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## NEW SPECIES OF GALL MIDGES OF THE SUPERTRIBE OLIGOTROPHIDI (DIPTERA, CECIDOMYIIDAE) FROM THE RUSSIAN FAR EAST

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*Rhizomyia turriiformis* Fedotova et Sidorenko, **sp. n.**, *Rh. furcata* Fedotova et Sidorenko, **sp. n.**, *Rh. applanata* Fedotova et Sidorenko, **sp. n.**, *Ledomyia eminens* Fedotova et Sidorenko, **sp. n.**, *Lathyromyza recedens* Fedotova et Sidorenko, **sp. n.** from Primorskii krai are described. New combination *Rhizomyia arsenjevi* (Fedotova, 2004), **comb. n.** (*Brachyneurina*) is proposed. Genera *Ledomyia* Kieffer, 1894 and *Lathyromyza* Rübсаamen, 1916 are recorded for the first time for fauna of the Russian Far East.

KEY WORDS: Diptera, Cecidomyiidae, gall midges, new species, new combination, Russian Far East.

**З. А. Федотова<sup>1)</sup>, В. С. Сидоренко<sup>2)</sup>. Новые виды галлиц из надтрибы Oligotrophidi (Diptera, Cecidomyiidae) с Дальнего Востока России // Дальневосточный энтомолог. 2005. N 146. С. 1-12.**

Описаны *Rhizomyia turriiformis* Fedotova et Sidorenko, **sp. n.**, *Rh. furcata* Fedotova et Sidorenko, **sp. n.**, *Rh. Fedotova* et Sidorenko, **sp. n.**, *Ledomyia eminens* Fedotova et Sidorenko, **sp. n.** и *Lathyromyza recedens* Fedotova et Sidorenko, **sp. n.** из Приморского края. Предложена новая комбинация *Rhizomyia arsenjevi* (Fedotova, 2004), **comb. n.** (*Brachyneurina*). Роды *Ledomyia* Kieffer, 1894 и *Lathy-*

*romyza* Rübсаamen, 1916 указываются впервые для фауны Дальнего Востока России.

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## INTRODUCTION

This paper is devoted to the descriptions of new taxa of gall midges collected by pitfall traps during study of the forest ecosystems in vicinities of Vladivostok and Kedrovaya Pad' Reserve in 2004. Holotypes of new species are deposited in the Zoological Institute, St.-Petersburg, Russia. The abbreviations used in the descriptions and figure legends are as follows: F1, F2, ... F15 – length of flagellomeres 1, 2, ... 15.

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## SUPERTRIBE OLIGOTROPHIDI KIEFFER, 1913

DIAGNOSIS. First tarsal segment distinctly shorter than 2nd. Vein  $R_{4+5}$  separated from  $R_{1+2}$  and joining the costa at or slightly before the wing apex. Cross-vein ( $R_s$ ) absents. Male flagellomeres usually consists of proximal node and distal stem; each flagellomere with simple or anastomosed circumfila; the female terminal antennal segments without reduction; female flagellomeres usually subcylindrical, without stem.

## TRIBE BRACHYNEURINI EDWARDS, 1937

DIAGNOSIS. Antennae with 10 flagellomeres, tarsal claws narrow, curved near midlength; VII and VIII male abdominal tergites reduced and strongly sclerotized, linear; VII and VIII sternites shorter than other ones; parameres short, sclerotized, free, glabrous, each with one to three setae. Female postabdomen usually not protractile, apically with three lamellae, two large upper ones and one small lower one. Cosmopolitan tribe, including 7 genera and 49 species (Skuhrová, 1986; Gagné, 2004).

