

Tachysphex stysi sp. nov. (Hymenoptera: Apoidea: Crabronidae) from Central Asia

Jakub STRAKA

Charles University in Prague, Faculty of Science, Department of Zoology, Viničná 7, CZ-128 44, Praha 2, Czech Republic; e-mail: straka-jakub@vol.cz

Abstract. *Tachysphex austriacus* species subgroup of *T. pompiliformis* species group is defined. *Tachysphex stysi* sp. nov., a new member of this subgroup, is described. The new species is known from Kazakhstan, Tajikistan, and Turkmenistan.

Key words. Hymenoptera, Apoidea, Crabronidae, *Tachysphex*, taxonomy, new species, description, Palaearctic region, Central Asia

Introduction

The genus *Tachysphex* Kohl, 1883, a member of the family Crabronidae, tribe Larrini (MENKE 1997), includes 444 described species from all over the world (PULAWSKI 2008). They can be found in most terrestrial habitats, but occur mainly in grasslands and deserts, where the most frequent prey – grasshoppers – occur in numbers. Adults or larvae of the Blattoidea, Mantodea, Ensifera and Caelifera are also known as prey of *Tachysphex* (KROMBEIN & PULAWSKI 1994).

Several species groups within the genus have been established. One of them, the *T. pompiliformis* group, is variable and complicated (see PULAWSKI 1971), and STRAKA (2005) proposed diagnoses of some subgroups (species complexes) of this group. A new subgroup is proposed for *T. austriacus* Kohl, 1892, and related taxa in this paper. *Tachysphex austriacus* was restored from synonymy with *T. pompiliformis* (Panzer, 1805) by Straka (2004) and thought to be its sibling species. However, there are some important and consistent characters distinguishing the species related to *T. pompiliformis* from those related to *T. austriacus*. A new species, described here, supports this differentiation.

Material and methods

Material from the following institutions and private collections was examined:

JSPC Jakub Straka, Praha, Czech Republic;

OLML Oberösterreichisches Landesmuseum, Linz, Austria (Fritz Gusenleitner);

Usual abbreviations of geographical direction are used: N – North, S – South, E – East, W – West, and their combinations: NE, NW, SE, and SW.

Morphological terms are used according to BOHART & MENKE (1976) and KROMBEIN & PULAWSKI (1994). The following abbreviations are used in the descriptions of body proportions:

WML	clypeus median lobe width;	WV	vertex width (according to KROMBEIN & PULAWSKI 1994);
LCL	clypeus maximum length;		
WCL	clypeus width;	LV	vertex length (according to KROMBEIN & PULAWSKI 1994);
LF1	length of flagellomere I, dorsally;	MOD	diameter of median ocellus;
WF1	width of flagellomere I, apically, dorsally;	LF1	fore femur length;
LF3	length of flagellomere III, dorsally;	WF1	fore femur width, laterally.
WF3	width of flagellomere III, apically, dorsally;		

Specimens of the newly described species were labelled as follows: ‘HOLOTYPE ♂, *Tachysphex stysi* sp. nov., J. Straka det. 2008’ on a red card; each paratype similarly on a yellow card. Exact label data are cited for the holotype only. Separate lines on a label are indicated by a slash (/) and separate labels by a double slash (//); author’s remarks are given in square brackets.

Taxonomy

Tachysphex austriacus species subgroup

Diagnosis. The *T. austriacus* species subgroup (species complex sensu STRAKA 2005) differs from the *T. pompiliformis* species subgroup mainly by two very consistent characters in the males. In the *T. austriacus* species subgroup, the fore femoral notch is slightly shiny to shiny, not elevated and with distinct small setae, and setae on the volsellar apical process are uniformly (or nearly so) directed ventrally. In the *T. pompiliformis* species subgroup, the surface of the fore femoral notch is densely microsculptured, slightly elevated and with a distinct step on the inner margin, and the setae on the lower surface of the fore femoral notch are hardly visible (magnification 30×) and ventral setae on the volsellar apical process randomly directed (see figures in STRAKA 2005). In the *T. pompiliformis* group, females also have the malar space and adjacent part of genae with distinctly different punctuation than in the *T. austriacus* species subgroup, however only *T. austriacus* resembles species of *T. pompiliformis* subgroup in this character.

