

A new species of the genus *Neurocyta* (Trichoptera: Phryganeidae) and new Caddisflies records from Asia

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Abstract. *Neurocyta tseramensis* new species is described, diagnosed and illustrated with drawings of the genitalia and a habitus photo. The four species of this genus from the Oriental Biogeographic Region are: *N. arenata* Navas 1916, *N. brunnea* Martynov 1930, *N. minor* Moseley 1935, and *N. drukpa* Schmid 1975. Also, new records of several caddisfly species in various families from Asia are presented. Their habitats are restricted to the Himalayas.

Keywords. Caddisflies, genitalia structure, new species, Kazakhstan, Nepal, Pakistan, Thailand

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Introduction

The genus in the family Phryganeidae was established and described by Navas (2016) from India, West Bengal. Kimmins (1950) assigned *Oopterygia brunnei* Martynov 1930 type species as a junior synonym to the *Eubasilissa* genus. He supposed that the *Neurocyta* genus was probably an aberrant *Eubasilissa*. The name *Neurocyta* is based on two Greek roots: *neuron* 'nerve', and *kytos* 'cell', with reference to the venation of the hind wing (Schmid 1959). *Neurocyta* and *Eubasilissa* are considered sister groups because male genitalic structure in the two genera is essentially similar. The species of the genus *Neurocyta* inhabit the cool, rapid flowing streams in the rhododendron forest of the alpine zones at 2000–4000 m a.s.l. of the Himalayas (Holzenthal *et al.* 2007), and neighbouring countries: India (Sikkim), West Bengal, China (Tibet), Bhutan, and Myanmar (Malicky 2007, Wiggins 1998). They were not reported from Nepal before. The total number of species of the genus *Neurocyta* is 4 (Morse 2018) and all four are confined to the Oriental Biogeographic Region.

Material and methods

The specimen in this study was captured with a light trap and is stored in 75% ethanol. The posterior of the abdomen of the holotype male was cleared in 20% lactic acid and the phallic apparatus everted (Blahnik & Holzenthal 2004). Then it was placed in ethanol for examination under a stereomicroscope (Nikon, SMZ-10-2x) and sketched. For the identification of species the works by Kiss (2011, 2015, 2017), Kiss & Malicky (2003), Schmid (1959, 1960, 1961, 1968, 1975), Wiggins (1998), and Ross 1956 were used. The terminology follows that of Navas (1916), Martynov (1930), Schmid (1975), and Wiggins (1998). This species was caught by light trapping at the altitudes of 3900 m in Nepal, East Nepal, the Deorali Danda, Taplejung District, near the Gunsh stream. The rest of the species were collected in Kazakhstan, Pakistan, Thailand, and Nepal.

Results

Species description

Neurocyta tseramensis new species (Figs 1–8).

Type material – Holotype: ♂, male, Nepal, Deorali Danda, Tseram, 3900 m elevation, by light trapping, 23 June 1998, leg. Márton Hreblay and Balázs Benedek (gen. prep. No.136, Ottó Kiss, in coll. Mátra Museum, Gyöngyös, Hungary).

Description – Male (in ethanol, n=1). Body length 19.65 mm, length of each forewing 25.1 mm, width of each forewing 10.5 mm (Fig. 7). Hind wings 20.3 mm long and 11.5 mm broad; length of each antenna 18 mm, brownish, setae short and dark brown. Head and thorax dark brown, with long hairs; antennae dark brownish, with pale ring; legs reddish-brown, with short hairs; tibiae and tarsi reddish-brown (Fig. 7). Spines black, spurs reddish-brown. Abdomen brownish, somewhat reddish. Forewings broad, almost oval, with convex upper margin, rounded at apex, apical margin somewhat incurved. Ground-colour of male forewings pale, greyish testaceous or somewhat brownish, with rounded pale confluent spots; fringe very short, pale yellowish. Membrane finely granulose, covered with short brownish hairs (Fig. 7). Hind wings almost as broad as forewings but little paler, remains of reticulation visible only in apical portions of wings.

Male genitalia (Figs 1L, 2D, 3V, 4C, 5L, 6L). Segment IX (Figs 1L, 3V) subrectangular, ventrally shorter than dorsally, with long hairs dorsally and pointed protrusion on base in lateral view. Segment X (Figs 1L, 2D, 3V) subtriangular membrane, subdivided by a median fissure into two portions, tapered apically, broad ventrally, with long apical hairs and sinuous margin in dorsal view. Preanal appendage (Figs 1L, 3V) long and narrow, ribbon-like, shorter than posterior end of segment X. Basal segment of each inferior appendage trapezoidal with concave upper margin and slightly convex lower margin, apical segment of each inferior appendage short in lateral view (Figs 1L, 2D, 3V). Phallotheca short and stout, heavily sclerotized, endotheca also stout, concave, with ventral aperture and two dorsal sclerites and broad projection posterocaudally in lateral view (Figs 5L, 6L).