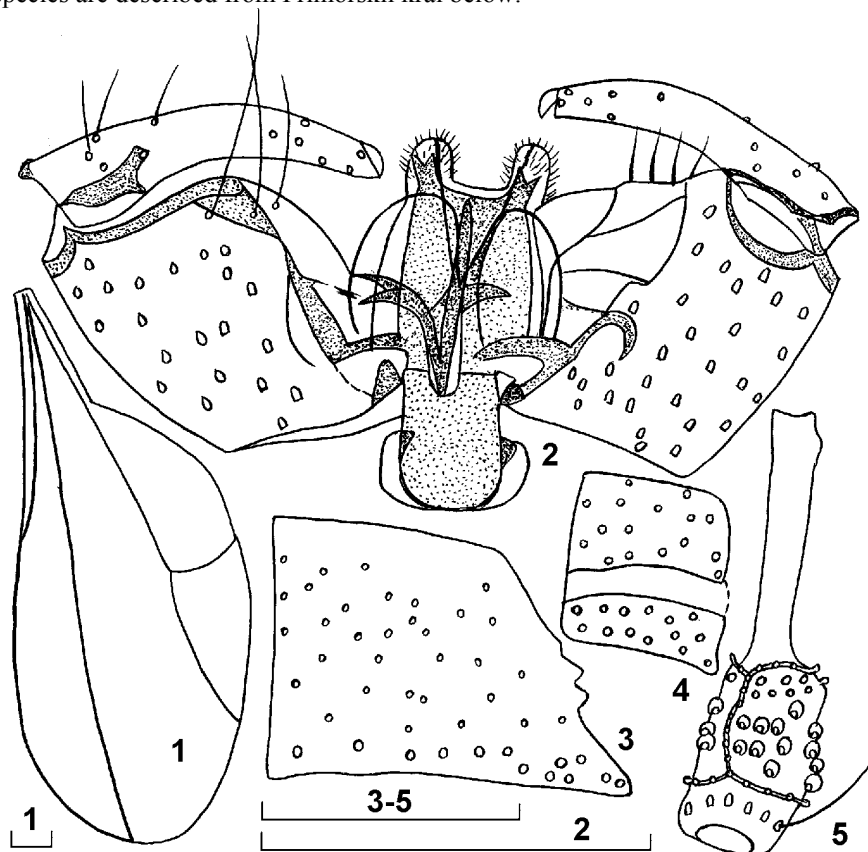
### Genus *Rhizomyia* Kieffer, 1898

*Rhizomyia* Kieffer, 1898: 56.

Type species – *Rhizomyia perpelexa* Kieffer, 1898: 57.

DIAGNOSIS. Vein  $R_{4+5}$  straight, joining costa at wing apex; *Cu* forked; antennae 2+10-segmented; flagellomeres subcylindrical, with stem; claws with tooth. Genus

distributed in Holarctic and Oriental regions, includes 23 species, 13 of them are Palaearctic ones (Skuhravá, 1997; Mamaev, 1998; Mamaev, Zaitzev, 2002; Fedotova, 2004; Gagné, 2004). Four species have been recorded from Russian Far East: *Rh. binaria* Mamaev, 1998, *Rh. improbabilis* Mamaev, 1998, *Rh. rossica* Mamaev et Zaitzev, 2002, *Rh. arsenjevi* (Fedotova, 2004), **comb. n.** and three new species are described from Primorskii krai below.



Figs 1-7. *Rhizomyia turriformis* sp. n., male: 1) wing; 2) genitalia; 3) VI abdominal tergite; 4) VI abdominal sternite; 5) F5; 6) scape, pedicel, F1 and F2; 7) palpus. Scale line - 0.1 mm.

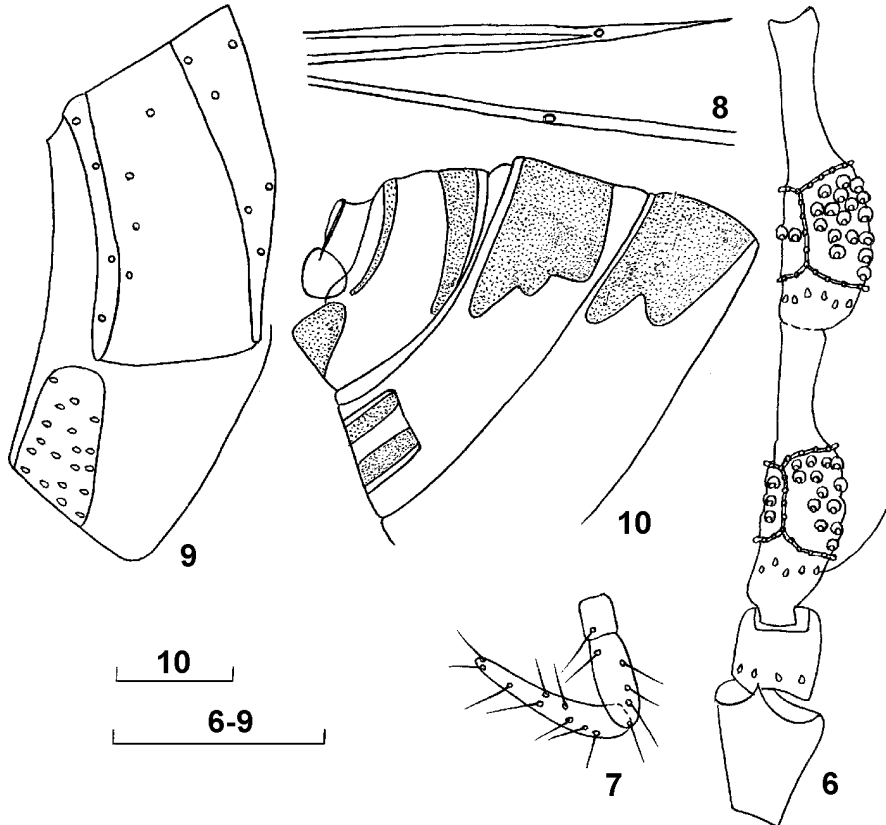
***Rhizomyia turriformis* Fedotova et Sidorenko, sp. n.**

