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Phylogeny of the genus *Xylota* MEIGEN, 1822 (Diptera, Syrphidae), with descriptions of new taxa

[Phylogenie der Gattung *Xylota* MEIGEN, 1822 (Diptera, Syrphidae), mit Beschreibungen neuer Taxa]

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Abstract: The taxonomic status of various taxa in the genus *Xylota* MEIGEN, 1822 is clarified, and new taxa described. A phylogenetic system of the genus is proposed based on 75 characters scored on 82 species.

Key words: Syrphidae, *Xylota*, new subgenus, new species, new synonyms, phylogeny

Zusammenfassung: Der taxonomische Status verschiedener Taxa in der Gattung *Xylota* MEIGEN, 1822 wird aufgeklärt und neue Taxa beschrieben. Ein phylogenetisches System der Gattung ist anhand von 75 Merkmalen bewertet bei 82 Arten vorgeschlagen.

Stichwörter: Syrphidae, *Xylota*, neue Untergattung, neue Arten, neue Synonyme, Phylogenie

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Introduction: A number of species from the genus *Xylota* MEIGEN, 1822 were analysed in detail by HIPPA (1978) in his review of this and related genera in the tribe Xylotini. He considered the genus *Hovaxylota* KEISER, 1971 from Africa and Madagascar to be the sister-group to *Xylota*, and *Sterphoides* HIPPA, 1978 from the New World to form a clade with them. He thought that *Brachypalpoides* HIPPA, 1978 was more distantly related, belonging to quite a separate clade within the Xylotini. However THOMPSON (1975) considered *Brachypalpoides* to be the sister-group or a subgenus of *Xylota*, with *Sterphoides* a subgenus of *Xylota*. We attempt here to clarify the status of some species of *Xylota* s. str., and to examine the phylogenetic relationships between these taxa and the species groups established by HIPPA (1978).

Examination of the original description of *X. crepera* HE & CHU, 1992 **syn. nov.** allows us to recognise it as a synonym of *X. pseudoignava* MUTIN, 1984.

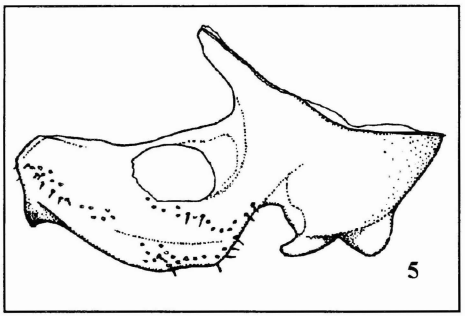


Figure 5: *Xylota pseudoignava* MUTIN, 1984: hypandrium theca (lateral view).

X. pseudoignava differs from the similar Palaearctic species *X. coeruleiventris* and *X. jakutorum* by the combination of the following characters: abdomen black with silvery maculae on tergites 2-4, or rarely totally obscure; basal tarsomere of front leg with a pair of long curved setae at apicodorsal prolateral corner; scutum yellow pilose with black setae on postalar callus, and with some long black pile and/or patches of short black pile in posterior half; theca of hypandrium with a sharp posteroventral tubercle (figure 5).

Material: 53 ♂♂ and 70 ♀♀ from southern Siberia (Altai, Tuva, western Sayan), Amurland, Primorye.

Xylota tarda MEIGEN, 1822

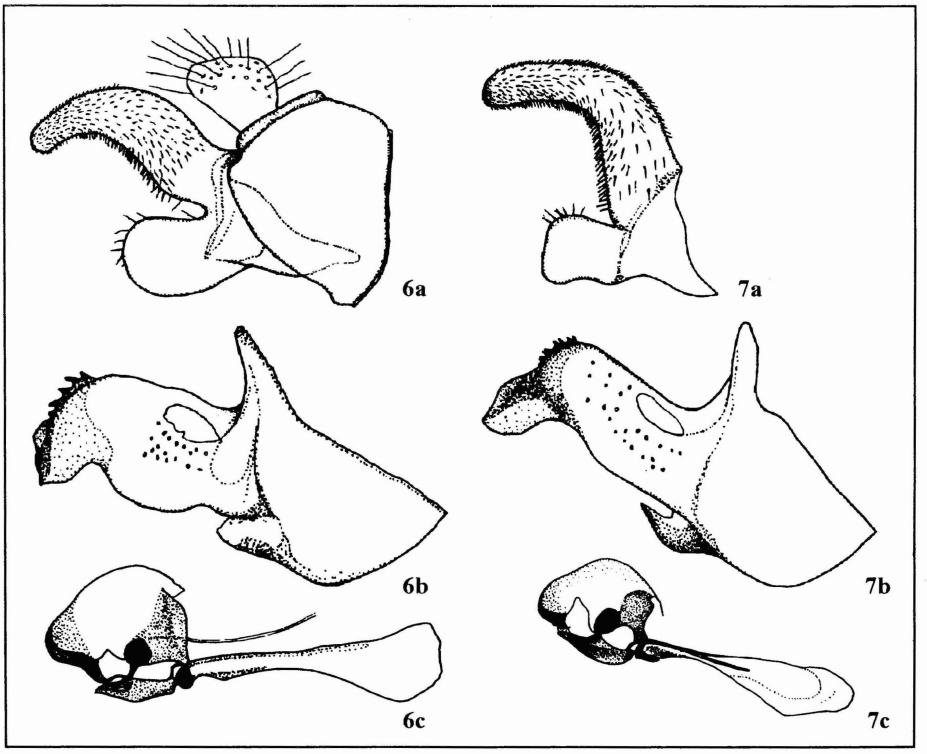
= *Xylota arboris* HE & CHU, 1992 **syn. nov.**

