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Reassessment of the spider genus *Wubanoides* ESKOV, 1986 (Arachnida: Araneae: Linyphiidae)

With 14 Figures

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Abstract. The non-micronetid genus *Wubanoides* ESKOV, 1986, is redelimitated and retained for two species only: *Wubanoides uralensis* (PAKHORUKOV, 1981) and *W. fissus* (KULCZYNKI, 1926). For other former congeners, new genera are established: the non-micronetid *Epibellowia* gen. nov. for *W. septentrionalis* (OI, 1960), *W. enormitus* (TANASEVITCH, 1988), and *W. pacificus* ESKOV et MARUSIK, 1993; and the micronetid *Eldonia* gen. nov. for *W. kayacensis* (PAIK, 1965). *Wubanoides kolymensis* (TANASEVITCH et ESKOV, 1987) is ejected from *Wubanoides* and temporarily returned into "Leptyphantes".

The following abbreviations have been accepted in the text and figures: Fe – femur, Ti – tibia, Mt – metatarsus, TmI – position of the metatarsal trichobothrium, TA – termonal apophysis, MM – median membrane, R – radix, E – embolus, EP – embolus proper, EM – embolic membrane, L – "lamella characteristica". The chaetotaxy is given in the following formula: Ti I: 2–1–1–0. This stands for: tibia I has two dorsal, one pro- and one retro-lateral spine, ventral spines absent (the apical spines are herewith disregarded).

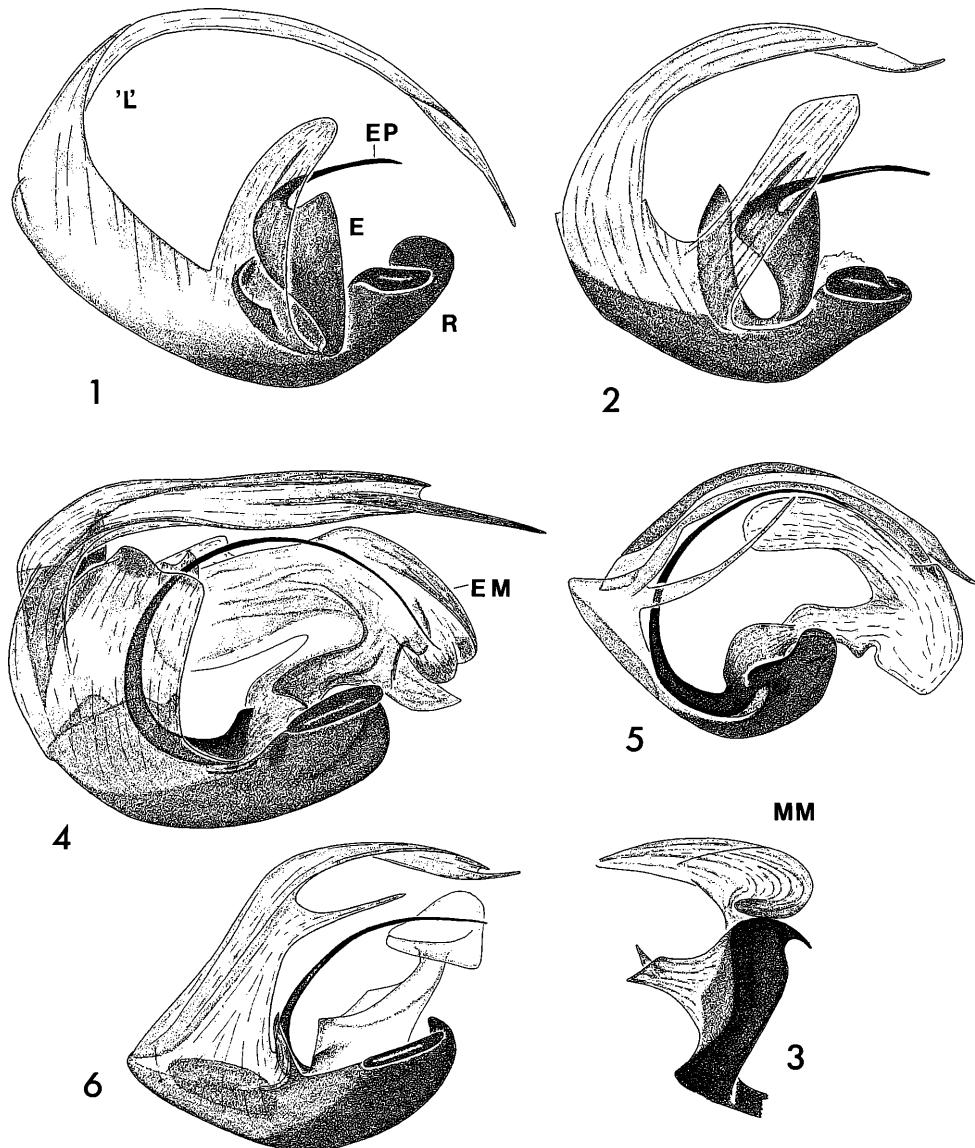
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The genus *Wubanoides* ESKOV, 1986, has been established by ESKOV (1986) to comprised three species, with *W. longicornis* ESKOV, 1989 (= *Veles uralensis* PAKHORUKOV, 1981) as the type-species. Somewhat later, two more species, i.e. *Arcuphanes septentrionalis* (OI, 1960), and *Centromerus kayacensis* PAIK, 1965, have joined *Wubanoides* (cf. SAITO & YASUDA, 1989; ESKOV, 1992), followed by a detail taxonomic account of the genus by ESKOV & MARUSIK (1992). That revision has provided an extended diagnosis of *Wubanoides*, its relationships and status in the system of the family Linyphiidae. In particular, the genus has been assigned to the tribe Leptyphantini (s. str.) and considered as being especially closely related to *Poeciloneta* KULCZYNKI, 1894. Moreover, further species have been transferred to or described in *Wubanoides*, and all its seven congeners, i.e. *uralensis* (PAKHORUKOV, 1981), *septentrionalis* (OI, 1960), *kayacensis* (PAIK, 1965), *fissus* (KULCZYNKI, 1926), *kolymensis* (TANASEVITCH & ESKOV, 1987), *enormitus* (TANASEVITCH, 1988), and *pacificus* ESKOV et MARUSIK, 1992, have been divided between three species groups, each briefly diagnosed:

– the *fissus*-group: *Wubanoides uralensis* (PAKHORUKOV, 1981), *W. fissus* (KULCZYNKI, 1926), and *W. kayacensis* (PAIK, 1965);

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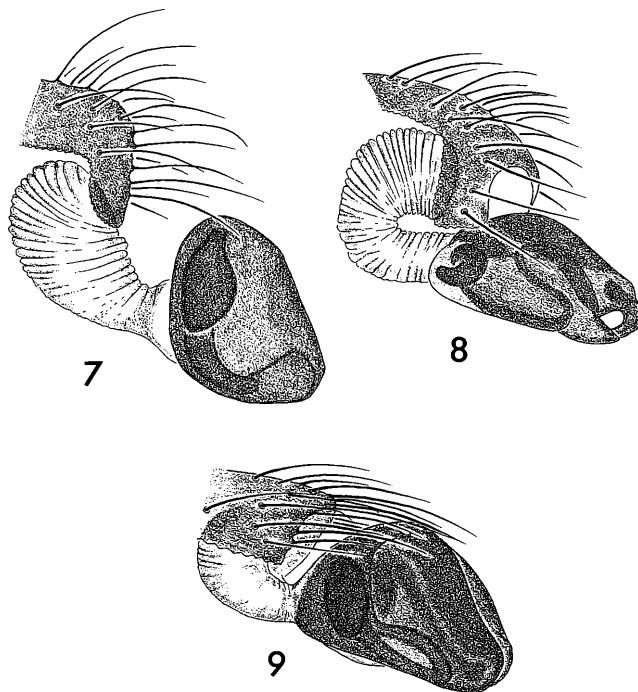
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Figs. 1–6: Embolic division (1, 2, 4–6) and suprategulum with median membrane (3): 1 – *Wubanoides uralensis* (PAKHORUKOV, 1981); 2, 3 – *W. fissus* (KULCZYNSKI, 1926); 4 – *Epibellowia septentrionalis* (OI, 1960); 5 – *Epibellowia pacifica* (ESKOV et MARUSIK, 1993); 6 – *Epibellowia enormita* (TANASEVITCH, 1988).

