

РОССИЙСКАЯ АКАДЕМИЯ НАУК  
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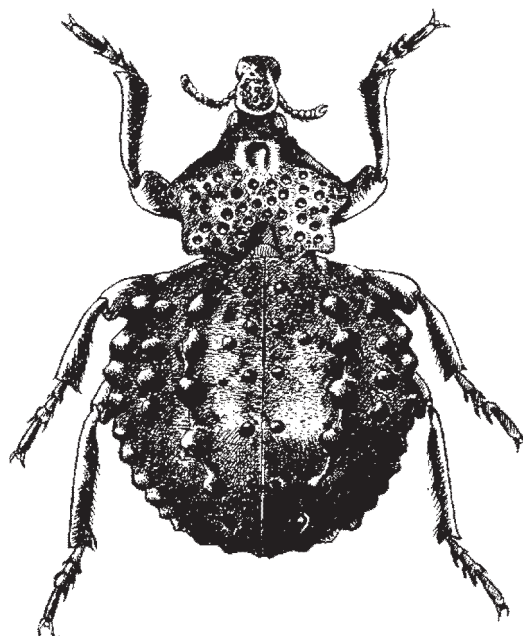


# Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 4. Вып. 1

Vol. 4. No. 1



Ростов-на-Дону  
2008

## Systematic notes on Sciapodinae from Baltic amber and on Dolichopodidae from Tanzanian copal (Diptera)

### Таксономические заметки о Sciapodinae из балтийского янтаря и о Dolichopodidae из танзанийской смолы (Diptera)

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**Key words:** Diptera, Dolichopodidae, *Wheelerenomyia*, Baltic amber, *Diaphorus*, *Chaetogonopteron*, Tanzanian copal, new combinations.

**Ключевые слова:** Diptera, Dolichopodidae, *Wheelerenomyia*, балтийский янтарь, *Diaphorus*, *Chaetogonopteron*, танзанийская смола, новые комбинации.

**Abstract.** Sciapodinae from Baltic amber are reviewed. All species with strongly sinuate vein M are united in one extinct genus *Wheelerenomyia* Meunier, 1907, including now 15 species. The following new combinations are proposed for species from Baltic amber: *Wheelerenomyia bickeli* (Negrobov et Selivanova, 2003), **comb. nov.** (from *Amesorghaga*), *W. corcula* (Meunier, 1907), **comb. nov.** (from *Neurigona*), *W. longicerca* (Negrobov et Selivanova, 2003), **comb. nov.** (from *Amesorghaga*), *W. originaria* (Meunier, 1907), **comb. nov.** (from *Nematoproctus*), *W. pacata* (Meunier, 1907), **comb. nov.** (from *Nematoproctus*), *W. parca* (Meunier, 1907), **comb. nov.** (from *Nematoproctus*), *W. parvula* (Meunier, 1907), **comb. nov.** (from *Nematoproctus*), *W. parva* (Meunier, 1907), **comb. nov.** (from *Nematoproctus*), *W. pellucida* (Meunier, 1907), **comb. nov.** (from *Psilopus*), *W. perastutula* (Meunier, 1907), **comb. nov.** (from *Psilopus*), *W. perattica* (Meunier, 1907), **comb. nov.** (from *Psilopus*), *W. quadrispinosa* (Negrobov et Selivanova, 2003), **comb. nov.** (from *Amesorghaga*), *W. subparva* (Meunier, 1916), **comb. nov.** (from *Nematoproctus*), *W. vladimiri* (Negrobov et Selivanova, 2003), **comb. nov.** (from *Amesorghaga*). Предложены также новые комбинации для видов, описанных из танзанийской смолы: *Diaphorus alsiosus* (Meunier, 1910), **comb. nov.** (из рода *Nematoproctus*) и *Chaetogonopteron sobrium* (Meunier, 1910), **comb. nov.** (из рода *Teuchophorus*).

**Резюме.** Дан обзор подсемейства Sciapodinae из балтийского янтаря. Все виды с сильно изогнутой крыловой жилкой M объединены в одном ископаемом роде *Wheelerenomyia* Meunier, 1907, включающем 15 видов. Предложены новые комбинации для видов, описанных из балтийского янтаря: *Wheelerenomyia bickeli* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*), *W. corcula* (Meunier, 1907), **comb. nov.** (из рода *Neurigona*), *W. longicerca* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*), *W. originaria* (Meunier, 1907), **comb. nov.** (из рода *Nematoproctus*), *W. pacata* (Meunier, 1907), **comb. nov.** (из рода *Nematoproctus*), *W. parca* (Meunier, 1907), **comb. nov.** (из рода *Nematoproctus*), *W. parvula* (Meunier, 1907), **comb. nov.** (из рода *Nematoproctus*), *W. parva* (Meunier, 1907), **comb. nov.** (из рода *Nematoproctus*), *W. pellucida* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. perastutula* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. perattica* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. quadrispinosa* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*), *W. subparva* (Meunier, 1916), **comb. nov.** (из рода *Nematoproctus*), *W. vladimiri* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*). Предложены также новые комбинации для видов, описанных из танзанийской смолы: *Diaphorus alsiosus* (Meunier, 1910), **comb. nov.** (из рода *Nematoproctus*) и *Chaetogonopteron sobrium* (Meunier, 1910), **comb. nov.** (из рода *Teuchophorus*).

