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The genus *Psilotreta* Banks (Trichoptera: Odontoceridae) in Vietnam

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Abstract. Eight species of the genus *Psilotreta* Banks (Trichoptera: Odontoceridae) are currently known from Vietnam: *P. albogera* Mey 1997, *P. androconiata* Mey 1997, *P. bidens* Mey 1995, *P. enikoae* Oláh and Johanson 2010, *P. frigidaria* Mey 1996, *P. jaroschi* Malicky 1995, *P. papaceki* Malicky 1995, *P. spitzeri* Malicky 1995. A **new species**, *Psilotreta kurenschikovorum*, from Thua Thien-Hue Province is herein described. The new species differs from other species of the genus by peculiarities in wing venation, by the unusual shape of epicranial suture on the head, and by the bifid apical segment of the inferior appendage. Additional province and collection information for previously recorded species are included.

Key words. Caddisfly, Trichoptera, Odontoceridae, *Psilotreta*, new species, Vietnam

Introduction

Currently, 56 species of the genus *Psilotreta* Banks (Trichoptera: Odontoceridae) are known in the World, most of which occur in the Oriental Region (Morse 2010). Eight species of this genus are currently recorded from Vietnam. In this paper, we present several new provincial records for *Psilotreta* in Vietnam. In addition, a new species, *Psilotreta kurenschikovorum*, is described and illustrated below based on 6 adult males collected from Bach Ma National Park in Thua Thien-Hue Province.

All species of *Psilotreta* collected in Vietnam have been found in 6 provinces located in the upper half of the country. This portion of Vietnam has greater relief than the southern half of the country. The collection locality for the new species represents the southernmost province for which *Psilotreta* species are known. Four of the 8 species of *Psilotreta* are known from Lao Cai Province in the extreme north.

The information presented in this paper was based on material collected by institutional personnel of the Royal Ontario Museum, Toronto (**ROME**; 1995-2000) and the American Museum of Natural History, New York (**AMNH**; 1998-1999). Both museums conducted surveys on multiple taxa in Vietnam to establish baseline information about the biodiversity of that country.

Material and methods

Specimens were collected with Malaise or UV light traps. Abdomens were removed and cleared in 10% KOH, then washed in water and put in glycerin for further examination and drawing. All material is stored in 80% ethyl alcohol and deposited in the Royal Ontario Museum or American Museum of Natural History. Names of new provincial records are indicated in the bold. Terminology follows that of Schmid (1998).

***Psilotreta albogera* Mey**

Psilotreta albogera Mey 1997: 202; Yuan and Yang 2008: 613.

Distribution. China, Vietnam (Lao Cai).

***Psilotreta androconiata* Mey**

Psilotreta androconiata Mey 1997: 202.

Distribution. Vietnam (Lao Cai).

***Psilotreta bidens* Mey**

Psilotreta bidens Mey 1995: 216.

Material examined. **Vietnam**: Nghe An Province, west of Con Cuong, Khe Moi Forestry Camp, margin of 3 m tributary of Khe Moi River, Malaise trap, 24-29 October 1994, D. Currie, 1 male, ROM 946105, ROME.

Distribution. Vietnam (Lao Cai, **Nghe An**).

***Psilotreta enikoae* Oláh and Johanson**

Psilotreta enikoae Oláh and Johanson 2010: 99-101.

Material examined. **Vietnam**: Thua Thien-Hue Province, Nam Dong District, Huong Loc commune, ca. 9 km south-east Khe Tre, Malaise trap, 26 May – 1 June 2002, C. Darling, 6 males, 7 females, ROM 2002508, ROME.

Distribution. Vietnam (Quang Tri, **Thua Thien-Hue**).

***Psilotreta frigidaria* Mey**

Psilotreta frigidaria Mey 1997: 202.

Material examined. **Vietnam**: Lao Cai Province, 1.5 m wide stream near mountain pass on road from Sapa to Lai Chau, Malaise trap, 8-12 May 1995, D. Currie, J. Swann, 3 males, ROM 956040, ROME.

Distribution. Vietnam (Lao Cai).

***Psilotreta jaroschi* Malicky**

Psilotreta jaroschi Malicky 1995: 871; Oláh and Johanson 2010: 101.

Distribution. Vietnam (Hoa Binh, Tam Dao National Park*, Vinh Phúc).

* **Note**. Tam Dao National Park is part of three Vietnamese provinces (Thai Nguyen, Tuyen Quang, and Vinh Phúc). Oláh and Johanson (2010) did not specify from which province the collection was made.

***Psilotreta papaceki* Malicky**

Psilotreta papaceki Malicky 1995: 872, 2010: 325; Oláh and Johanson 2010: 102.