Diagnosis: This new species is similar to *Neurocyta brunnea* (Martynov) / *Oopterygia brunnea* Martynov 1930/ from China (Tibet, Yatung), but differs from it in that:

Segment X is subdivided by a median fissure into two portions (not, only posterior portion subdivided).

Praeanal appendages long and narrow, ribbon-like, shorter than posterior end of segment X (not, forms short protrusions).

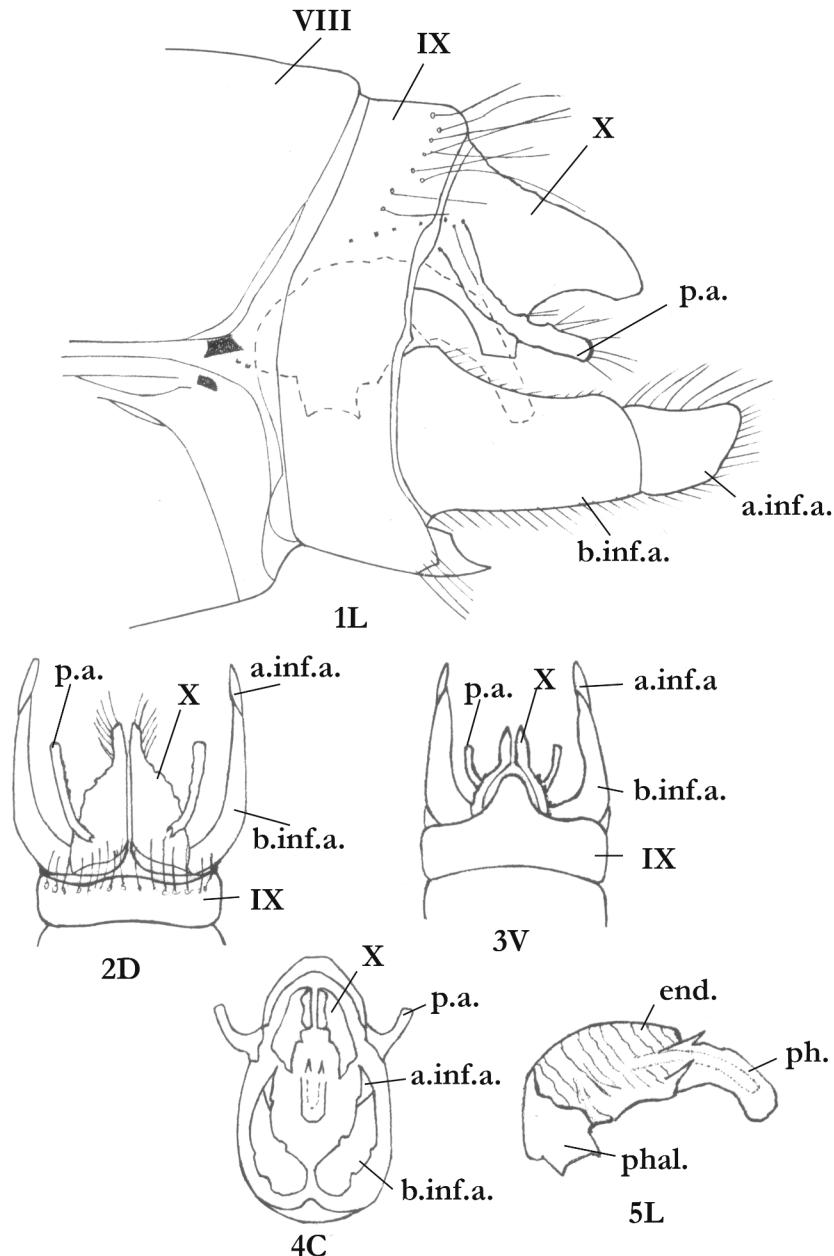
Endotheca stout, concave with ventral aperture and two dorsal sclerites (not, elongated, with four sclerites).

Etymology. Named for the place where the new species was collected.

Female. Type material – Paratype ("allotype"). 2 ♀♀, **Nepal**, East Nepal, Deorali Danda, Tseram, 3900 m elevation, 22 June 1998, leg. Márton Hreblay and Balázs Benedek, 2 females (gen. prep. No. 137, Ottó Kiss, in coll. Mátra Museum, Gyöngyös, Hungary).

