1. Paris. 682 p.

Wang H.Q. 1981. [Protection and utilization of spiders in paddy fields]. Hunan: Hunan Press of Science and Technology. 188 p. [in Chinese].