Material examined. **Vietnam**: Ha Tinh Province, Huong Son, 300 m, 18°21'N, 106°15'E, flight-intercept trap, 5-22 May 1998, L. Herman, 1 male, AMNH; 200 m, 18°21'N, 105°15'E, Malaise trap, 15 May 1998, J. Carpenter, K. Long, D. Grimaldi, L. Herman, D. Silva, 1 male, 1 female, AMNH.

Distribution. Laos, Vietnam (**Ha Tinh**, Tam Dao National Park*, Vinh Phúc).

***Psilotreta spitzeri* Malicky**

Psilotreta spitzeri Malicky 1995: 871; Oláh and Johanson 2010: 105.

Material examined. **Vietnam**: Vinh Phúc Province, Tam Dao Hill Station, lower waterfall of stream flowing through town, UV light, 11 May 1996, B. Hubley, C. Darling, 1 male, 1 female, ROM 961030, ROME.

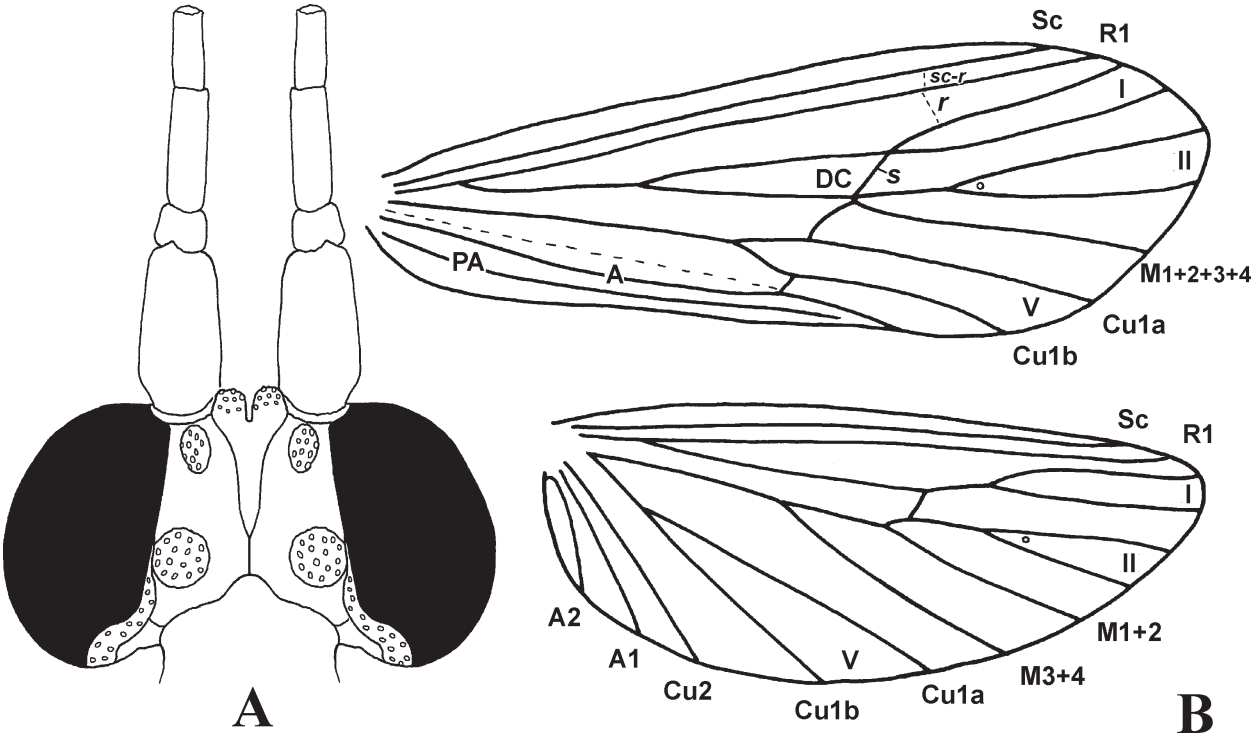

Figure 1. *Psilotreta kurenschikovorum* sp. n., male holotype: **A)** Head, dorsal; **B)** Wings (abbreviations: Sc – subcostal vein; R – radial vein; M – median vein; Cu – cubital vein; A – anal vein; DC – discoidal cell; *sc-r*, *r*, *s* – crossveins).

Distribution. Vietnam (Tam Dao National Park*, Vinh Phúc).

