BRAUERIA (Lunz am See, Austria) 20:5-6 (1993)

A NEW SPECIES OF CADDISFLY OF THE GENUS RHYACOPHILA PICTET (TRICHOPTERA: RHYACOPHILIDAE) FROM EASTERN ASIA

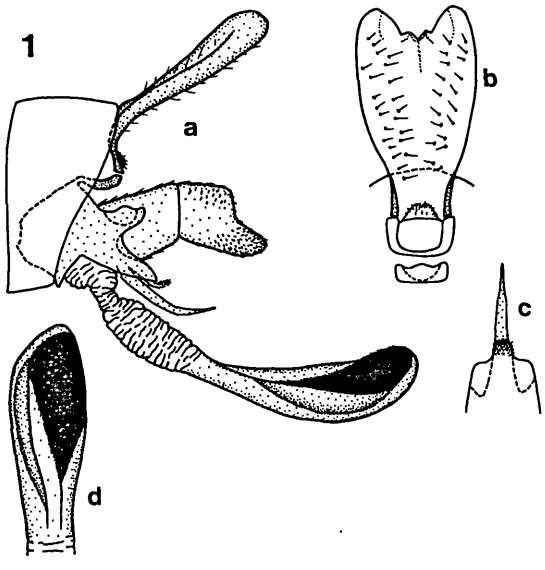
Tatyana I.Lukyanchenko

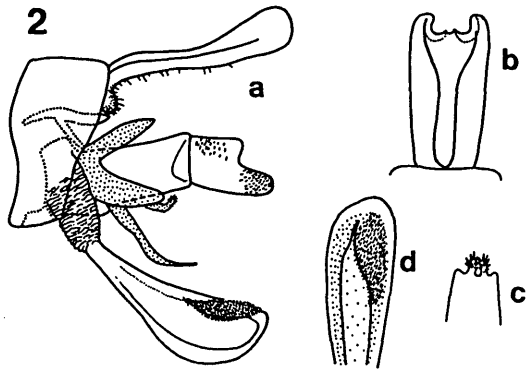
Rhyacophila arefini n.sp. belongs to the philopotamoides branch, sibirica group (Schmid, 1970). It is placed in a group of sister species: Rhyacophila narvae Navas (Holarctic), R.tonneri Mey (Korea) and R.transquila Tsuda (Sakhalin, Kurile Islands, Japan). Comparison of the males has shown that they are very close to eachother, differing in details of genital structure.

Rhyacophila arefini n.sp.

Male: Body length 6,2 - 8,2 mm, dorsally dark brown. Head dark brown to black, warts somewhat lighter, golden yellow setae, brown antennae and light brown palps. The forewings are yellowish brown with brown veins, pterostigma darker, wing-span 16,4 - 19 mm. Ventral processes present on abdominal segments 6 and 7.

Male genitalia (Fig.1): The main colour is

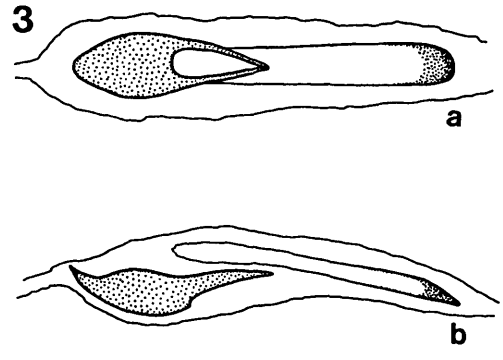




yellowish brown. Dorsal branch of the tenth segment is long, gradually thickened and widened distally. Posterior margin broadly excised (a, b). Tergal strap reduced, the U-shaped apical band directly joins the tenth segment with the phallobase. Dorsal process fused with the aedeagus has scoop-like shape, semicircular in caudal view with a figured margin (a, b). The upper appendix of the aedeagus has a rounded spinulate medial lobe which is longer than the lateral ones (c). The ventral appendix of the aedeagus is cylindrical, curved and acute (a, c). The ventral lobe of the aedeagus is erectile, distal part is spoon-like, asymmetrical. The unpaired cushion is covered with yellowish brown dense setae (d). Second article of the inferior appendages with two portions, ventral portion rounded at apex, nearly twice longer than dorsal one (a).

Rhyacophila arefini n.sp. and R.tonneri (Fig.2) are very similar, but the tenth segment of the first species is somewhat shorter with a different form of excision. Dorsal processes of the phallus and medial lobes of the upper appendix of the aedeagus differ in form and size.

