

# ***Tersoakus* gen. nov., a new genus of cremastine wasps from the Russian Far East (Hymenoptera: Ichneumonidae: Cremastinae)**

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The new genus of ichneumonid wasps, *Tersoakus* gen. nov. (type species and only known species: *Tersoakus kasparyani* spec. nov.), is described from the Russian Far East. The genus is mainly characterized by the peculiar forewing venation, i.e., the apex of the disco-cubital vein connected with the base of second abscissa of the radius, and also by the presence of an outer tooth at the apex of the fore tibia and by the triangular hypopygium of the female.

## **Introduction**

The ichneumonid wasps of the subfamily Cremastinae Foerster, 1869, are well-known as important biological control agents. The reason for such an importance lies in the host range of the cremastines. Mostly leaf-rollers, gall-makers, wood-borers and other concealed living insect-larvae are recorded as their hosts. It concerns usually larvae of moths (Coleophoridae, Psychidae, Pyralidae, Tortricidae, etc.), but also of beetles (Buprestidae, Chrysomelidae) and sawflies (Tenthredinidae) (Dasch, 1979; Gauld, 1984).

The cremastines are distinguished from other Ichneumonidae by having a sclerotized bridge separating the membranous sockets of the tibial spurs and the basitarsus of all tibiae (Townes, 1958). The Cremastinae, along with the subfamilies Campopleginae Foerster, 1869, Tersilochinae Schmiedeknecht, 1910, Anomaloninae Viereck, 1918, and Ophioninae Shuckard, 1840, are included in the so-called "ophionoid complex". Such an inclusion is broadly based upon the habitual similarity of the mentioned groups.

Usually Cremastinae can be distinguished from other members of the "ophionoid complex" with the naked eye because of some peculiar habitual features. These are the slender body and legs, small head, the long, thin and straight ovipositor and the "tender" wings.

The subfamily Cremastinae has a world-wide distribution, but occurs mainly in the arid regions (Gauld, 1984; Townes et al., 1961, 1965; Dasch, 1979; Yu & Horstmann, 1997). The Cremastinae of the Russian Far East are rather poorly studied. Some data are given by Townes et al. (1965), who listed 26 species in four genera for the East Palaearctic region. Since 1965 only some new records (Kasparyan, 1981; Narolsky, 1987b) and a sole description (Narolsky, 1987a) have been published for the Russian Far East.

The study of the collections of the Zoological Institute of Russian Academy of Sciences, St. Petersburg, conducted by the author, revealed an undescribed species representing a new genus of Cremastinae, from the Russian Far East. The new genus is rather peculiar since it notably differs by its habitus from the other genera of the subfamily.

### Abbreviations

Depositories: RMNH — Department of Entomology, Nationaal Natuurhistorisch Museum, Leiden, Netherlands; SIZK — Schmalhausen Institute of Zoology, Ukrainian Academy of Sciences, Kiev; ZISP — Zoological Institute of Russian Academy of Sciences, St. Petersburg.

Morphometrical indexes: POL — postero-ocellar distance (the distance between the posterior ocelli); OOL — oculo-ocellar distance (the distance between the compound eye and a posterior ocellus); Od — maximum diameter of a posterior ocellus.

### Descriptions

#### *Tersoakus* gen. nov.

Type species.— *Tersoakus kasparyani* spec. nov.

Diagnosis.— Body short and robust; head large, temples wide, about twice transverse width of eye; clypeus enlarged, with non-rimmed lower margin; mandibles massive, lower tooth longer than upper tooth; speculum separated ventrally from mesopleuron with shallow transverse groove, the latter perpendicular to mesopleural suture; propodeum very short, abruptly vertical beyond areole, in lateral profile; first tergite with short and very deep glymma prior postpetiolus; lateral margin of first tergite parallel and widely separated ventrally; apex of fore tibia with small outer tooth; hypopygium triangular in female; ovipositor short, thick, without subapical dorsal notch; clasper very wide basally, but without basal lobe in male; fore wing with short and broad stigma, areolet absent, apex of discocubital vein connected with base of second abscissa of radius; first abscissa very short, 0.33 times as long as second.