***Psilotreta kurenschikovorum* sp. n.**
Fig. 1-2

Diagnosis. *Psilotreta kurenschikovorum* is unique compared to all other species of the genus by fork I in the forewing short, arising at the junction of R2+3 and crossvein *s*; by the absence of an anal cell; and, by the hindwing with fork I petiolate and R4+5 without a base (discoidal cell incomplete). In addition, it differs by the shape of the epicranial suture on the vertex, with long arms; by the bifid apical segment of the inferior appendage; and, by the presence of nipple-like processes on the bottom of the endotheca. *Psilotreta kurenschikovorum* sp. n. shares similarities with a group of *Psilotreta* species (e.g., *P. albogera* Malicky 1995, *P. aran* Malicky 2009, *P. dardanos* Malicky 2000, *P. kwantungensis* Ulmer 1926, and *P. quin* Malicky and Chantaramongkol 1991). In all these species, the basal segment of the inferior appendage has a developed posteroventral portion, and the apical segment arises apicodorsally.

Adult. Length of male forewing: 7.1-7.4 mm. Head, thorax and legs light brown to yellowish; setal warts slightly darker than background. Eyes large, globular. Head nearly as long as wide in dorsal view. Frons with a pair of elongated warts subtending eyes below antennae. Vertex with Y-shaped epicranial suture having long arms (more than 2/3 of entire length of head), surrounding pair of prominent frontal warts (Fig. 1A); and with antennal warts oval, located below antennal socket between edge of eye and epicranial arm; posterior warts larger than antennal warts, round, connected to anterior margin of very long posterolateral warts subtending eyes posteriorly. Antennae slightly longer than wings. Scapus subequal in length to head. Maxillary palpi thin, segments 3, 4, and 5 subequal in length, longer than segments 1 and 2. Labial palpi segment 3 slightly longer than segment 2. Wings (Fig. 1B) elongate, subequal in width. Forewings yellow-brownish with a few small light spots scattered in anterior part; hind wings paler.