*pellucida* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. perastutula* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. perattica* (Meunier, 1907), **comb. nov.** (из рода *Psilopus*), *W. quadrispinosa* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*), *W. subparva* (Meunier, 1916), **comb. nov.** (из рода *Nematoproctus*), *W. vladimiri* (Negrobov et Selivanova, 2003), **comb. nov.** (из рода *Amesorghaga*). Предложены также новые комбинации для видов, описанных из танзанийской смолы: *Diaphorus alsiosus* (Meunier, 1910), **comb. nov.** (из рода *Nematoproctus*) и *Chaetogonopteron sobrium* (Meunier, 1910), **comb. nov.** (из рода *Teuchophorus*).

### Introduction

The subfamily Sciapodinae was first recorded from Baltic amber by Meunier [1907, 1908a, b] who described three species of the genus *Psilopus* Meigen, 1824 (now *Sciapus* Zeller, 1842). Meunier considered the shape of postpedicel and the position of antennal stylus to be a good character for distinguishing genera. The characters are not sufficient now to separate even subfamilies of the Dolichopodidae (see Robinson [1970]). Very short species descriptions given by Meunier often do not allow to determine even the generic position of those taxa correctly. Some species were probably misplaced by him at generic level, as already supposed by Parent [1936] and Negrobov [1978]. Bickel [1994] has supposed that species described by Meunier in the genus *Nematoproctus* Loew, 1857, belong to the sciapodine genus *Mesorhaga* Schiener, 1868. Negrobov and Selivanova [2003] have described four species of *Amesorghaga* Bickel, 1994, from Baltic amber; this extant genus differs from *Mesorhaga* in presence of true preapical seta on mid and hind femora. H. Ulrich (2003, pers. com.) has noted after examination of the type material that *Wheelerenomyia* Meunier, 1907 is also a sciapodine genus. Comparison of descriptions and figures provided by Meunier and Negrobov & Selivanova gives no doubt that all species described by the authors in the genera *Nematoproctus*, *Psilopus* and *Amesorghaga* belong to one sciapodine genus. However, the species can not be placed into the extant genera and should be transferred into

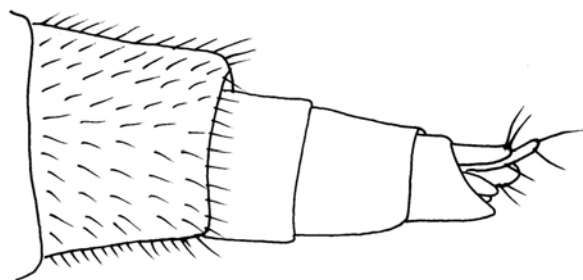


Fig. 1. *Wheelerenomyia corcula* (Meunier, 1907), female ovipositor, lateral view.

Рис. 1. *Wheelerenomyia corcula* (Meunier, 1907), самка, яйцеклад, вид сбоку.

the fossil genus *Wheelerenomyia*. In the collection of the Zoological Institute of the Russian Academy of Sciences (Rodendorf's collection) I have found a piece of Baltic amber with the species described as *Neurigona corcula* Meunier, 1907. Despite partly damaged head of the female, it evidently belongs to Sciapodinae, being also transferred here to *Wheelerenomyia*. So, all 15 species from Baltic amber with strongly sinuate vein M are united here in one extinct genus. It is also known from Ukrainian amber (recorded as *Neurigona* sp. sensu Meunier; see Grichanov, [2000]).

## Taxonomy

### Genus *Wheelerenomyia* Meunier, 1907

*Wheelerenomyia* Meunier, 1907: 199. Type species: *Wheelerenomyia eocenica* Meunier, 1907 (monotypy).