Species included. *Tachysphex austriacus* Kohl, 1892, *T. pekingensis* Tsuneki, 1971, *T. prismaticus* Straka, 2005, and *T. stysi* sp. nov.

Tachysphex stysi sp. nov.

(Figs. 1-7)

Type material. HOLOTYPE: KAZAKHSTAN, ♂, ‘Kasachstan mer. / Chagir 42,2N,68,8E / 40 km S Aris / leg K. Denes 6.5.94’ [printed label] (OLML). PARATYPES: KAZAKHSTAN: same locality and date as holotype, 67 ♂♂ 28 ♀♀, K. Deneš, J. Halada, Ma. Halada and J. Kadlec lgt.; Djambul 10 km E, 31.v.1994, 2 ♀♀, J. and Ma. Halada lgt. TAJIKISTAN: Aruk-Tau, Garavuti, 20.iv.1978, 1 ♀, J. Niedl lgt. TURKMENISTAN: Sandikatzi env., 3.-13.v.1993, 12 ♀♀, K. Deneš, J. Halada and Mi. Halada lgt.; Nebit-Dag, 1.v.1993, 1 ♀, Mi. Halada lgt. (all specimens in OLML and JSPC).

Description. Male (holotype). Body length: 7.5 mm.

Coloration. Apical half of mandible, tegula, metasomal segments I and II, all bases of femora, tibiae and all tarsi red. Other body parts all black.

Head. Inner margin of mandible circularly emarginate, with one well developed tooth (Fig. 1). Labrum flat, not emarginated. Clypeus slightly convex; basomedian area slightly convex, densely punctate; bevel abrupt, as long as one third of clypeus, shiny (Fig. 1); lip arcuate, with median emargination and distinct lateral corners. Antennae short. Frons and vertex densely and uniformly punctate, punctures minute, most punctures less than one diameter apart, interspaces slightly shiny; setae shorter than MOD, erect to semierect.

Mesosoma. Scutum densely but variably punctate, punctures less than half to one and half diameter apart, scutellum uniformly punctate, punctures about one diameter apart, all interspaces distinctly microsculptured, shiny. Mesopleuron finely rugose; its lower part with poorly defined punctation, punctures evanescent in microsculpture and rugosity, less than one diameter apart. Mesothoracic venter densely punctate, punctures ill-defined, about half diameter apart. Propodeal dorsum with conspicuous irregular longitudinal ridges, interspaces strongly sculptured to rugose, dull. Propodeal side obliquely ridged. Venter of all trochanters finely micropunctate, punctures no more than one diameter apart, interspaces shiny. Fore femoral notch semicircular, sparsely setose and with shiny surface (Fig. 2). Wings nearly hyaline; veins brown.

Metasoma. Terga I-IV with weak, but distinct silvery apical bands; apical depressions on all terga slightly translucent, barely defined. Terga (including apical depressions) densely micropunctate, punctures ill-defined, evanescent in microsculpture. All sterna with uniform sculpture similar to that on terga, but punctures more distinct. Gonostyle with about 20 setae on apical half; setae uniform in length or nearly so. Volsella similar to that of *T. prismaticus* Straka, 2005 in shape (cf. Fig. 13 in STRAKA (2005)); setae on volsella uniformly or nearly so directed ventrally (Fig. 3).