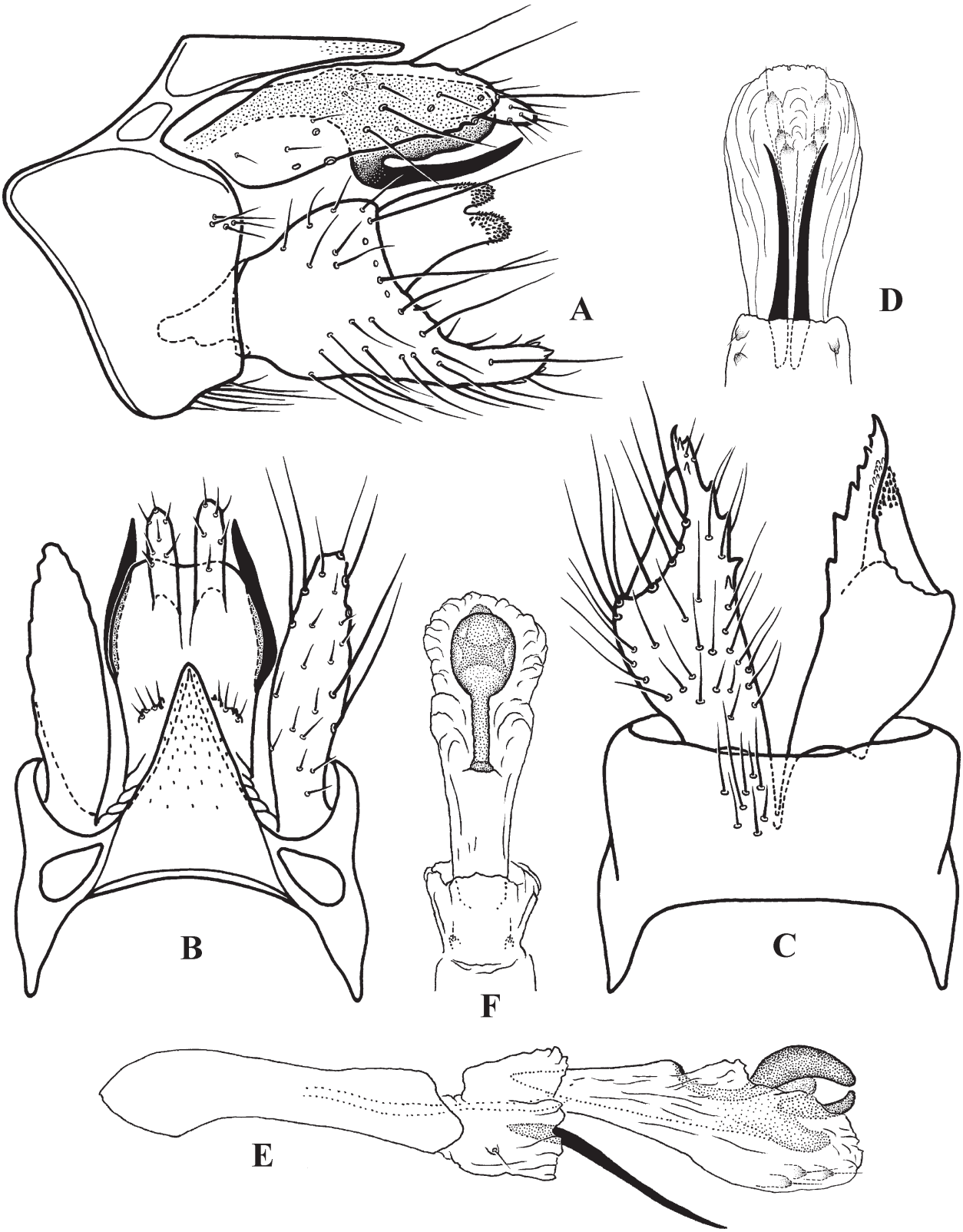

Figure 2. *Psilotreta kurenschikovorum* sp. n., male genitalia. Holotype: **A)** Lateral; **B)** Dorsal; **C)** Ventral; **D)** Endotheca ventral. Paratype: **E)** Phallic apparatus, lateral; **F)** Endotheca dorsal (parameres not illustrated).

Forks I, II, and V present in both wings. Discoidal cell medium size and situated in middle of forewing; absent in hind wing. Fork I in forewing short, arising at junction of R2+3 and crossvein *s*; fork I in hind wing petiolate. Crossveins *sc-r* and *r* faint in forewing, indistinct in hind wing. In forewing, M without base (no thyridial cell), represented by single apical branch, originating from R4+5; Cu2 indistinct or missing; single anal vein without basal cell; postanal vein long. In hind wing, R4+5 without a base; M divided to M1+2 and M3+4; fork V very long; 2 anal veins; sparse long hairs along posterior edge of anal area.

Male genitalia (Fig. 2). Segment IX stout, with anteromesal margin prominently produced anteriorly; posterior margin nearly straight below preanal appendage; a few setae located posterolaterally and ventromesally. Dorsum of segment IX triangular, finely granular. Preanal appendage very large, evenly elongate, bearing scattered long setae. Segment X truncated, with shallow depression posteromesally; subbasally with pair of setal warts; subapically with pair of finger-like lobes covered with setae. Intermediate appendage located on side of segment X, saber-like, slightly curved posterodorsally in lateral view and posteromesally in dorsal view; longer than main body of segment X, but shorter than subapical finger-like lobes of segment. Basal segment of inferior appendage thick, with elongate posteroventral portion nearly as long as preanal appendage and protruding slightly beyond apical segment of inferior appendage; in lateral view, apical segment bifid, arising apicodorsally, and covered with numerous short, dark spines. Phallic apparatus with tubular sclerotized phallotheca; endotheca membranous with large phallotremal sclerite, dorsal part spoon-shaped in dorsal view; 2 slender, acute parameres located ventrally; 3 pairs of membranous, nipple-like processes on bottom of distal portion of endotheca, with tips lightly sclerotized, each with straight seta located off-center of tip. In holotype, basal portion of endotheca bearing 2, similar nipple-like processes located posterolaterally on left side, and 1 process on right side; paratype specimens with single process on each side.

Female and immature stages. Unknown.

Holotype male: Vietnam, Thua Thien-Hue Province, Bach Ma National Park, Parashorea trail, dry stream bed in dipterocarp forest, 9 km from park entrance, 1000 m, 16°12'2.4"N, 107°50'49.6"E, Malaise trap, 26 May - 13 June 2001, C. Darling and N. Tatarnic (ROM 2001503, ROME). **Paratypes:** 5 males, same data as holotype (ROM 2001503, ROME). All types were deposited in the Royal Ontario Museum.

Distribution. Known only from the type locality in Thua Thien-Hue Province (Vietnam).

Etymology. This species is named after our friends, Andrei and Natalia Kurenschikov, living in Port Vanino, Russia.

Remarks. The nipple-like processes on the bottom of the endotheca are suggestive of a tactile function used during copulation.

Taxonomic Notes. Among the Asian *Psilotreta* species keyed by Parker and Wiggins (1987: 32), *P. kurenschikovorum* sp. n. is most similar to *P. kwantungensis* Ulmer and *P. lobopennis* Hwang. The following changes are made to the aforementioned key:

2(1). Inferior appendages with ventral lobe of basal segment subequal in length to apical segment .... ***P. kwantungensis* Ulmer**

— Inferior appendages with ventral lobe of basal segment extending beyond apex of apical segment **3**

3(2). Apical segment of inferior appendage bifid; fork I of forewing short, arising at junction of R2+3 and crossvein *s* ..... ***P. kurenschikovorum* sp. n.**

— Apical segment of inferior appendage acuminate; fork I of forewing long, arising at a point halfway down the discoidal cell ..... ***P. lobopennis* Hwang**

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