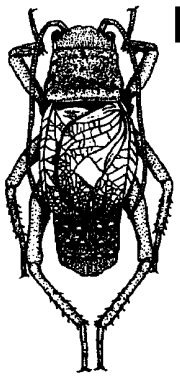

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SIX NEW SPECIES AND THREE NEW RECORDS OF CADDISFLIES (TRICHOPTERA) FROM THE FAR EAST OF RUSSIA, WITH REMARKS ON THE *HYALOPSYCHE SACHALINICA* MARTYNOV

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Six new species: *Dolophilodes affinis* Levanidova et Arefina, **sp. n.**; *D. kunashirensis* Ivanov, **sp. n.**; *Cheumatopsyche daurensis* Ivanov, **sp. n.**; *Lype daurica* Ivanov et Levanidova, **sp. n.**; *Psychomyia birushka* Arefina et Levanidova, **sp. n.** and *Limnephilus tiunovae* Arefina et Levanidova, **sp. n.** from the south of Russian Far East are described. Three species: *Ecnomus yamashironis* Tsuda, *Micrasema hanasensis* Tsuda and *Pseudostenophylax riedeli* Botosaneanu are newly recorded to the Russia. New synonymy of *Hyalopsyche sachalinica* Martynov (=*H. amurensis* Martynov, **syn. n.**) is proposed.

KEY WORDS: Trichoptera, caddisflies, new species, Russian Far East.

Т.И.Арефина[1)], В.Д.Иванов[2)], И.М. Леванидова[1)]. Шесть новых видов и три новые находки ручейников (Trichoptera) с Дальнего Востока России с замечаниями по *Hyalopsyche sachalinica* Martynov // Дальневосточный энтомолог. 1996. N 34. С. 1-12.

С юга Дальнего Востока описаны 6 новых видов: *Dolophilodes affinis* Levanidova et Arefina, **sp. n.**; *D. kunashirensis* Ivanov, **sp. n.**; *Cheumatopsyche daurensis* Ivanov, **sp. n.**; *Lype daurica* Ivanov et Levanidova, **sp. n.**; *Psychomyia birushka* Arefina et Levanidova, **sp. n.** и *Limnephilus tiunovae* Arefina et Levanidova, **sp. n.** Три вида: *Ecnomus yamashironis* Tsuda, *Micrasema hanasensis* Tsuda и *Pseudostenophylax riedeli* Botosaneanu впервые указываются для фауны России. Установлена новая синонимия: *Hyalopsyche sachalinica* Martynov (=*H. amurensis* Martynov, **syn. n.**).

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INTRODUCTION

During the study of extensive Trichoptera collection in the Institute of Biology and Pedolody, Vladivostok, for preparing the adult key of Far Eastern species, five new and three newly recorded species are discovered. Additional new species has been found in the collection of Zoological Institute, St. Petersburg, which was recorded as *Cheumatopsyche albofasciata* McL. from the Amur river basin (Martynov, 1910, 1934). The examination of the genitalia of the type specimens of two local *Hyalopsyche*–species from the Amur basin and Sakhalin (Martynov, 1910, 1934) confirmed their identity.

Types are deposited in the Zoological Institute of Russian Academy of Sciences, St. Petersburg [ZISP] and in the Institute of Biology and Pedology, Far East Branch of Russian Academy of Sciences, Vladivostok [IBP].