Female: Body length 6,8-8,0 mm, wing span 16,6 - 18,5 mm. Colour similar to male. Ventral process present on abdominal segment 6. Segment 7 dark brown, cone-shaped, dorsally distal margin with moderate in depth excision. Genitalia (Fig.3):

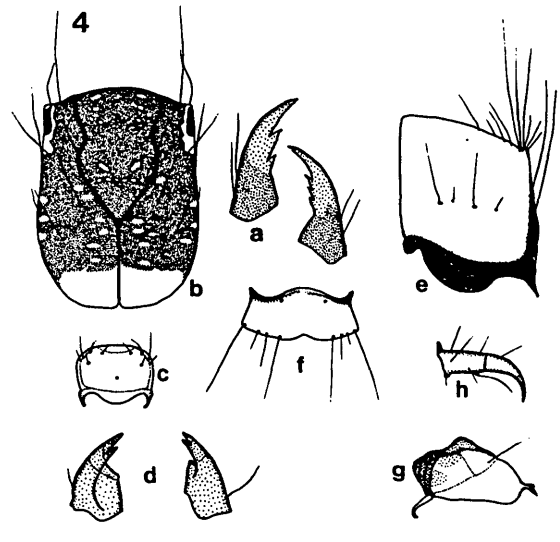


Basal piece of vaginal apparatus somewhat widened in the middle part, elongated terminal piece membranous with sclerotized distal apex.

Pupa (Fig. 4 a): Cocoon yellow brown, transparent. Mandibles dark brown basally, apices lighter, left mandible with two teeth and three teeth on right one. Dorsal plates sclerotized with hooks, anterior plates present on segment 3 to 7, posterior ones on segment 3 to 5.

Adults and larvae were associated by dissecting a mature pupa with larval sclerites in the cocoon.

Last instar larva (Fig. 4 b-h): Length of larva 10,5 mm. Head longer than wide, slightly narrowed anteriorly, dark brown with light yellow posterior part (b). Frontoclypeus with light spots, parietal sclerites with light brown spots on dorsal, lateral and ventral surfaces. Praegula and gula brown. Labrum rounded, yellow brown, upper



sclerotized surface of it with rounded excision (c). Mandibles dark brown, each with one tooth, right mandible has a small subapical tooth on the lower bland (d). Thorax without gills. Pronotum light yellow without spots. Posterior margin and inferior half of lateral margin black, posterolateral corner with black acute appendix (e). Trochantin dark brown with digitate process. Fore legs slightly wider and shorter than mid and hind legs. Abdomen pale brown with light straps. Dorsal sclerite of segment 9 somewhat widened posteriorly, acute anterior corners dark brown (f). Dorsolateral sclerite of anal proleg with dark brown anterodorsal margin and with small spur-shaped appendix (g), which is shorter than in R.transquila; anal claw without teeth (h).

Material. Holotype ♂, Kunashir Island, a river near Yuzhno-Kurilsk town, 30 June 1976, V.Zherikhin. Paratypes: ♂, data same as holotype; ♂, Kunashir Island, Odinokiy spring, 5 June 1976, T.Vshivkova; 3♂♂, Hokkaido, a river near Hokkaido Fish Hatchery Station, 27 May 1991, T.Vshivkova; 25♂♂, 2 pupae (♂,♀), 1 larva: a river near Hokkaido Fish Hatchery, 27 May 1991, T.Vshivkova; 2♂♂, 2♀♀, Eniwa, Kitakashiwagi, 15 May 1992, T.Ito; 1♂, 3♀♀, Eniwa, Kitakashiwagi, 25 June 1992, T.Ito; ♂♀, Eniwa, Eniwa Park, 16 July 1992, T.Ito.

Distribution. Russia: Kunashir; Japan: Hokkaido; Kurile Islands.

Etymology. This new species is named in memory of my late husband, the entomologist Dr.Vladimir S.Arefin.

Remarks. In the collection of the Institute of Biology and Pedology, Russian Academy of Science, the specimens of this species from Kunashir were identified as Rhyacophila narvae (Levanidova, 1980, 1986). Kuwayama (1967) recorded R.narvae for the Southern Kurile Islands: Iturup and Shikotan. However, Dr.Kuranishi reexamined old specimens of Kuwayama's collection from Iturup and Shikotan Islands, at my request, and informed me that they belong to R.arefini. The specimens which were collected in Hokkaido belong to the species R.arefini. Thus, the presence of R.narvae in Kurile Islands is now debatable.

Acknowledgements. My cordial thanks are due to Dr.I.Levanidova (IBP RAS) for her advice on my study, and Dr.R.Kuranishi, Natural History Museum and Institute, Chiba, Japan, for his invaluable help. I am also thankful to Dr.T.Ito (Hokkaido Fish Hatchery, Japan), Dr.V.Zherikhin (Institute of Paleontology RAS, Moscow), and Dr.T.Vshivkova (IBP RAS) for caddisflies from Kunashir and Hokkaido.