Description.— Small species (length of forewing 3-4 mm). Antenna short, head large and massive; mandible elongate and massive (fig. 3), lower tooth longer than upper tooth; malar space as long as about half of basal width of mandible; clypeus enlarged, very weakly delimited anteriorly, its apical margin strongly produced (fig. 2) with somewhat emarginate ridge; clypeal foveae large and deep; face strongly transverse, medially with acute peak below antennal sockets; frons deeply concave above each of antennal socket and significantly convex laterally, medially with small interscrobial protuberance; inner raised margins of antennal fossae reaching base of this protuberance (fig. 1); eye comparatively small; inner orbits divergent dorsally; ocelli small; temple rounded, nearly as long as transverse width of eye, OOL much longer than Od; occipital carina strong and not reduced medially, reaching base of mandible.

Mesosoma.— Thorax short, robust; collar of pronotum wide, dorsally without any fovea or keels; epomia weakly traced; mesoscutum short and broad, without notauli,

its anterior margin somewhat raised, with shallow notaulic depressions; lateral carinae of mesoscutum notably raised beyond tegula, reaching base of scutellum; mesopleurum short and high; prepectal carina reaching its anterior margin in about mid part of the hind margin of pronotum; subtegular ridge strong, significantly raised; speculum large, subquadrate, 2/3 as long as mesopleuron; speculum separated ventrally from mesopleuron with shallow transverse groove, the latter perpendicular to mesopleural suture and stretching along about half of length of mesopleuron; postpectal carina complete; scutellum short, triangular in shape, concave basally, laterally not carinate; propodeum shortened, abruptly vertical beyond areole, in lateral profile (fig. 8); fields of propodeum complete; areola small, hexagonal (fig. 9); costula occasionally weakened; posterior margin of propodeum emarginate (fig. 11).

Membrane of forewing normal, not shortened (2.4 times as long as broad in holotype); stigma short and broad; radial cell short; areolet absent, disco-cubital vein connected with base of second abscissa of radius; first abscissa of radius and second abscissa of radius rectangularly connected (as in *Tersilochinae*; fig. 6); nervulus interstitial; nervellus broken in its lower third; discoidella distinct.

Legs strong; apex of fore tibia with outer (!) tooth; mid tibia with two spurs; hind femur without ventral tooth; tarsal claws short and pectinate.

Metasoma short; petiolus long, widened basally; postpetiole elongate, almost parallel-sided, with prominent spiracles; glymma short and very deep just before postpetiole and extends as a shallow sulcus almost to base of petiole; lateral margin of first tergite parallel-sided and widely separated ventrally; second tergite broad, not elongate; epipleurum of second tergite turned under; thyridium absent; apex of abdomen beyond second tergite distinctly compressed laterally in female (fig. 4), less in male (fig. 5).

Ovipositor short, thick, without subapical dorsal notch; upper valva somewhat raised apically, apex of lower valva thin and elongate, with sparse long setae (fig. 7); ovipositor sheath widened apically (fig. 10); hypopygium well visible, triangular in female (fig. 13); clasper short and broad, triangular, without basal lobe in male (fig. 5). Etymology.—“Ters” is from *Tersilochinae*, what emphasize the likeness of venation of fore wings, “oak[us]” refers to the English name of *Quercus*. The grammatical gender of *Tersoakus* is masculine.