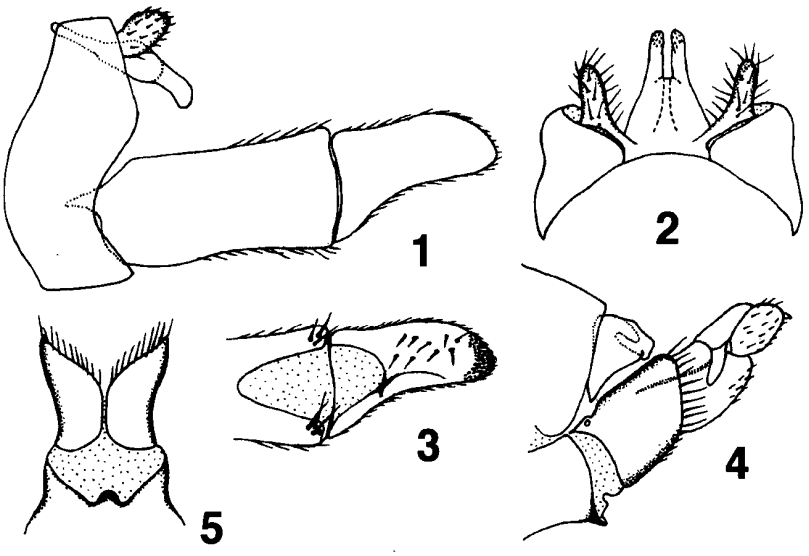
DESCRIPTION OF NEW TAXA

Family Philopotamidae

***Dolophilodes affinis* Levanidova et Arefina, sp. n.**
(Figs 1-5)

Dolophilodes similis Levanidova, 1982: 158 (nomen nudum).
Sortosa distincta (nec Walker, 1852): Kobayashi, 1989: 2.

MATERIAL. Holotype - ♂, Primorskii krai: Kedrovaya Pad' reserve, Kedrovaya river basin, Vodopadnyi stream, 11.VII 1977 (Levanidov) [ZISP]. Paratypes: 13 ♂, 4 ♀, with the same lable as in holotype; 22 ♂, 5 ♀, the same locality, 27.VI 1973 (Levanidova); 1 ♂, 2 ♀, Kedrovaya river basin, Goraiskii stream, 13.VII 1992 (Arefina); 12 ♂, 28 ♀, Sikhotae-Alinskii reserve, Sukhoi stream, 5.VII 1994 (Potikha); 3 ♂, 1 ♀, Lazovskii reserve, 6.VI 1979 (Zapolina); 1 ♂, Partizanskaya river basin, Frolovka stream, 4.VIII 1986 (Lukyanchenko). [All paratypes in IBP].



Figs. 1-5. *Dolophilodes affinis* sp. n. 1-3) male genitalia: 1) lateral view; 2) dorsal view; 3) right gonostylus, inside view; 4, 5) female genitalia: 4) lateral view; 5) ventral view.

DESCRIPTION. Fore wing length: ♂ 7.8-9.5 mm, ♀ 8.5-10.5 mm. Body brown to dark brown. Wings light brown, with vague light spots, fore wing and hind wing pterostigma darker.

Male genitalia (Figs 1-3). Segment IX bented at place of gonopodes attachment. Cerci (preanal appendages) small, oval in lateral view. Segment X short, with rounded apex, turned downwards in lateral aspect, the tip of this segment narrowly notched to the half in dorsal view. Gonopodes (inferior appendages) massive, consist of long almost rectangular gonocoxite, and gonostyle which is slightly longer than half of gonocoxite. Gonostyle abruptly tapering to rounded apex, covered with small dense knobs on inner surface, ventral margin widely concave.

Female genitalia (Figs 4, 5). Sternum VII with short rounded ventral projection in ventral view. Segment VIII evidently divided in tergum and sternum, tergum VIII almost semicircular with prominent apex in dorsal aspect; sternum VIII separated mesoventrally, with rather short proximal projection. Segment X small. Segment XI oval, cerci very short.

Immature stages unknown.

DISTRIBUTION. Russia (Primorskii krai). Korea.

DISCUSSION. The male of *D. affinis* sp. n. resembles that of *D. distinctus* (Walker, 1852) by the shape of segment IX, by oval cerci and by segment X, bilobated to about a half of its length (see: Schmid, 1982, Figs. 132, 133), but differs from it by more massive and longer gonopodes, by shorter (relatively to gonocoxite) gonostyle and by shape of segment X in lateral view. The female

of the new species easily differs from all other species of the genus by presence of ventral projection on sternum VII and by the shape of tergum VIII. The male genitalia of *Sortosa distincta* Walker figured by Kobayashi (1989) really belongs to *D. affinis* sp. n.