REFERENCES

Kuwayama,S., 1967, Insect fauna of the Southern Kurile Islands. - Hokuno-kai, Sapporo, 225pp. (In Japanese).

Levanidova,I.M.,, 1980, Ecological and zoogeographical analysis of the genus Rhyacophila (Trichoptera, Rhyacophilidae) on the Far East of USSR. - Fauna of fresh waters of the Far East. Vladivostok: 60-74.

Levanidova,I.M., 1986, Annotation catalogue of the caddisflies (Trichoptera) and mayflies (Ephemeroptera). - Suppl."Bottom organisms of fresh waters of the Far East", Vladivostok: 3-14.

Mey,W., 1989, Taxonomische und faunistische Notizen zu einigen Köcherfliegen (Trichoptera) aus Korea. - Acta entomol.Bohemoslov. 86:295-305.

Schmid,F., 1970, Le genre Rhyacophila et la famille des Rhyacophilidae (Trichoptera). - Mém.Soc.Ent.Can. 66:1-230.

Tsuda,M., 1940, Zur Kenntnis der japanischen Rhyacophilinen (Rhyacophilidae, Trichoptera). - Annot.Zool.Jap. 19:119-135.

Address of the author:

Tatyana I.Lukyanchenko
Laboratory of Freshwater Hydrobiology
Institute of Biology and Pedology
Russian Academy of Sciences
VLADIVOSTOK 690022, Russia

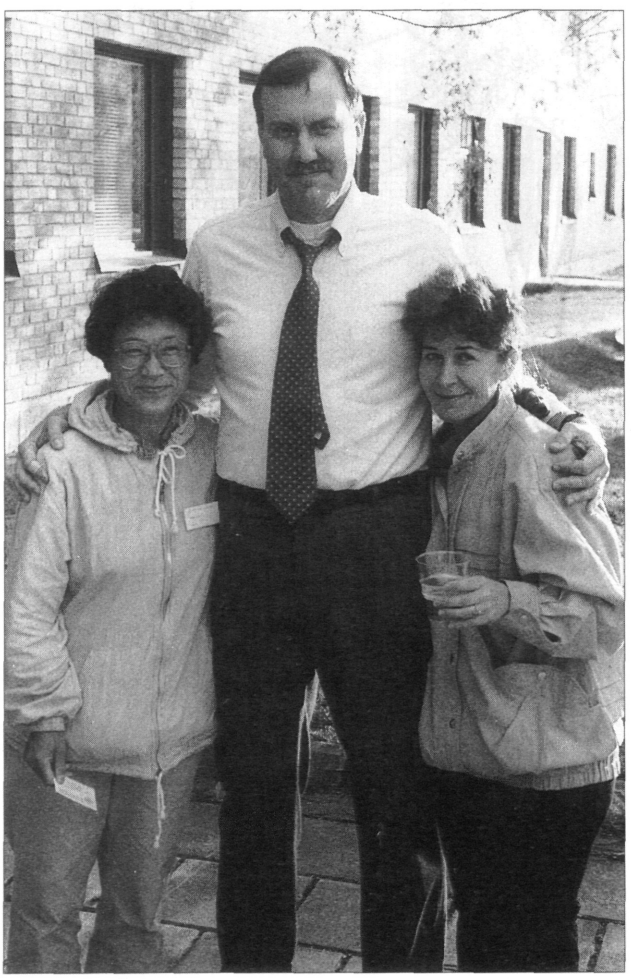
Fig.1. Rhyacophila arefini n.sp., male genitalia: a .. lateral view; b .. 10th segment, caudal view; c .. aedeagus, dorsal; d .. distal part of ventral lobe, dorsal.

Fig.2. Rhyacophila tonneri Mey (From Mey, 1989), male genitalia: a .. lateral view; b .. 10th segment, dorsal; c .. upper appendix of aedeagus, dorsal; d .. distal part of ventral lobe, dorsal.

Fig.3. Rhyacophila arefini n.sp., vaginal apparatus of female: a .. ventral view; b .. lateral view.

Fig.4. Rhyacophila arefini n.sp., pupa mandibles (a) and last instar larva: b .. head, dorsal; c .. labrum, dorsal; d .. mandibles, dorsal; e .. pronotum, dorsal; f .. dorsal sclerite of segment 9; g .. dorsolateral sclerite of anal proleg, lateral; h .. anal claw, lateral.

*



Photographs from the 7th Trichoptera Symposium, Umeå, 3 - 8 August 1992:

Ito, Armitage, Vshivkova