Figs 1-10

**MATERIAL.** Holotype - ♂, (slide 207): Russia, Primorskii krai, Vladivostok, 28.V 2004 (V. Sidorenko).

**DESCRIPTION. MALE.** Body length 1.86 mm, wing length 1.70 mm, wing width 0.73 mm. Last segments of flagellum lost, scape enlarged apically, 1.7 times as

long as transversal pedicel. Basal nodes of flagellomeres elongated, with numerous swollen peritremae of setae, stem of mid flagellomeres longer than basal node, which with 2 rings of sensorial filae, connected by commissures. F1 3.6 times as long as wide, basal node 1.4 times longer stem. F2 1.1 times as long as F1. F5 3.4 times as long as wide, basal node 1.3 times shorter than stem. Palpi 3-segmented, its ratio 1:2.3:4.1, last segment narrowed apically. Tarsal claws lost.



Figs 8-10. *Rhizomyia turriiformis* sp. n., male: 8) veins  $C$ ,  $R_{1+2}$ ;  $R_{2+5}$  of wing; 9) VII abdominal segment; 10) V-VIII abdominal segments. Scale line - 0.1 mm.

Wing strongly rounded, maximally enlarged distally, 2.4 times as long as wide. Vein  $R_{1+2}$  joining  $C$  far before wing middle,  $R_{4+5}$  almost straight and joining  $C$  distinctly before of wing apex. Fork of  $Cu$  located at more long distance from the base of wing than point of joining  $R_{1+2}$  to  $C$ . Two pores on veins and apex  $R_{1+2}$  present. Gonocoxites slightly enlarged medially and almost straight laterally, densely covered by setae, 1.2 times as long as wide, with narrow spots of sclerotization. Gonostylus slightly curved distally, with long basal narrow excision on ventral side, 1.2 times longer than gonocoxites, slightly enlarged basally, 4.3 times as long as wide. Cerci

with oviform lobes and narrow triangular excision. Hypoproct 1.1 times narrower than cerci, slightly sclerotized, with apical pointed dissected protrusions. Aedeagus narrow, almost parallel-sided, strongly sclerotized, pointed apically, with lateral branches. Base of genitalia with wide sclerotized plate. Mid tergites of abdomen with lateral excisions, distally with one row of setae, densely covered by scales. VII tergite consist of two sclerotized plates. Mid abdominal sternites consist of two sclerotized plates too. VII sternite whole.

FEMALE unknown.

RELATIONSHIPS. New species differs from other known species of the genus *Rhizomyia* by gonostylus longer than gonocoxites; by strongly sclerotized aedeagus; by wide wings and inner spot of sclerotization on hypoproct. New species more closes to *Rh. arsenjevi* (Fedotova, 2004) from Primorskii krai, but differs by long strongly sclerotized aedeagus (not enlarged basally), by strongly enlarged and elongated hypoproct, by less curved gonostylus, and by wide sclerotized plate at the base of gonocoxites (not narrow plate).