Included species (all from Baltic amber, Eocene/Oligocene):

1. *Wheelerenomyia bickeli* (Negrobov et Selivanova, 2003), **comb. nov.**  
*Amesorrhaga bickeli* Negrobov et Selivanova, 2003: 61
2. *Wheelerenomyia corcula* (Meunier, 1907), **comb. nov.**  
*Neurigona corcula* Meunier, 1907: 222
3. *Wheelerenomyia eocenica* Meunier, 1907: 198
4. *Wheelerenomyia longicerca* (Negrobov et Selivanova, 2003), **comb. nov.**  
*Amesorrhaga longicerca* Negrobov et Selivanova, 2003: 63
5. *Wheelerenomyia originaria* (Meunier, 1907), **comb. nov.**  
*Nematoproctus originarius* Meunier, 1907: 210
6. *Wheelerenomyia pacata* (Meunier, 1907), **comb. nov.**  
*Nematoproctus pacatus* Meunier, 1907: 210
7. *Wheelerenomyia parca* (Meunier, 1907), **comb. nov.**  
*Nematoproctus parvus* Meunier, 1907: 210
8. *Wheelerenomyia parvula* (Meunier, 1907), **comb. nov.**  
*Nematoproctus parvulus* Meunier, 1907: 210
9. *Wheelerenomyia parva* (Meunier, 1907), **comb. nov.**  
*Nematoproctus parvus* Meunier, 1907: 210

10. *Wheelerenomyia pellucida* (Meunier, 1907), **comb. nov.**

*Psilopus pellucidus* Meunier, 1907: 210

*Sciapus pellucidus* (Meunier, 1907): Evenhuis, 1994: 367

11. *Wheelerenomyia perastutula* (Meunier, 1907), **comb. nov.**

*Psilopus perastutulus* Meunier, 1907: 210

*Sciapus perastutulus* (Meunier, 1907): Evenhuis, 1994: 367

12. *Wheelerenomyia perattica* (Meunier, 1907), **comb. nov.**

*Psilopus peratticus* Meunier, 1907: 210

*Sciapus peratticus* (Meunier, 1907): Evenhuis, 1994: 367

13. *Wheelerenomyia quadrispinosa* (Negrobov et Selivanova, 2003), **comb. nov.**

*Amesorrhaga quadrispinosa* Negrobov et Selivanova, 2003: 60

14. *Wheelerenomyia subparva* (Meunier, 1916), **comb. nov.**

*Nematoproctus subparvus* Meunier, 1916: 278

15. *Wheelerenomyia vladimiri* (Negrobov et Selivanova, 2003), **comb. nov.**

*Amesorrhaga vladimiri* Negrobov et Selivanova, 2003: 58

**Diagnosis and remarks.** The known species of the subfamily Sciapodinae (except for *Mesorhaga*, *Amesorrhaga* and few species in other genera) are often readily identified by the branched vein M and excavated vertex. Most genera (except for *Sciapus*, *Amesorrhaga* and *Negrobovia* Bickel, 1994) are characterized by absence of distinct preapicals on mid and hind femora. The Baltic amber has practically no true Sciapodini+Chrysosomatini as fossil specimens have distinct preapicals on mid and hind femora and unbranched  $M_{1+2}$ . Meunier pictured branched vein M for *W. pellucida* only, but describing  $M_2$  in the text as wing fold ("pli alaire"); the species must be reexamined. The other species of *Wheelerenomyia* have rather distinct curvature in middle of  $M_{1+2}$  of *Mesorhaga* type. Therefore, this fossil genus is close to Mesorhagini (including *Mesorhaga*, *Amesorrhaga* and *Negrobovia*). It keys out to *Amesorrhaga*, differing in many morphological characters: the body is usually not stout, practically lacking male or female secondary sexual characters on wings and tarsi; thorax with strong seta on lower propleuron (at least *W. corcula*), well developed biseriata acrostichals, 6 pairs of strong dorsocentrals; legs usually elongate, with usually short setae, slightly longer than diameter of corresponding podomeres; sometimes femora with long ventral setae or spines; wing vein  $R_1$  long, ending right before level of *m-cu* (the character meeting in some species of *Dytomyia* Bickel, 1994 and *Parentia* Hardy, 1935); vein M unbranched, with more or less strong bend; distal part of  $CuA_1$  usually longer than *m-cu*. Hypopygium pictured for *W. pacata*, *W. perastutula*, *W. bickeli*, *W. longicerca* and *W. vladimiri* has *Sciapus*-like morphology; hypandrium and aedeagus entire; surstylus elongate; Negrobov and Selivanova [2003] have pictured hypopygial cerci with strong ventral projection in all new species. Ovipositor of *W. corcula* (Fig. 1) looks like this in some species of *Amblypsilopus* Bigot, 1888 and *Austrosiapus* Bickel, 1994 (see Bickel [1994]); ninth tergum is split into

two long narrow hemitergites, each bearing 2 long simple setae; cerci are distinctly longer than the hemitergites.