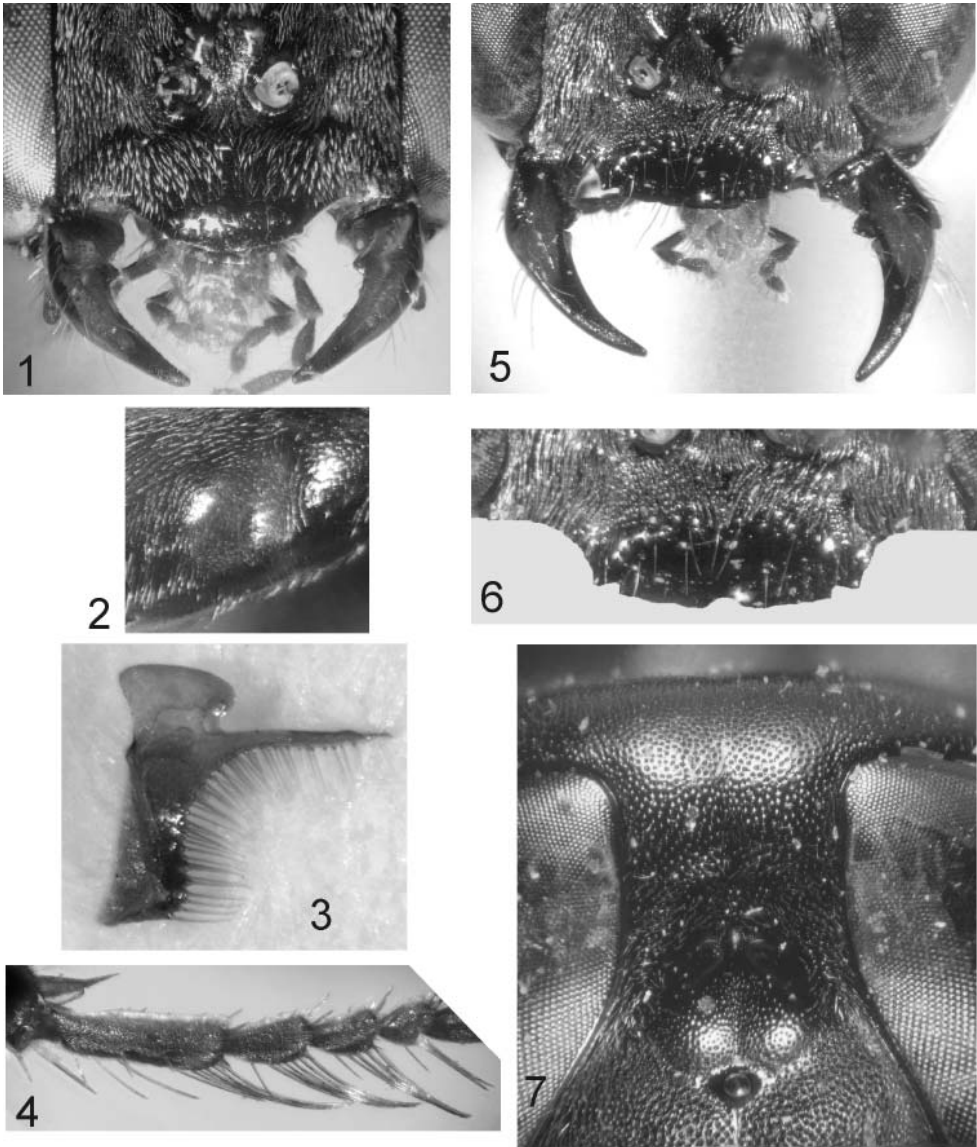
Variation in males. Body length: 5.5-7.5 mm. Head. Clypeal lip with or without median emargination; WML : LCL = 0.8-0.9; WCL : WML = 2.4-2.6. Antennae relatively short; LF1 : WF1 = 1.7-1.8; LF3 : WF3 = 1.8-1.9. Frons and vertex densely, uniformly punctate, punctures one to less than one diameter apart, interspaces shiny to slightly dull; WV : LV = 1.2-1.3.

Female (general description). Body length: 7.0-9.5 mm.

Coloration. Mandible mesally, two or three distal tarsomeres, and gastral segments I-II or I-III red. Tegula reddish translucent. Other body parts all black.

Head. Labrum flat, slightly emarginated medially. Clypeal lip with deep irregular median emargination (Figs. 5-6); transition between clypeal basomedian area and bevel relatively sharp, angulated; basomedian area convex, about as long as bevel; bevel concave, bright shiny; WML : LCL = 1.5-1.6, WCL : WML = 1.9. Antenna relatively short; LF1 : WF1 = 3.0-3.1; LF3 : WF3 = 3.0-3.1. Frons and vertex uniformly punctate, punctures less than one diameter apart, more than that on vertex, interspaces microsculptured, slightly shiny to dull (Fig. 7); setae short, erect to nearly erect; postocellar impression distinct and deep, obtusely Y-shaped; WV : LV = 1.1-1.3 (Fig. 7). Malar space and adjacent part of gena almost impunctate, integument bright and shiny; gena densely punctate.