Examination of the original description and the figures of the genitalia of *X. arboris* HE & CHU, 1992 **syn. nov.** showed that this taxon is identical to *X. tarda* MEIGEN, 1822. We studied a large number of specimens of Far-Eastern *X. tarda* and found wide variability in the abdominal pattern. The majority of the studied specimens of *X. tarda* have reddish abdominal maculae, joined medially. This character was designated by HE & CHU (1992) as the important characteristic of *X. arboris* **syn. nov.**.

Xylota zeya spec. nov.

♂: Body length 8 mm, wing length 6.5 mm.

Head: In front view elliptical. Face rather slightly concave. Lower part of face protruded forward less than the frontal prominence. Frons and face black, pale pollinose. Antennae and arista dark brown, basoflagellomere and apex of arista paler. Vertical triangle black, with long dark brown pile.



Figures 6 a-c, 7 a-c: 6. *Xylota zeya* **spec. nov.**: **a.** epandrium; **b.** hypandrium theca; **c.** aedeagus (lateral view); **7.** *Xylota nartshukae* Bagachanova, 1984: **a.** surstylus; **b.** hypandrium theca; **c.** aedeagus (lateral view, right side).

Thorax: Scutum and scutellum mainly shining black, with erect black pile, longer along apical margin of scutellum. Postpronotal lobes and space between them with brownish and whitish pile, grey pollinose. Pleura with weak pale pollinosity, and with mainly white pile; posterior dorsal corner of anepisternum and anepimeron with black pile. Premarginal sulcus of scutellum absent; apical setae of scutellum indistinct. Wing membrane with dense microtrichia, stigma yellowish, unicolorous with cells C and Cs. Legs entirely black. Femora mainly with erect pale pile. Tibiae retrolaterally with pressed black pile. Hind trochanter with hardly developed spur (id est with trace of spur). Hind femur ventrally with numerous thin setae (bristles) which do not form distinct rows toward base. First tarsomere of front tarsus without modified setae.

Abdomen: Dull black, with shining triangular maculae on tergites 2 and 3; basal part of tergite 4 shining black. Shining areas and sides of tergites pale erect pilose, dull areas with brown short pressed pile. Syntergosternite pale pilose. For genitalia, see figures 6 a-c.

♀: Unknown.

Holotype: ♂, Amurskaya Territory, Zeya Town, 29.vi.1979 (A. Shatalkin) (ZMMSU).

Discussion. In appearance, *X. zeya* **spec. nov.** is very similar to *X. nartshukae* BAGATSHANOVA, 1984 and *X. suecica* RINGDAHL, 1943. The former is distinguishable by its pale pilose scutellum and tibiae, by the less elliptical form of the lower lobe of the surstyli, and the form of the lateral arms of the hypandrium theca (figures 7 a-c). The latter has more short pile on the scutum and scutellum, a thinner and longer arista, a distinct premarginal sulcus of the scutellum, mainly pale pilose tibiae, the black pile of the syntergosternite, and a different type of hypandrium theca.

Phylogenetic analysis

The subgenera and species groups of HIPPA (1978) are in general well supported by our data, and the genus *Brachypalpoides* is also monophyletic according to our data. However, the eventual tree (figure 18) shows that some species groups are unclear, and that the subgenus *Xylota* is not monophyletic, since the other subgenera are dispersed among its species groups. The characters supporting this tree are given in table 2: one can see that there are no synapomorphies defining the *carbonaria* group, and it may be worth reassessing the validity of this grouping. Furthermore there are apparently no changes supporting the monophyly of the main clade (from node 4 on figure 18). The clade consisting of the *segnis*, *flavitarsis* and *ignava* groups of HIPPA (1978) is very distinct, and probably these should all be recognised as a single group, the *segnis* group. The most plesiomorphic group is the Holarctic *triangularis*, indicating the geographical origins of the genus *Xylota*.

Relationships of the species within two of the species groups, the *sylvarum* and *triangularis* group, are shown in figures 19-20. The other main species group, the *carbonaria* group, was poorly resolved by the characters we use here. We do not have space here to explore the suggested geographical transitions and character changes among species within groups.

References:

BAGACHANOVA, A. K. (1980): New species of Syrphidae (Diptera) from Central Yakutia. - Entomologicheskoe obozrenie **59** (2): 421-427; St. Petersburg. [in Russian]