Meunier [1907, 1908a, b, 1916] gave incomplete descriptions of his species, placing them in four different genera. We think that he might rather probably describe males and females of the same species under different names. Moreover, some of his species were probably redescribed later in the genus *Amesorhaga* [Negrobov, Selivanova, 2003]. Therefore, compilation of a key to species would be now premature. Nevertheless, some species or species groups are quite distinct. The most striking character is shortened basitarsus of hind leg in *W. corcula*. It is half as long as the 2<sup>nd</sup> segment of tarsus that is unusual for both Sciapodinae and Neurigoninae, but being rather common, e.g., in Medeterinae and Sympycninae. There is also a species *W. pacata* with the hind basitarsus being slightly but distinctly shorter than next segment. The other species have the hind basitarsus about as long as or longer than the 2<sup>nd</sup> segment.

Females of *W. originaria* and *W. quadrispinosa* have fore coxa and femur ornamented with several strong spines; the spines are considered as female secondary sexual characters in *Sciapus*, *Dytomyia* and some species of *Plagiozopelma* Enderlein, 1912 [Bickel, 1994]. However, male *W. vladimiri* is described with the same spines on fore leg having also 3–4 setae on hind coxa, that is unusual for the subfamily. Males *W. parca* and *W. bickeli* are characteristic in relatively weak situation of M<sub>1+2</sub> vein. Female *W. pellucida* has angular curvature of this vein. A group of species with strongly but evenly sinuated M vein includes males *W. longicerca*, *W. perastutula*, *W. perattica* and females *W. eocenica*, *W. subparva*, *W. parva* and *W. parvula*. These species can be hardly distinguished without studying type material, but *W. longicerca*, *W. parva* and *W. parvula* are somewhat smaller (1.75–2.5 mm) than the other species (3.5–4 mm), and *W. longicerca* is remarkable in having elongate ventral setae on all femora (?MSSC).

Tertiary Baltic-Dnieper Subprovince embraces large area of modern Europe. Bickel [1994] noted that its fauna has no any Gondwanan palaeotropical elements, and the western Palaeartic appears to have been isolated to recent time. Therefore, it is not surprising that extant Mesorhagini are absent in Europe and adjacent regions. The question is still open: could *Wheeleromyia* give origin to other sciapodine clades? Anyway, their comparative abundance in amber correlates with mainly tree trunk and tree canopy habitats of almost all Sciapodinae. The subfamily is now basically pantropical that supports opinions about subtropical climate of the Baltic region during the Eocene.

**Additional notes.** Checking description of one more *Nematoproctus* species [Meunier, 1910] from rather recent Zanzibaran copal (Pleistocene/Holocene), I have found that the author misplaced dolichopodid species at generic level. Pictures illustrating description of female *Nematoproctus alsiosus* Meunier, 1910 show antenna and wing that are typical of the genus *Diaphorus* Meigen, 1824; i.e., postpedicel is higher than long, and wing is rather broad at base, with almost straight and parallel R and M veins. There are many species of the genus in modern fauna of Tropical Africa with their females being poorly

distinguished. On the contrary, the genus *Nematoproctus* is not known in Afrotropics. A drawing of male hind tarsus of *Teuchophorus sobrius* Meunier, 1910 in the same paper clearly indicates that this species belongs to *Chaetogonopteron* De Meijere, 1913 (sister genus to *Sympycnus* Loew, 1857). The species belongs to a group of species having apicoventral worm-like process on the 2<sup>nd</sup> segment of hind tarsus; two basal segments of the hind tarsus are shortened. Only one species of this group, *Ch. nectarophagum* (Curran, 1924), is present in Afrotropics, but having many relatives in the Oriental Region. This species is widely distributed in many countries of Africa and on adjacent islands, reaching southern Palaeartic and western Orient [Grichanov, 2006]. If the thickened wing costa described by Meunier is only visual distortion of the resinite, then it is quite probable that a piece of Zanzibaran copal contains a male of *Ch. nectarophagum* or its predecessor. So, the following new combinations are here proposed:

*Diaphorus alsiosus* (Meunier, 1910), **comb. nov.**

*Nematoproctus alsiosus* Meunier, 1910: 141

*Chaetogonopteron sobrium* (Meunier, 1910), **comb. nov.**

*Teuchophorus sobrius* Meunier, 1910: 142.

## Acknowledgements

The author expresses sincere gratitude to Drs. E.P. Nartshuk and V.F. Zaitsev (St. Petersburg) for the providing material from their Institute.

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