Female (in ethanol, n = 2). Body length 21.2 mm, length of eah forewing 27 mm, width of each forewing 11.2 mm. Hind wings 23.5 mm long and 11 mm broad; length of each brownish antenna 14 mm, setae short and dark brown. Head and thorax dark brown, with short hairs.

Female genitalia (Fig. 8). Subgenital plate terminated in sclerotized lobe. Vaginal pouch short, with long, elongated spermatheca, bursa copulatrix with broad base, stout, inclined medial section and obtuse apex. Paired cerci pointed.



Figures 1–5. *Neurocyta tseramensis* new species, holotype male genitalia: 1L, lateral view; 2D, segment X, preanal appendage, dorsal view; 3V, segment X, inferior appendage, ventral view; 4C, inferior appendage, caudal view; 5L; phallic apparatus, lateral view; Abbreviations: a.inf.a. = apical segment of inferior appendage; b.inf.a. = basal segment of inferior appendage; end. = endotheca; phal. = phallotheca; ph. = phallicata; VIII, IX, X. = segments VIII, IX, X.



Figure 6. *Neurocyta tseramensis* new species, holotype male, phallic apparatus, lateral view.

Figure 7. *Neurocyta tseramensis* new species, holotype male habitus, lateral view.

Figure 8. *Neurocyta tseramensis* new species, paratype ("allotype"), female genitalia, with detail of internal structure, lateral view.



Faunistic records of Trichoptera

Apatanidae

Apatania asion Malicky, 1997

Material examined (in ethanol) – **Nepal**, Solu Khumbu, 10 km E of Jiri, Deorali, 2800 m elevation, 15 March 1999, leg. Márton Hreblay and István Soós, 2 males.

Apatania auctumnalis Mey & Malicky 1993

Material examined (in ethanol). – **Nepal**, Ganesh Himal, 1 km N of Nesim, 2600 m elevation, 11 March 1996, (85°17' E, 28°08' N), leg. László Bódi and György Makranczy, 6 males, 1 female.

Apatania bhimagada Schmid, 1968

Material examined (in ethanol). – **Nepal**, Ganesh Himal, 1 km N of Nesim, 2600 m elevation, 11 March 1996, leg. László Bódi & György Makranczy, 1 male. – **Nepal**, Solu Khumbu, 1 km E of Sete, 3100 m elevation, 08 March 1999, leg. Marton Hreblay and István Soós, 1 male.

Apatania kalariana Schmid, 1961

Material examined (in ethanol). – **Pakistan**, Prov. Jammu & Kaschmir, Khirimi valley, 8 km NW of Chitim, Chauki, 3150 m elevation, 21 July 1998, leg. Tibor Csővári and László Mikus, 21 males. – Prov. Jammu & Kaschmir, Astor valley, Rama, (35°20' N, 74°53' E) 3100 m elevation, 20 July 1998, leg. Tibor Csővári and László Mikus, 4 males.

Glossosomatidae

Glossosoma dentatum Mc Lachlan, 1879

Material examined, (in ethanol). – **Nepal**, Ganesh Himal, 2 km W of Thangjet, 2300 m elevation, 08 March 1996, – Phede, 2770 m elevation, leg. Márton Hreblay, 1

(Murre), 2835 m elevation, 27 June 1997, leg. Márton Hreblay and Krisztina Csák, 13 males. – **Nepal**, Mt. Kalinchok, 8 km NNE of Muldi (Murre), 3100 m elevation, 28 June 1997, leg. Márton Hreblay and Krisztina Csák, 11 males. – **Nepal**, Mt. Kalinchok, 3 km SW of Kalinchok peak, 2900 m elevation, 30 June 1997, leg. Márton Hreblay and Krisztina Csák, 7 males. – **Nepal**, Mt. Kalinchok, 2 km N of Tarebhir, 2600 m elevation, 02 July 1997, leg. Márton Hreblay and Krisztina Csák, 22 males. – **Nepal**, Mt. Kalinchok, 5 km W of Bigu, 2300 m elevation, 03 July 1997, leg. Márton Hreblay and Krisztina Csák, 1 male.

Wormaldia relicta Martynov 1935

Material examined (in ethanol). – **Nepal**, East Nepal, Surke Danda, 4 km NE of Suketar, Lali Kharka, 2350 m elevation, 09 May 1997, leg. Márton hreblay and Lajos Szécsényi, 1 male.

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