- the *septentrionalis*-group: *W. septentrionalis* (OI, 1960), *W. enormitus* (TANASEVITCH, 1988), and *W. pacifica* ESKOV et MARUSIK, 1992;
- the *kolymensis*-group: *W. kolymensis* (TANASEVITCH et ESKOV, 1987).

As is well-known, the assignment of a species to this or that genus depends on how close it is to the type-species. The major criterion of such relationships in linyphiid spiders as well as in the family's suprageneric taxonomy lies in genital structure, with the main emphasis placed there on the con-



Figs. 7–9: Epigyne: 7 – *Wubanoides uralensis* (PAKHORUKOV, 1981); 8 – *Epibellowia enormita* (TANASEVITCH, 1988); 9 – *E. septentrionalis* (OI, 1960).

formation of the male embolic division. Based on this paradigm, the status of the genus *Wubanoides* as referred to by ESKOV & MARUSIK (1992) seems inexact and warranting a revision.

Originally, ESKOV (1986) allocated the genus within the “*Lepthyphantes*” group of genera sensu MILLIDGE (1977) and thus made it especially closely related to the genera *Lepthyphantes* MENGE, 1866, and *Bolyphantes* C. L. KOCH, 1837, in particular to *B. unicornis* (O. PICKARD-CAMBRIDGE, 1873). ESKOV & MARUSIK (1992) confirmed the assignment of *Wubanoides* to the tribe Lepthyphantini s. str. (sic!), subfamily Micronetinae, and indicated its close relations with *Poeciloneta* Kulczynski, 1894. The above taxonomic constructions have been based on a seeming, superficial similarity in chaetotaxy and genital structure of some *Wubanoides* species with certain representatives of separate micronetine genera, which indeed does take place. Yet, the genital conformation has never been adequately and thoroughly studied and compared, something that would allow creation of a more natural classification. The structure of the embolic division of the type-species *W. uralensis* (Fig. 1) definitely implies, this species and hence genus represent neither the tribe Lepthyphantini nor even the subfamily Micronetinae. The strongly sclerotized radix, with the lamella characteristic (= radical apophysis?) as if arising from it, the long and well-sclerotized embolus proper of a penetrating type (joint-type in Micronetinae), the absence of a Fickert’s gland, the poorly differentiated embolus-retinal apophysis complex, all this combined characterizes the embolic division of *Wubanoides*. Such a pattern resembles that observed in the *keyserlingi*-complex of “*Lepthyphantes*” sensu SAARISTO & TANASEVITCH (1993), which does not belong in the Micronetinae either. In contrast, by their male palpal structure, two species, i.e. *W. kayacensis* (Figs. 10–14) and *W. kolymensis* (cf. TANASEVITCH & ESKOV, 1987: Fig. 1: 1–4), are typical micronetines and thus must be ejected from *Wubanoides*. A separate genus, *Eldonia* gen. nov., is erected herewith for *W. kayacensis*, while *W. kolymensis*, perhaps also warranting a genus of its own, is provisionally returned into *Lepthyphantes*, i.e. *Lepthyphantes kolymensis* (TANASEVITCH et ESKOV, 1989), stat. reject.

Among the remaining four “congener”, only one, *W. fissus*, is really closely related to the type species by all characters (cp. Figs. 1–2). In contrast, *W. septentrionalis*, *W. enormitus* and *W. pacificus* appear to form a rather homogeneous group distinguished by such important features as a very long and slender embolus proper, a relatively small embolic body, a very large, specifically membranized structure in its basal part (cf. Figs. 4–6). These characters of the structure of the embolic division coupled with the absence of a large and well sclerotized median membrane (Fig. 3) (= terminal apophysis in ESKOV, 1986) allow to erect a separate new genus, *Epibellowia* gen. nov., to comprise *septentrionalis*, *enormitus* and *pacificus*. This genus seems indeed close to *Wubanoides*, but the latter is currently restricted to two species only: *uralensis* and *fissus*. Against the background of distinctly different patterns of embolic division structure in both latter genera, of real taxonomic importance in *Wubanoides* (s. str.) becomes such a somatic feature as the presence on the male carapace of its members of a postocular horn-like process supporting a strong seta [see discussion in ESKOV & MARUSIK (1993: 23)].