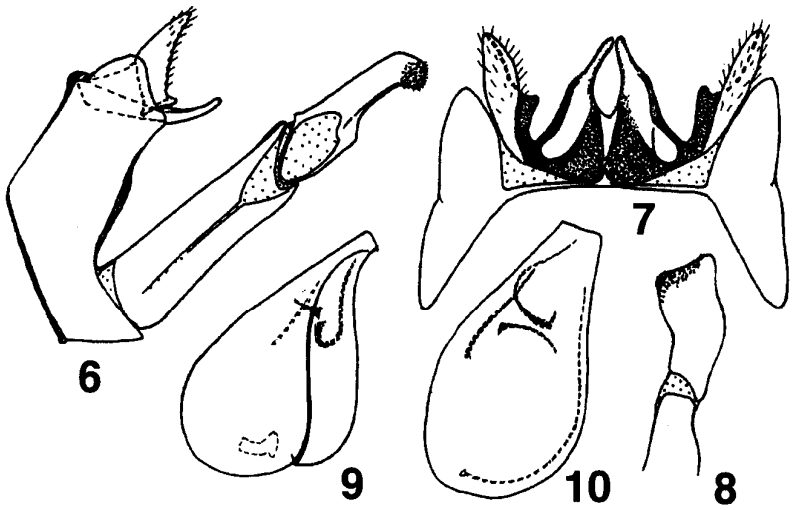
ETYMOLOGY. Specific name is derived from Latin adjective *affinis*, similar, with reference to the resemblance of new species with *D. distinctus*.

***Dolophilodes kunashirensis* Ivanov, sp. n.**
(Figs 6-10)

MATERIAL. Holotype - ♂, Kunashir Island, Alyokhino, 5.VI 1976 (Makarchenko) [ZISP]. Paratype: 1 ♂, the same locality, 1.VI 1976 (Makarchenko) [IBP].

DESCRIPTION. Body length 6.5 mm; fore wing length 5.5 mm. Body dark fuscous; tibiae, tarsi, and abdomen lighter than head and thorax. Fore wings fuscous with vague light spots spreaded mostly in the basal and anterior wing parts. Fore wing and hind wing pterostigma elongated. Rudimentary second anal vein of the fore wing does not reach the wing margin; forks f_1, f_3, f_4 on the fore wing are stalked.

Male genitalia (Figs 6-10). Segment X sharply bented in its middle part. Cerci strongly elongated upwards, hind margin roundly incised. Segment X short and flat, with slightly bented upwards apex; bilobated tip of this segment widely separated basally with branches convergented apically. Gonopodes long and slender; the hinge line between gonocoxite and gonostyle inclined



Figs. 6-10. *Dolophilodes kunashirensis* sp. n., male genitalia: 6) lateral view; 7) dorsal view; 8) gonostylus, dorsal view; 9) phallobase, lateral view; 10) do, dorsal view.

anteroventrad. Gonostylus angularily incised from below; its apex curved caudoventrad and covered with short setae. There are two long lengthwise oriented needles and two shorter transversal spines inside the fallobase.

Female and immature stages unknown.

DISTRIBUTION. Russia: Kuril Islands (Kunashir I.).

Family Hydropsychidae

***Cheumatopsyche daurensis* Ivanov, sp. n.**
(Figs 11-15)

Cheumatopsyche albofasciata (nec McLachlan, 1880): Martynov, 1910: 392; 1934: 284, fig. 206.