***Rhizomyia furcata* Fedotova et Sidorenko, sp. n.**

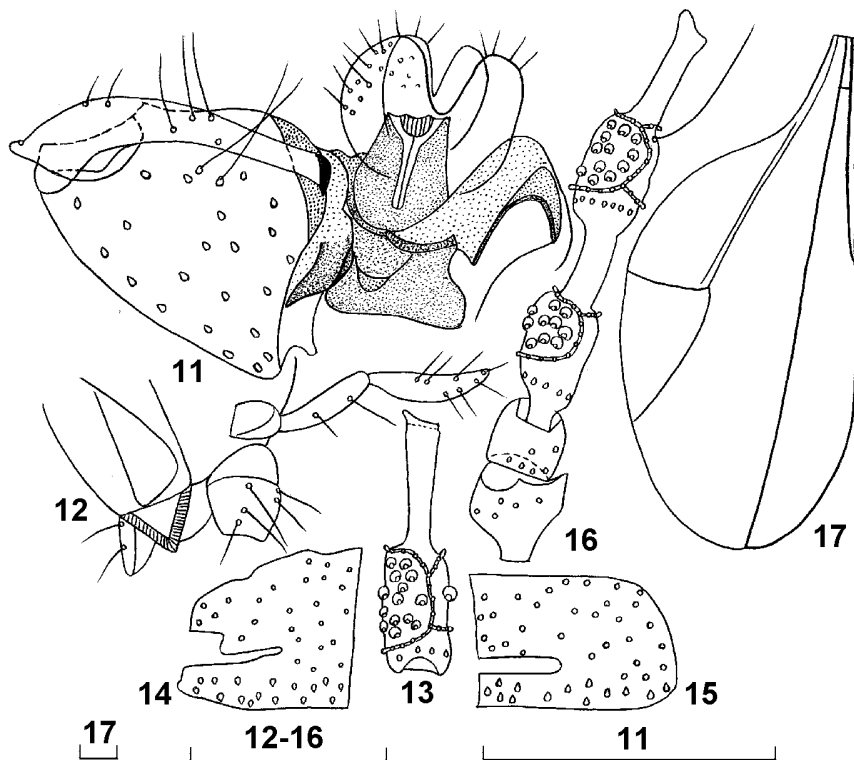
Figs 11-17

MATERIAL. Holotype - ♂, (slide 208): Russia, Primorskii krai, Vladivostok, 28.V 2004 (V. Sidorenko).

DESCRIPTION. MALE. Body length 1.46 mm, wing length 1.59 mm, wing width 0.67 mm. Last segments of flagellum lost, scape strongly narrowed basally, 1.3 times

as long as rounded pedicel. Basal nodes of flagellomeres elongated, with numerous swollen peritremae of setae, stem of mid flagellomeres almost as long as basal node, which with 2 rings of sensorial filae, connected by comissures. F1 2.8 times as long as wide, basal node 2.1 times longer than stem. F2 1.2 times as long as F1. F5 3.8 times as long as wide, basal node as long as stem. Palpi 3-segmented, its ratio 1:2.1:2.4, last segment enlarged medially and pointed apically. Tarsal claws lost. Wing strongly rounded, maximum enlarged proximally, 2.2 times as long as wide. Vein  $R_{1+2}$  joining *C* far before wing middle,  $R_{4+5}$  almost straight and joining *C* slightly before wing apex. Fork of *Cu* located at more long distance from the base of wing than point of joining  $R_{1+2}$  to *C*. Additional vein *pCu* presents. Gonocoxites strongly enlarged basally and slightly rounded laterally and medially, 1.4 times as long as wide, with wide sclerotized base and medial spots. Gonostylus slightly curved proximally, without additional narrow excision on ventral side, 1.1 times shorter than gonocoxites, slightly enlarged basally, 4.8 times as long as wide. Cerci with wide lobes, enlarged laterally and with oval narrow excision. Hypoproct 1.8 times narrower than cerci, with elongated lobes, divided by triangular excision, as long as cerci. Aedeagus spatulate, forked, strongly enlarged and blunt apically, located on sclerotized plate. Base of genitalia with wide sclerotized plate and wide sclerotized outgrowths. Mid abdominal tergites with lateral deep lacunes, distally emarginated by two rows of setae, densely covered by scales. Mid abdominal sternites with narrow medial lacune, located along distal margin, rounded laterally.

FEMALE unknown.