The epigyne in both closely related genera *Wubanoides* and *Epiphormonia* gen. nov. is very similar and striking, being well-sclerotized, bulbiform, with a monolith structure, placed on a long, membranous bellows-like base (Figs. 7–9). To spot this bellows-like structure, the epigyne treated with hot KOH must be subjected to some stretching. When viewed superficially, that structure is hardly traceable, thus having escaped the attention of previous students. Superficially, the epigyne of *Wubanoides* and *Epibellowia* gen. nov. is similar to that of some *Metalephyphantes* LOCKET, 1968. Yet, judged from LOCKET's (1968) illustrations, the bellows-like epigyne in the latter genus actually represents a wrinkled integumental outgrowth (cp. *Incestophantes* TANASEVITCH, 1993), whereas in *Wubanoides* and *Epiphormonia* gen. nov. it is a very delicate, membranized tissue.

Wubanoides ESKOV, 1986

Type species: *Wubanoides longicornis* ESKOV, 1989 (= *Veles uralensis* PAKHORUKOV, 1981)

Diagnosis: Medium-sized linyphiids (2.00–2.60 mm). Male carapace modified, with a postocular horn-like process supporting a strong, forward directed seta. Chelicerae unmodified, with well-developed stridulatory ridges. Legs relatively long and slender. Chaetotaxy: Fe I: 1–0–0–0, II–IV: 0–0–0–0; Ti I: 2–0–0–0 (male), 2–1–1–0 (female), II: 2–0–1–0, III–IV: 2–0–0–0; Mt I–IV: 1–0–0–0. Mt I–III with a trichobothrium. Tm I: 0.25–0.27. Male Ti I ventrally with two rows of thin hairs. Palp: Cymbium with a long basal process. Paracymbium relatively small, L-shaped, with tooth-like outgrowths and several spines in distal part. Tegulum conical. Median membrane very large and well-sclerotized, directed forward. Embolic division complex (Figs. 1–3): “lamella characteristic” fused with radix, very difficult to state if this is a real lamella characteristic or a radical apophysis. “Lamella characteristic” very long, bipartite, main branch embracing bulbus as a semi-circle. Embolus with a flat triangular main body, embolus proper relatively long, embolic membrane absent. Epigyne well sclerotized, bulb-like in shape (Fig. 7), with a monolith structure situated on a long, membranous bellows-like base.

Taxonomic remarks: The genus is closely related to *Epibellowia* gen. nov., being well distinguishable by the presence of a relatively short embolus proper and, in contrast, the well-developed main body of the embolus, the very large, membranous outgrowth in the basal part of embolus, as well as by the postocular horn-like process supporting a strong seta on the male carapace.

Species included: *Wubanoides uralensis* (PAKHORUKOV, 1981), *W. fissus* (KULCZYNSKI, 1926).

Distribution: *W. uralensis*: West and South Siberia, Mongolia; in Europe: Bolshezemelskaya Tundra and Malozemelskaya Tundra, Czech Republic. *W. fissus*: Middle and East Siberia, Far East, Japan (mainly after ESKOV & MARUSIK, 1993, but also original data).

***Epibellowia* gen. nov.**

Type-species: *Fusciphantes septentrionalis* OI, 1960

Etymology: The generic name consists of parts of two words: Latin “epigyne” and English “bellowia”, the latter referring to the bellows-like structure of the epigyne.

Diagnosis: Medium-sized linyphiids (1.80–2.40 mm). Male carapace unmodified. Chelicerae unmodified, with well-developed stridulatory ridges. Legs relatively long and slender. Chaetotaxy: Fe I: 1–0–0–0, II–IV: 0–0–0–0; Ti I: 2–1–1–0 (male *septentrionalis*: 2–0–0–0), II: 2–0–1–0–, III–IV: 2–0–0–0; Mt I–IV: 1–0–0–0. Mt I–III with a trichobothrium. Tm I: 0.21–0.27. male Ti I ventrally with two rows of thin hairs. Palp: Cymbium without basal process. Paracymbium relatively small, L-shaped, with tooth-like outgrowths and several spines in distal part. Median membrane well-developed. Embolic division complex (Figs. 4–6): “lamella characteristic” fused with radix, long, complex in shape. Embolus basally with a very well developed membranous outgrowth. Embolus proper very long, thin, curved. Epigyne well-sclerotized, bulb-like in shape (Figs. 8–9), with a monolith structure situated on a long, membranous bellows-like base.

Taxonomic remarks: The genus is very closely related to *Wubanoides* (see above).