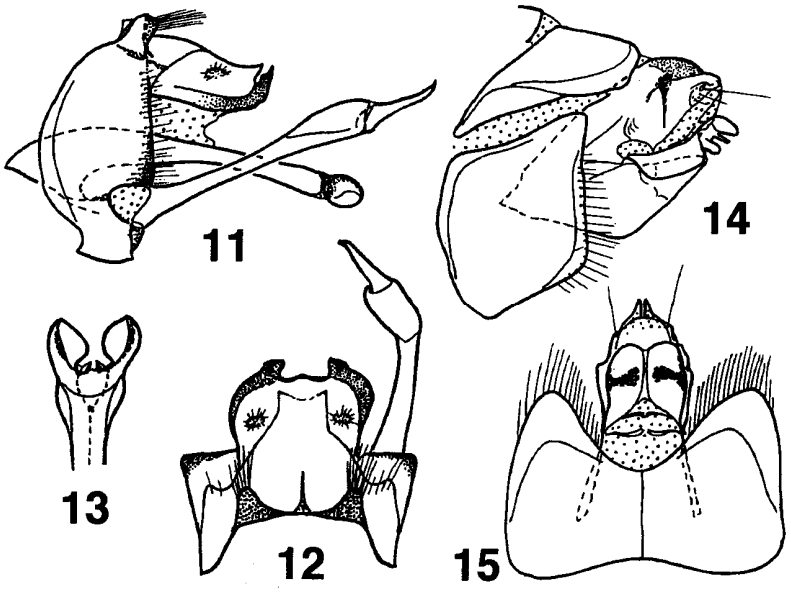
MATERIAL. Holotype - ♂, Amur river basin, Sii river branch at the Bolonskii construction venture, 23.IX 1933 (Buldovskii) [ZISP]. Paratypes: 5 ♂, with the same lable as in holotype; 3 ♂, Amur river basin, Zeya river, 6 km upstream from Blagoveschensk, 2.VIII 1927 (Martynov); 2 ♂, left shore of Zeya river, opposite to the pass at Blagoveschensk, 3.VIII 1927 (Martynov); 1 ♂, Zeya river, at Blagoveschensk (anonymous, the date omitted); 14♂, 8♀, Khabarovsk, 23, 24 (10, 11).VI, 6, 7.VII (23, 24.VI) 1916 (Pavlenko, Chernavin); 1 ♂, 2 ♀, Amur river, the island opposite to Khabarovsk, 23.VII 1927 (Martynov); 1 ♂, Amur river, 7 km upstream from Vyatskoye, 22(9).VI 1910 (Soldatov); 2 ♂, 1 ♀, Amur river, between Vyatskoye and Voronezhskoye, 15(2).VI 1910 (Soldatov); 1 ♂, 2 ♀, Amur river, near Nizhne-Tambovskoye, 20(7).VI, 24(11).VI 1911 (Soldatov); 1 ♂, Listvintsevo near Amur river, 25(12).VI 1911 (Soldatov); 1 ♂, near Malyshevskii river branch, 90 km from Khabarovsk, 10-13.VI (28-31.V) 1910 (Soldatov); 1 ♂, "Tsesarevich" steam ship, 23(10).VI 1915 (Delle); 1 ♀, Amur river, Khabarovsk-Nikolaevsk, 19.VII 1926 (Formozov); 3 ♂, 4 ♀, Amur river basin, branch Parakta, 5.VIII (anonymous, year is omitted); 1 ♂, left shore of Ussuri river, 30 km from Khabarovsk, 28.VII 1927 (Martynov); 7 ♂, 1 ♀, Bolshehehtsirskii reserve, Ussuri river, 5.VI 1989 (Lukyanchenko, Levanidova); 1 ♂, 1 ♀, Ussuri river basin, Khor river, 2.VIII 1949 (Levanidova). [All paratypes in ZISP]. In the material the old dates are given in the brackets.

DESCRIPTION. The detail description of *Ch. albofasciata* McL. is given by Martynov (1934) and actually should be concerned to *Ch. daurensis*. Below we added some important characters which distinguish these species.

Wings pale greyish fuscous, body light fuscous.

Male genitalia (Figs 11-13). Segment X with shallow rectangular incision; the caudal sclerotized projections of this segment are short and acute. Gonostylus sharpened apically. Posterolateral margins of the segment IX protrude to the sides.

Female genitalia (Figs 14, 15) has the deep gonostyle receptacular channels. The VIII abdominal sternum is rhomboidal in lateral view; tergum VIII with deep incision.



Figs. 11-15. *Cheumatopsyche daurensis* sp. n. 11-13) male genitalia: 11) lateral view; 12) dorsal view; 13) aedeagus, dorsal view; 14, 15) female genitalia: 14) lateral view; 15) dorsal view.

DISTRIBUTION. Russia: Amurskaya oblast', Khabarovskii krai.