*Tersoakus kasparyani* spec. nov.  
(figs 1-13)

Type material.— Holotype, ♀ (ZISP), “Khabarovsk, Khekhzir 17 km 3.vii.1983, on oak, Kasparyan”. Paratypes: 1 ♀ (SIZK), “Primorye, Spassk 25.vi.1981, Belokobylskij”; 1 ♀ (SIZK) “Gornotaezhnoe, 20 km SE Ussuriysk, 27.vi.1981, Kasparyan”; 1 ♀ (SIZK), “Khabarovsk, Khekhzir 18 km 5.vii.1983, *Quercus*, Kasparyan”; 21 ♀♀ + 5 ♂♂ (ZISP), “Khabarovsk, Khekhzir 18-20 km 4-5.vii.1983, on oak, Kasparyan”; 1 ♀ (SIZK), “Primorskiy Krai, Anisimovka 11.vi.1996, forest, field, Zinoviev”; 2 ♀♀ (SIZK), 2 ♀♀ (RMNH), 1 ♂ (SIZK) “Primorskiy Krai, near Volno-Nadezhdinsk, 4.viii.1996, forest, field, Belokobylskij”; 1 ♀ (SIZK), “Primorskiy Krai, 20 km SE Ussuriysk, 18.viii.1996, forest, Belokobylskij”.

Description.— Female (holotype) main or general features indicated in description of genus. Fore wing length 3.1-4.0 mm; flagellum 19-segmented, subapical segments elongate; head 2.0 × long as wide; malar space 0.6 times basal width of mandible; face

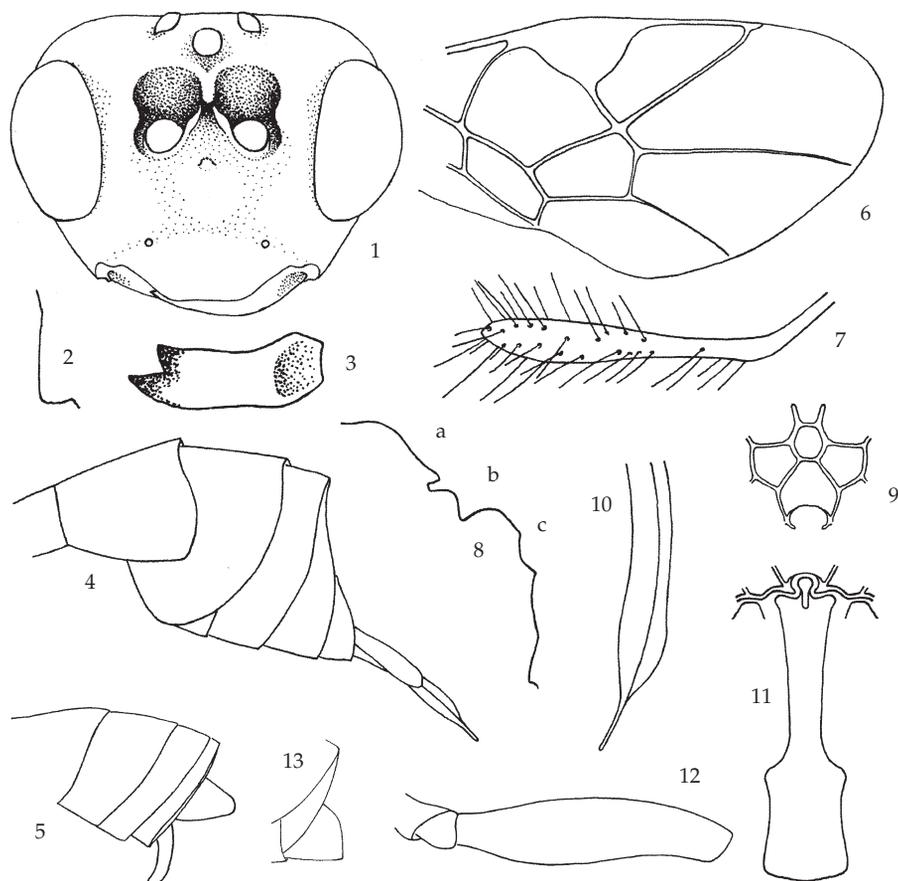


Fig. 1-13, *Tersoakus kasparyani* spec. nov. 1, head; 2, clypeus, lateral aspect; 3, mandible; 4, apex of metasoma of female; 5, id. of male; 6, fore wing of female; 7, male clasper; 8, profile of posterior part of mesosoma, lateral view (a = scutellum, b = postscutellum, c = propodeum); 9, propodeum, dorsal aspect; 10, apex of ovipositor; 11, first tergite, dorsal aspect; 12, hind femur of female; 13, hypopygium.

width 2.3 times as wide as high; POL = 1.4 times, and OOL = 2.6 times of Od; temple 0.9 times as long as transverse width of eye; thorax as long as high; postpetiole twice as long as its apical width; length second tergite 1.3 times its apical width; hind femur 4.4 times (4.2-4.6 times in paratypes) as long as high (fig. 12).

