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Nakamura, Takeyuki
The Shirakami Institute for Environmental Sciences, Hirosaki University

Saigusa, Toyohei
Baikoen

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A New Japanese Species of Trichoceridae (Diptera) Belonging to the *Trichocera rectistylus* Species Group Hitherto Unknown from East Asia

Takeyuki NAKAMURA¹⁾ and Toyohei SAIGUSA²⁾

1) The Shirakami Institute for Environmental Sciences, Hirosaki University, Bunkyo-cho 3, Hirosaki City, Aomori Prefecture, 036-8561 Japan

2) Baikoen 2-7-1-402, Chuo-ku, Fukuoka City, Fukuoka Prefecture, 810-0035 Japan

Abstract. A new species, *Trichocera* (*Trichocera*) *tsugaruensis* sp. nov., is described from Honshu, Japan. This species belongs to the *Trichocera rectistylus* species group which has ever been known only from Europe. This is the first record of the species group from East Asia.

Key words: Trichoceridae, *Trichocera*, *rectistylus* group, new species, Japan.

Introduction

The *Trichocera rectistylus* species group was established by STARÝ (1998) for four new species, *Trichocera rectistylus* STARÝ, 1998 (Czech Republic), *Trichocera basidens* STARÝ, 1998 (Slovakia and Czech Republic), *Trichocera altipons* STARÝ, 1998 (Czech Republic) and *Trichocera transversa* STARÝ, 1998 (Poland). And, he (2001, 2009) added *Trichocera polanensis* STARÝ, 2001 from Slovakia, and *Trichocera villosa* STARÝ, 2009 from Czech Republic to this group, so that, it consists of six European species in total.

According to the earlier papers on this species group (STARÝ 1998, 2001), at the time of their original descriptions, every constituent of the group was supposed to be extremely rare, and some of the species were described from a single specimen. Though STARÝ (2009) reported additional specimens of *T. altipons*, *T. basidens*, *T. polanensis*, and *T. rectistylus*, the known distribution of the group is mainly limited to Europe (Czech Republic, Slovakia, Poland and Finland (?)).

This species group is characterized by the unique features of its aedeagal complex, as follows: short and broad paramere which is bent at base and straight distally; basal part of parameres fused to each other, forming phallosome on dorsal surface of aedeagus; lateral projection of paramere (projection of dorsal gonocoxal bridge) large and

strongly leaning towards paramere; and basal apodeme of paramere reduced or sometimes completely absent.

Females of the species group were first reported by STARÝ (2009) for five species except for *T. transversa*. They can be distinguished from other *Trichocera* species by extensive modifications of female terminalia in the following features: fusion of 8th to 10th terga; fusion of anterior part of the fused terga (the area of 8th tergum) with 8th sternum (The only exception is *T. polanensis*. In this species, the terga and 8th sternum are separate. However in *T. altipons* and *T. rectistylus*, not only the area of 8th tergum of the fused terga but also the area of 9th tergum is fused laterally with posterior part of 8th sternum); reductions of 9th sternum and its apodeme (a long and slender apodeme is present in *T. polanensis*); short and broad cerci with rough surface; and reduced or entirely indiscernible spermathecae.

In the course of our faunistic survey of Japanese Trichoceridae, we found a peculiar looking species with straight parameres of male genitalia, which turned out to be a member of the *Trichocera rectistylus* species group, and to be new to science. In this paper, we describe the first species of the species group from East Asia.

Description

Trichocera tsugaruensis sp. nov. (Figs. 1-3)

Diagnosis

Medium sized species with dark brown coloration. Legs dark ochereous brown. Wing with a brownish tinge, without distinct markings. Genitalia: posterior margin of 9th sternum deeply incurvate and V-shaped; ventral gonocoxal bridge extraordinarily broad, triangular in shape with its posterior extremity beyond level of gonocoxite-gonostylus articulation, and with a deep narrow incision at middle; gonostylus cylindrical and slightly curved inward; paramere absent; phallosome strongly sclerotized, keeled along dorsomedian line, and projecting posteriorly.