Mesosoma. Scutum and scutellum unevenly punctate. Central part of scutum sparsely punctate except for middle line, punctures one to many diameters apart; all margins and middle line densely punctate, punctures at most one diameter apart; all interspaces sparsely



Figs. 1-7. *Tachysphex stysi* sp. nov. 1-3 – male: 1 – clypeus and mandibles; 2 – forefemoral notch, ventral view; 3 – volsella, outer view. 4-7 – female: 4 – foretarsomeres with rake; 5 – clypeus and mandibles; 6 – clypeus, detail; 7 – vertex.

micropunctate, microsculptured and shiny. Scutellum more densely punctate in the middle than on sides, punctures variable in size and intermixed with micropunctuation, half to two diameters apart, interspaces slightly microsculptured to unsculptured, shiny. Mesopleuron (including hypopleuron area) finely, uniformly rugose throughout. Mesothoracic venter densely punctate. Propodeal dorsum uniformly rugose, in most specimens with more or less irregular longitudinal ridges. Propodeal side obliquely ridged, ridges conspicuous in most specimens. Venter of mid and hind trochanters with large punctures several diameters apart, interspaces shiny; punctures of fore trochanter minute, ill-defined, interspaces microsculptured, dull. Fore basitarsal rake with five preapical spines and one subapical (Fig. 4). Wings almost hyaline to slightly darkened at apex; veins brown.

Metasoma. Terga I-IV with indistinct silvery apical bands; apical part of terga I-III slightly translucent. Tergal punctures minute, ill-defined, evanescent in fine microsculpture; apical depressions without distinct punctures; all terga dull. Nearly entire sternum II with well defined micropunctures, micropunctuation of other sterna ill-defined, present only on sides; central part of all sterna with distinct large punctures that are two to many diameters apart; interspaces slightly shiny to dull. Pygidial plate slightly convex, superficially looking flat; sparsely punctate, interspaces not sculptured and shiny.

Differential diagnosis. *Tachysphex stysi* sp. nov. is a member of the *T. pompiliformis* species group and the *T. austriacus* species subgroup. It resembles other members of the subgroup: *T. austriacus*, *T. pekingensis* Tsuneki, 1971, *T. prismaticus* Straka, 2005 and at least three other undescribed central Asian species (J. Straka, unpublished data) in having the characters of the subgroup (see above). It differs from these species in the following combination of characters. Male: inner margin of mandibles circularly emarginated with one well developed tooth (Fig. 1); mid trochanters ventrally distinctly and uniformly punctate; four metasomal terga with short silver apical bands (visible in fresh specimens); all tibiae largely and all bases of femora red. Female: scutum variably punctate, punctures half to one diameter apart in anterior parts, in the middle and along all margins, mesolaterally with large interspaces among punctures, punctures up to five diameters apart; mid and hind trochanters ventrally sparsely punctate, punctures large, several diameters apart; fore basitarsal rake usually with five apical spines (Fig. 4); at least inner surface of fore tibia red, mid and hind tibiae black.

Males of *T. prismaticus* possess a similar shape of the mandibles as in male *T. stysi* sp. nov. (one tooth). However, both male and female of *T. prismaticus* differ from the new species by the black legs and moreover female *T. prismaticus* differ in the sculpture of the scutum, which is densely and uniformly punctate. *Tachysphex austriacus* and *T. pekingensis* are quite similar to each other. Both species possess two teeth on the inner margin of male mandibles, a uniformly sculptured scutum in females, and a densely punctate ventral part of all trochanters in both sexes. The tibiae are (at least partly) red in *T. pekingensis* but black in *T. austriacus*. Finally, males as well as females of the undescribed species are all black and males possess no distinct tooth on the inner margin of the mandibles. These species differ strongly from other species in body sculpture and vestiture.

Name derivation. Named in honour of the excellent Czech entomologist Professor Pavel Štys (Charles University, Prague).

Distribution. Kazakhstan, Tajikistan, Turkmenistan.

Acknowledgements

I sincerely thank Fritz Gusenleitner (Linz, Austria) for the loan of material and Wojciech J. Pulawski (San Francisco, USA) and Christian Schmid-Egger (Berlin, Germany) for valuable comments on the manuscript. The project was supported by the Research Program MSM No. 0021620828.

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