Sculpture.— Clypeus sparsely punctate basally, and polished apically; face and frons densely and finely punctate, mat; vertex, temples and genae roughly punctate, shiny; genae partly mat; pronotum entirely punctate, partly mat, punctures large with smoothed margins; anterior margin of mesoscutum finely and densely punctate, dorsal part widely and sparsely punctate; mesopleura entirely punctate, more finely and densely along its anterior margin, somewhat mat; speculum large, polished; scutellum dorsally sparsely punctate, polished laterally and apically; propodeum shiny, punctate, slightly mat laterally; punctures of propodeum consists of large pits with smoothed margins; metasoma polished, rather shiny (as in the subfamily

Mesochorinae), without striation.

Head, mesosoma, coxae and outer surface of femur covered with whitish setae. Setae of clypeus and mandible much longer than those of rest of body.

Coloration.— Head and mesosoma black; antennae brownish, with paler base; tegulae, clypeus, mandibles (except for black apex), and lower parts of gena, white; postero-lateral and lower corners of pronotum brownish; metasoma red, first and second tergites entirely (except for its postero-lateral corners) and dorsal parts of remaining tergites black; legs red; mid coxa light brown; hind coxa and femur brown; outer surface of hind tibia light brown to brown.

Male.— Similar to female in habitus, sculpture and colouration, but differs mainly in having black clypeus with whitish apical margin, and also darker legs and metasoma.

Type locality.— Khabarovsk, Russia (Russian Far East).

Distribution.— Russian Far East (Khabarovsk and Primorskij Territories); collected in forest on *Quercus* spec.

Host.— Unknown.

Etymology.— The new species is named in honour of one of its collectors, Dr Dmitriy R. Kasparyan.

### Relationships

Despite the discussed habitual peculiarities and the unique morphological features, the new genus is best placed in the Cremastinae, based on the possession of the main diagnostic character of this subfamily (i.e., the sclerotized bridge between the basitarsus and the socket of spurs).

Within the Cremastinae the new genus is quite isolated, because of the lack of most additional diagnostic characters peculiar to the subfamily. The only genus that may be confused with *Tersoakus* gen. nov. to some extent, is the Afrotropical genus *Belesica* Waterston, 1929. The only known species of the genus, *B. pictipennis* (Tosquinet, 1896), shares the enlarged head and mandibles, the very wide temple; the reduced posterior ocelli, the transverse depression of the mesopleuron, the shortened propodeum and ovipositor, with *Tersoakus*. However, the new genus is easily distinguishable from *Belesica* in having a different venation of the forewing and the presence of the apical tooth of the fore tibia.

The peculiarities of the morphology of the new genus are of particular interest for the phylogenetic reconstructions of the Cremastinae. For instance, the fusion of the apex of disco-cubital vein and the base of second abscissa of radius of the fore wing, the combination of short radial cell and elongate forewing membrane, and also the shape of the glymma of the first tergite of *Tersoakus* are shared with representatives of the subfamily Tersilochinae. The large hypopygium of *Tersoakus* is shared with some Phrudinae and Ctenopelmatinae. Also, all known Ctenopelmatinae have the apex of fore tibia with an outer tooth.

I would suspect that host associations of the new genus are quite peculiar and different from those known for the rest of Cremastinae (being associated with hosts inhabiting the xerophytic habitats). The peculiar shape of ovipositor and the type locality data (forest, on oak) are the background for such an assumption.

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