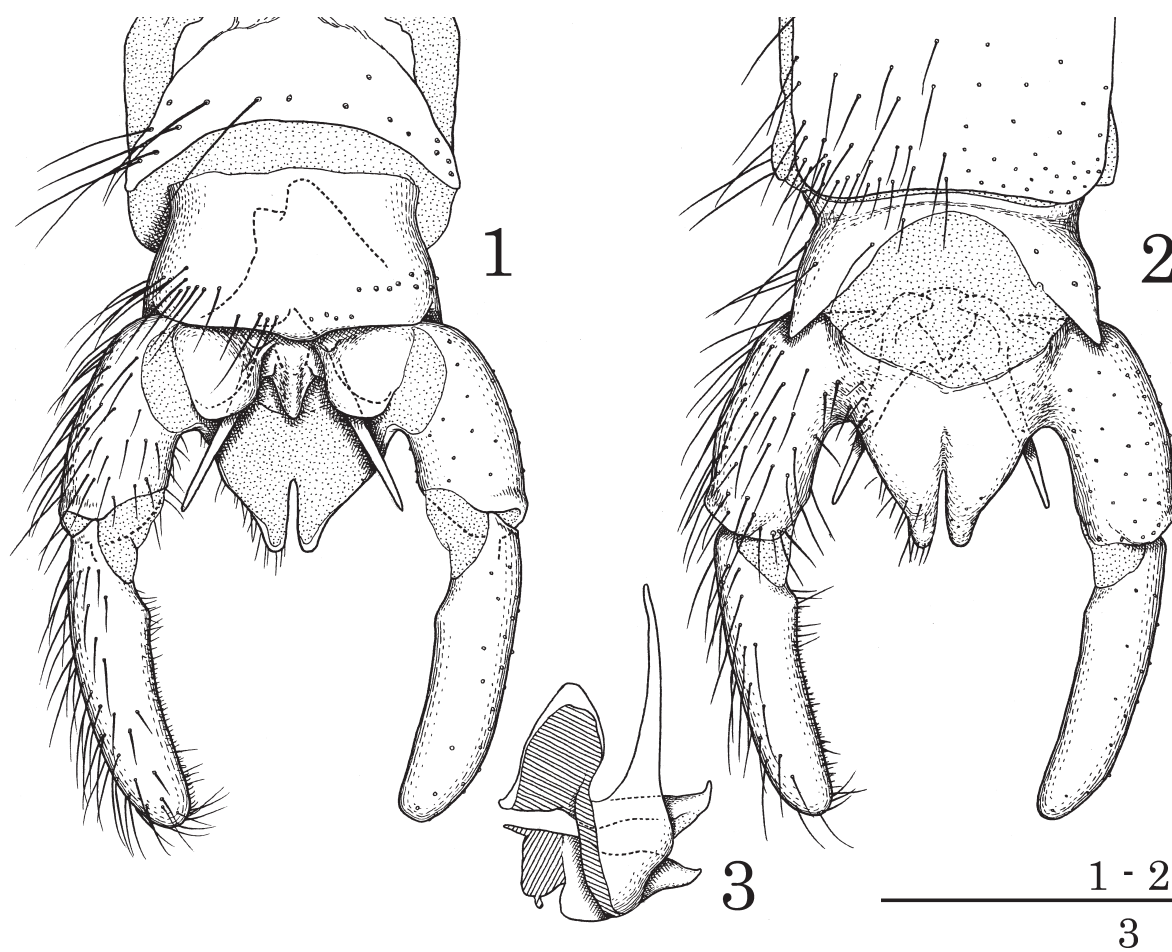
Male. Body length 3.8-4.7 mm, wing length 5.2-6.5 mm.

Head: Cranium, mouthparts and antenna dark brown,

yellowish brown pollinose; occiput, vertex and face clothed with dark brown setae; eye blackish brown. Antenna long, 2.8-3.0 times as long as thorax, consisting of 16 segments; 1st to 3rd flagellomeres densely clothed with pale curved setae, remaining flagellomeres covered with straight brown setae; 1st flagellomere pale brown at base, 1.6 times as long as 2nd.

Thorax: General coloration dark brown to blackish brown, pale brown pollinose; mesopleuron bare. Legs dark ochereous brown; trochanters and basal parts of femora somewhat paler; coxae and trochanters clothed with longish yellow setae; remainder of segments covered with brown setae; tibial spurs blackish brown.