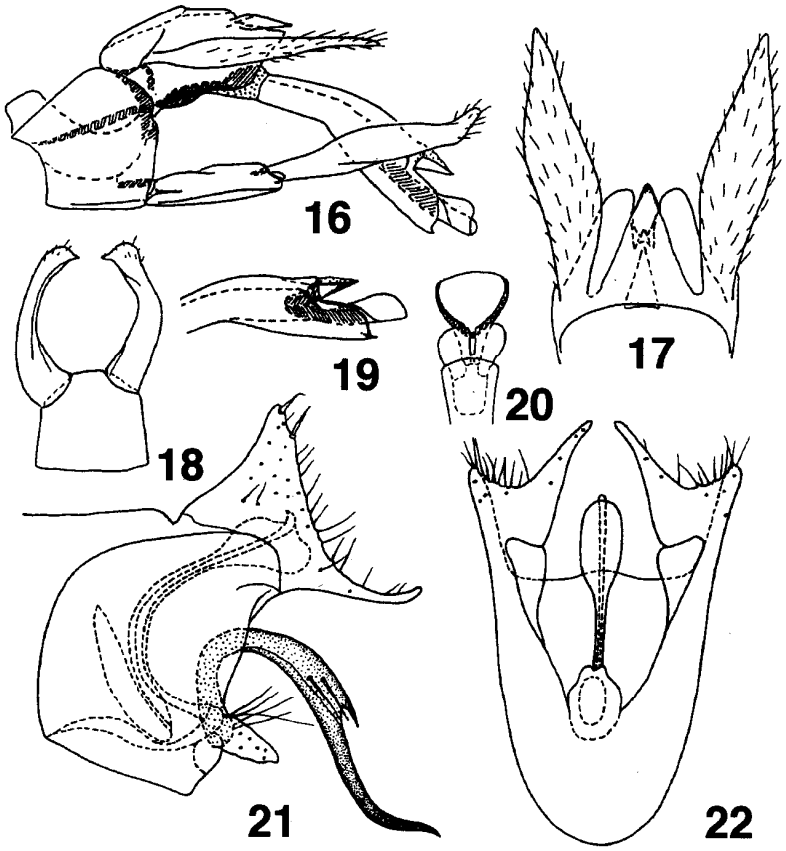
DISCUSSION. Quite probably, A.V. Martynov has not seen the true specimens of *Ch. albofasciata*. At least the specimens from Amur river basin, being in his possession, undoubtedly belong to *Ch. daurensis,* as it is clear from his description and figure of male genitalia in the text (Martynov, 1934). As he noted, all his specimens had not white bands on the wings, while wings of *Ch. albofasciata* are blackish fuscous, with contrast white spots creating irregular transverse bands. The male genitalia in *Ch. albofasciata* is readily distinguishable from that of *Ch. daurensis* by incision of the segment X deep, with large protuberance on the bottom, by caudal sclerotized projections very long with rounded setose terminal parts, by larger cerci visible as hair warts at sides of segment X, by gonostylus not sharpened apically, and by posterolateral margins of the segment IX widened posterolaterad.Female of *Ch. albofasciata* has not gonostyle receptacular channels; the tergal incision of segment VIII very shallow, dorsal margin of sternum VIII with a tooth-like projection. These species are not close relative. By the genital structures of male and especially female (lacking of receptacular channels) *Ch. albofasciata* similar with *Potamyia*-species, whereas those of *Ch. daurensis* are typical *Cheumatopsyche.*

Family Psychomyiidae

***Lype daurica* Ivanov et Levanidova, sp. n.**
(Figs 16-20)

MATERIAL. Holotype - ♂, Primorskii krai, Ussuriyskii reserve, Komarovka river, 27.VIII 1983 (Vshivkova) [ZISP].

DESCRIPTION. Head and legs brown, abdomen and pronotum light brown, other parts of the thorax dark brown; wings pale. Fore wing length 4.8 mm; body length 4.5 mm.



Figs. 16-22. Male genitalia. 16-20) *Lype daurica* sp. n: 16) lateral view; 17) dorsal view; 18) ventral view; 19) aedeagus, lateral view; 20) do, dorsal view; 21, 22) *Psychomyia birushka* sp. n.: 21) lateral view; 22) ventral view (without gonopodes).

Male genitalia (Figs 16-20). Cerci long, flat and wide, acute apically, and protruding beyond the hind margin of segment X about half of their length. Dorsal projection of segment IX short, flat, triangle protruding insufficiently behind segment X. Sternum IX not excised caudally. Segment X truncate posteriorly so its upper part is the most protruding caudad, bears deep and narrow posterior incision visible in dorsal view. Gonopodes without basal protuberance; gonostylus long and slightly turned upwards apically, gonostyle apex acute, turned inwards. Aedeagus massive with large subapical projection; its terminal lobe furrow-like, without apical incision.

Female and immature stages unknown.

DISTRIBUTION. Russia: Primorskii krai.