Species included: *Epibellowia septentrionalis* (OI, 1960), *E. enormita* (TANASEVITCH, 1988), and *E. pacifica* (ESKOV et MARUSIK, 1992), all **comb. nov.** ex *Wubanoides*.

Distribution: *E. septentrionalis*: Cisamuria, southern Maritime Province, Sakhalin, Hokkaido and Kunashir islands; *E. pacifica*: East and South Siberia, Far East; *E. enormita*: Sakhalin Island, southern Maritime Province (mainly after ESKOV & MARUSIK, 1993, but also original data).

***Eldonia* gen. nov.**

Type-species: *Centromerus kayacensis* PAIK, 1965

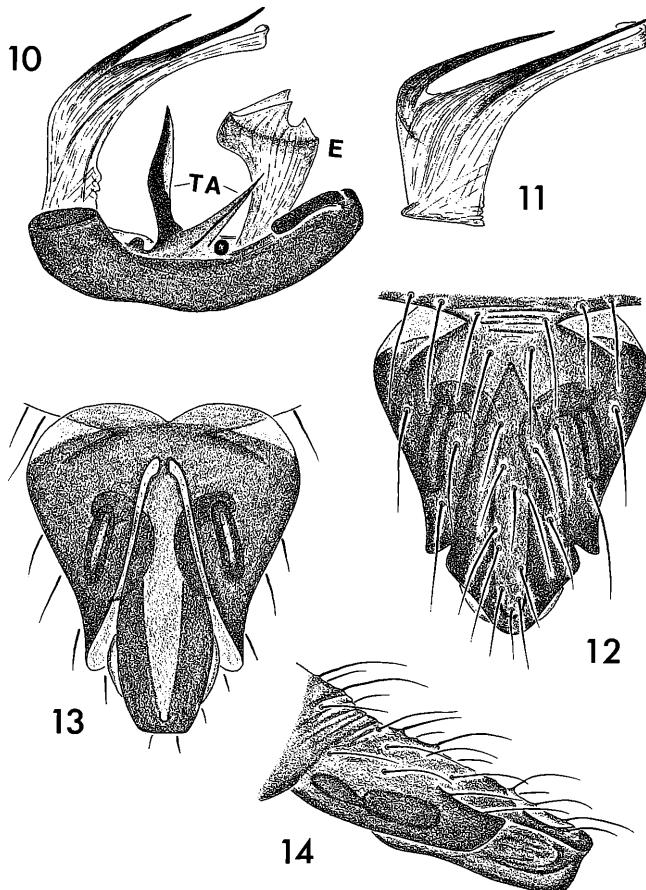
Etymology: This is just a meaningless combination of letters.

Diagnosis: A medium-sized micronetine genus: total length 1.86–2.10 mm. Carapace and chelicerae unmodified. Legs pale brown without median bands. Chaetotaxy. Fe I: 0–1–0–0, II–IV: 0–0–0–0; Ti I: 2–1–1–0, II: 2–0–1–0, II–IV: 2–0–0–0; Mt I–IV: 2–0–0–0. Male pro- and retro-lateral spines on Ti I very strongly reduced, poorly visible. Tm I: 0.21–0.24. Palp (Figs. 10–11): Tibia and patella unmodified. Cymbium with a long conical outgrowth. Lamella characteristic with three branches. Terminal apophysis devided into two narrow parts. Epigyne as in Figs. 12–14. Rear half of abdomen with a dorsal pattern of transverse bands.

Taxonomic remarks: *Eldonia* gen. nov. is a typical member among a multitude of mono- to oligotypic genera still to be erected in the subfamily Micronetinae, but currently yet entrapped by such polyphyletic, composite aggregates as “*Leptyphantes*”, “*Bolyphantes*”, etc. Hence it is impossible to accurately define the position of *Eldonia* gen. nov. in the family’s classification at the moment.

Species included: Only the type-species *Eldonia kayacensis* (PAIK, 1965), **comb. nov.**

Distribution: Korea, southern Maritime Province (PAIK, 1965; ESKOV & MARUSIK, 1993).



Figs. 10–14: Palp and epigyne of *Eldonia kayacensis* (PAIK, 1965): 10 – embolic division; 11 – lamella characteristic, 12 – dorsal, 13 – ventral, 14 – lateral view.

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