Wing 3.6 times as long as broad. Membrane subhyaline with a brownish tinge, without distinct markings; pterostigma slightly darker than ground; veins brown. Venation: Crossvein sc-r opposite to basal 1/4-1/3 of Rs; R2+3 1.0-1.5 times as long as R2+3+4; basal part of R5 absent or shorter than 0.3 times as long as crossvein r-m; cell m1 0.3-0.5 times as long as cell r5. Halter as long as



Figs. 1-3. *Trichocera tsugaruensis* sp. nov. - 1: Male terminalia, dorsal view; - 2: Male terminalia, ventral view; - 3: Aedeagal complex, lateral view. Scales = 0.25mm.

thorax, pale brown at base and shaft, dark brown at knob.

Abdomen uniformly dark brown; 8th tergum bearing a row of long setae along posterior margin and some scattered setae on lateral portion; 8th sternum clothed with scattered setae on posterior half.

Genitalia dark brown; 9th segment narrowest at base weakly broadened posteriorly; epandrium scatteredly shortsetose along posterior margin; hypandrium deeply emarginate in V-shape along posterior margin, bearing some setae on sublateral portion; ventromedian portion of 9th segment very short, and glabrous. Gonocoxite, 2.4 times as long as wide, 1.7 times as long as lateral margin of 9th segment; gonocoxite clothed with longish setae; ventral gonocoxal bridge extraordinarily broad, strongly and triangularly projected posteriorly beyond level of gonocoxite-gonostylus articulation, and deeply incised at middle; ventral surface of ventral gonocoxal bridge swollen and curved in lateral aspect. Gonostylus 1.4 times as long as gonocoxite, cylindrical and slightly curved inward, clothed with longish setae on lateral surface and densely clothed with short piles on mesial surface. Process of dorsal gonocoxal bridge broad, rounded apically. Paramere almost straight, rising at almost right angles to the long axis of phallus, moderately divergent from each other; basal apodeme of paramere absent. Phallosome strongly sclerotized, keeled along dorsomedian line, and projecting posteriorly.

Female unknown.

Holotype. Male, Ichinowatari, Hirosaki City, Aomori Pref., Honshu, Japan, 28-x-1996, T. Nakamura leg.

Paratypes. 3 males, same data as holotype.

Type depository and conditions of the materials

Holotype and a paratype are deposited in the collection of the Kyushu University Museum, Fukuoka, Japan, and the rest of paratypes are in the Shirakami Institute for Environmental Sciences, Hirosaki University, Aomori, Japan.

The specimens are in dried condition. The dissected male terminalia are preserved in micro vials with glycerine and pinned under its body with labels.

Etymology

Tsugaru is the old name of the province where the type materials were collected.

Discussion

Judging from the structure of aedeagal complex, *T. tsugaruensis* sp. nov. belongs to the *T. rectistylus* species

group undoubtedly. The present new species shares the following characters with every species of the group: large excision of posterior margin of 9th sternum; short and distally (at least) straight paramere; large process of dorsal gonocoxal bridge; and strongly sclerotized phallosome. Condition of paramere in the present new species is surprisingly similar to that of a Slovakian species, *T. polanensis*. In these two species, basal apodeme of paramere is completely absent; basal portion of paramere is widened ventrally; paramere itself is straight from its base, rising at almost right angles to the long axis of phallus; and a pair of parameres are divergent from each other making v-shape in dorsal aspect.

The most outstanding diagnosis of *T. tsugaruensis* sp. nov. is the shape of ventral gonocoxal bridge. The ventro-basal lobes of the gonocoxites become broader towards middle, fused completely at anterior half, and divided from each other by a deep notch at posterior half. As a result, the posterior margin of the bridge is strongly and triangularly prominent on both sides in *T. tsugaruensis* sp. nov. In the European species of the group, the bridge is always divided at middle, and never be shaped like this. Gonocoxite itself seems to be slenderer in *T. tsugaruensis* sp. nov. than in European species.

The type materials were collected on forest paths along a narrow stream in a deciduous tree forest, some 200 meters above sea level. *Trichocera tsugaruensis* sp. nov. is very rare, as the European species are. Almost nothing is known about the bionomics of this new species, as the specimens were collected together with hundreds of other species, and as we became aware of this interesting fly only when we examined them under a microscope in the laboratory.

Unfortunately, we could not find the females of this species. For a better understanding of the systematic position of this new species, detecting its female is an important subject for future study.

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