DISCUSSION. *L. daurica* sp. n. differs from *L. excisa* Mey, 1991 from Sakhalin (Mey, 1991) by genitalia structure (in *L. excisa* cerci narrow and rounded apically, slightly protruding beyond the hind margin of the segment X; sternum IX not incised caudally; dorsal projection of segment IX long; gonostylus has basal swelling and not turned upwards at its apex, but bented inwards; gonocoxite enlarged inwards; incision on hind margin of segment X wide, hind margin of that segment protruding behind its ventral, part; aedeagus with large dorsal protuberance and flat terminal lobe).

Psychomyia birushka **Arefina et Levanidova, sp. n.**
(Figs 21, 22)

MATERIAL. Holotype - ♂, Khabarovskii krai, lower part of Ussuri river basin, Birushka river, 27.VII 1950 (Levanidova) [ZISP].

DESCRIPTION. The holotype (in alcohol) discolored to pale yellow. Fore wing length 3.5 mm. R_{2+3} of hind wing fused with R_1, f_3 absent.

Male genitalia (Figs 21, 22). Sternum IX massive. Cerci broad at base with triangle dorsal portion and long, slender ventral one, turned inwards. Gonopodes consist of short gonocoxite and very long gonostyle which strongly curved upwards basally, then sinuated downwards; its distal part turned backwards with tip bented downwards. Gonostyle with stout dorso-mesal teeth and two stout setae on inner surface somewhat before of teeth. Aedeagus long, slender, well sclerotized, strongly curved upwards in lateral aspect, with bulbous tip.

Female and immature stages unknown.

DISTRIBUTION. Russia: Khabarovskii krai.

DISCUSSION. The male of *P. birushka* sp. n. resembles that of *P. minima* (Martynov, 1910) by shape of sternum IX and by widely concaved distal margin of cerci, but differs by slender and longer ventral portion of cerci, by longer gonostylus and by shorter aedeagus with bulbous tip.

ETYMOLOGY. The specific name is a noun and originates from the name of river, Birushka.

Family Limnephilidae

Limnephilus tiunovae **Arefina et Levanidova, sp. n.**
(Figs 23-27)

MATERIAL. Primorskii krai: Holotype - ♂, Kedrovaya Pad' reserve, about 0.5 km lower of the Kedrovaya river source, 9.X 1986 (Tiunova) [ZISP]. Paratype: 1 ♂, Ternei vicinity, 25.VIII 1994 (Potikha) [IBP].

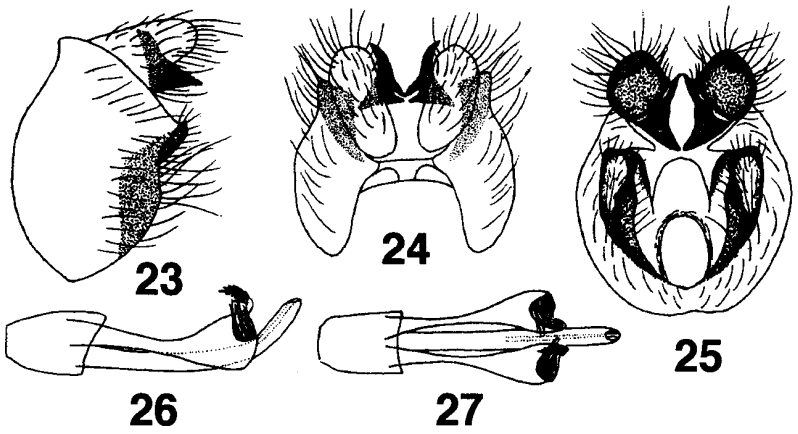
DESCRIPTION. Fore wing length 15.5 mm, body length 11.2 mm. Head and thorax reddish brown, legs yellow brown, spurs 1.3.4., venation typical for *Limnephilus*.

Male genitalia (Figs 23-27). Tergum VIII unmodified, posterior edge without short setae. Segment IX massive, widest laterally, dorsal strap substantial. Cerci rounded, with apex slightly curved ventro-mesad and with concave mesal surface. Intermediate appendages wide basally, with acute-triangular straight tips in lateral aspect and slightly curved outwards in dorsal and caudal aspects. Gonopodes short, rather stout, slightly prominent, somewhat turned inwards caudally. Aedeagus with tip turned upwards; parameres slender in basal half, broadened and bifid distally, dorsal branch thin with short setae, curved forward in lateral aspect; ventral branch short and wide, with long stout setae on dorsal edge.

Female and immature stages unknown.

DISTRIBUTION. Russia: Primorskii krai.

DISCUSSION. The male of *L. tiunovae* sp. n. resembles that of *L. isobela* Nimmo, 1991 from Canada (Nimmo, 1991) in having unmodified tergum VIII



Figs. 23-27. *Limnephilus tiunovae* sp. n., male genitalia: 23) lateral view; 24) dorsal view; 25) caudal view; 26) phallus, lateral view; 27) do, dorsal view.

without short setae on its posterior edge, parameres bifid distally, but differs by rounded margin of cerci, by intermediate appendages with tip curved outwards, by shorter gonopodes, by longer and slender dorsal branch of parameres.

ETYMOLOGY. The name of new species is dedicated to Tatyana M. Tiunova, expert in Ephemeroptera.

NEW RECORDS

Family Ecnomidae

***Ecnomus yamashironis* Tsuda, 1942**

MATERIAL. 1 pharate ♂, Nikolayevsk vicinity, 29.VII 1959 (Levanidova); 1 ♂, Khabarovsk vicinity, summer 1958 (Levanidova).

DISTRIBUTION. Russia (new record): Khabarovskii krai. Japan, Korea.

Family Brachycentridae

***Micrasema hanasensis* Tsuda, 1942**

MATERIAL. Kunashir Island: 50 larvae, Odinokii spring, 2, 5.VI 1976 (Levanidova); 10 larvae, Tyurino river basin, seepage areas, 24, 26, 28.IV 1978 (Makarchenko, Levanidova).

DISTRIBUTION. Russia (first record): Kunashir Island. Japan.

Family Limnephilidae

***Pseudostenophylax riedeli* Botosaneanu, 1970**

MATERIAL. 1 ♂, Khabarovskii krai, Chirka, 26.VI 1958 (Levanidova); 3 ♂, Primorskii krai, Lazovskii reserve, Yelomovskii stream, 14.VI 1981 (anonymous).

DISTRIBUTION. Russia (first record): Khabarovskii krai, Primorskii krai. Korea.

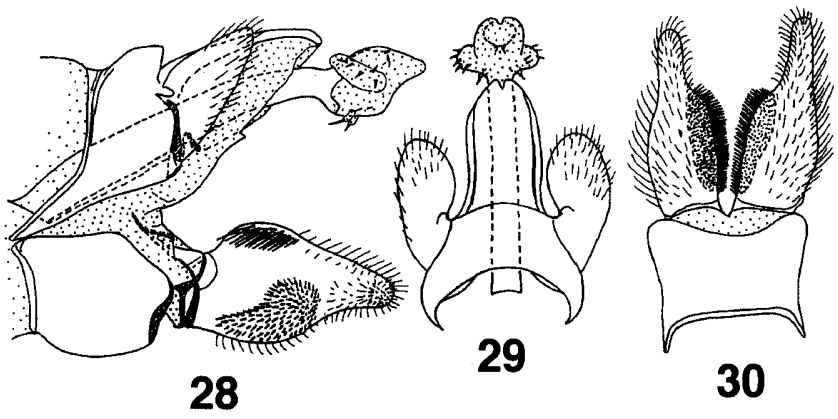
NEW SYNONYMY

***Hyalopsyche sachalinica* Martynov, 1910**
(Figs 28-30)

Hyalopsyche sachalinica Martynov, 1910: 397, figs. 35-38; 1934: 244, fig. 177.

Hyalopsyche amurensis Martynov, 1934: 245, fig. 178, **syn. n.**

NOTES. There were two species of Hyalopsychidae recorded from Russia: *Hyalopsyche amurensis* Martynov, 1934 (Amur river basin), and *H. sachalinica* Martynov, 1910 (Sakhalin). They differ mostly by small differences in males



Figs. 28-30. *Hyalopsyche sachalinica*, male genitalia: 28) lateral view; 29) dorsal view; 30) ventral view.

genitalia (Martynov, 1934). The types of both species are pinned. The male genitalia of the type specimens of both species have been studied. They are identical and new synonymy is proposed here.

ACKNOWLEDGEMENTS

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