Figs 11-17. *Rhizomyia furcata* sp. n., male: 11) genitalia; 12) mouth parts; 13) F 5; 14) VI abdominal tergite; 15) VI abdominal sternite; 16) scape, pedicel, F1 and F2; 17) wing. Scale line - 0.1 mm.

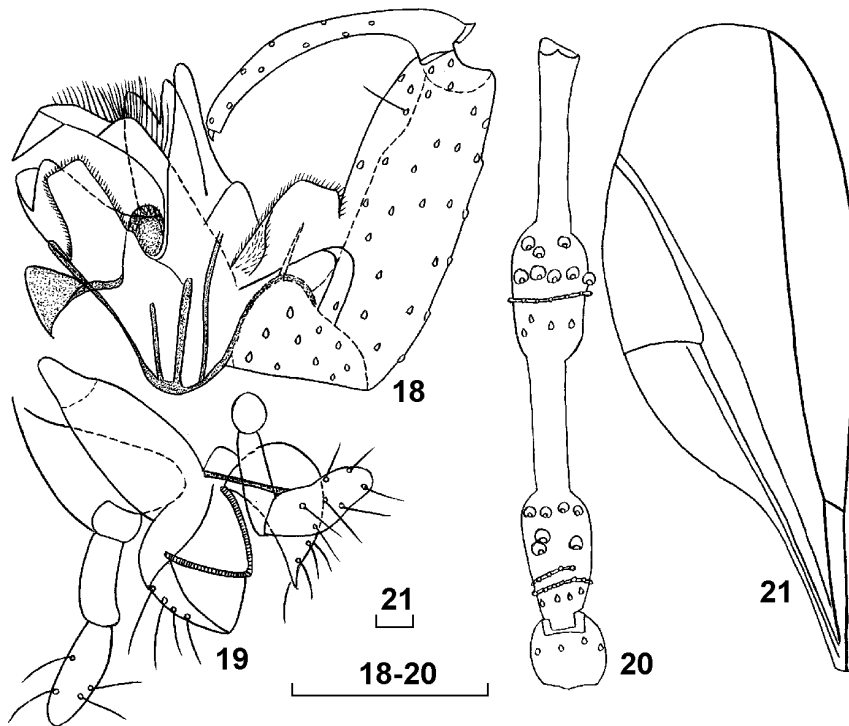
RELATIONSHIPS. New species differs from other known species of the genus *Rhizomyia* by forked aedeagus on sclerotized plate, by form of abdominal tergites and sternites with deep lacunes, and by equal length of cerci and hypoproct. New species closes to *Rh. turiformis* sp. n., but differs by basally enlarged gonocoxites, which longer than gonostylus, by equal length of basal node and stem of mid flagellomeres, by more proximally enlarged wing, by elongated segments of palpi, by vein  $R_{4+5}$  located closely to wing apex, and by small body size.

***Rhizomyia applanata* Fedotova et Sidorenko, sp. n.**

Figs 18-21

MATERIAL. Holotype – ♂ (slide 209 MT): Russia, Primorskii krai, Kedrovaya Pad' Reserve, 18.VIII 2004 (V. Sidorenko).

DESCRIPTION. MALE. Body length 2.0 mm, wing length 1.94 mm, wing width 0.70 mm. Last segments of flagellum lost, pedicel almost rounded. Basal nodes of



Figs 18-21. *Rhizomyia applanata* sp. n., male: 18) genitalia; 19) mouth parts; 20) pedicel, F1 and F2; 21) wing. Scale line - 0.1 mm.

flagellomeres elongated, with three whorls of setae and basal circular sensorial filae. Stem of basal flagellomeres longer than basal node or equal in length. F1 3.9 times as long as wide, basal node as long as stem. F2 1.2 times as long as F1. F2 3.9 times as long as wide, basal node 1.3 times shorter than stem. Palpi 3-segmented, its ratio 1:2.2:2.8 or 1:2.7:3.3, last segment enlarged medially and rounded apically. Tarsal claws lost. Wing with elongated base, maximum enlarged distally, 2.6 times as long as wide. Vein  $R_{1+2}$  joining  $C$  far before wing middle,  $R_{4+5}$  slightly curved medially, joining  $C$  distinctly before of wing apex. Fork of  $Cu$  located at more long distance from the base of wing than point of joining  $R_{1+2}$  to  $C$ . Three additional veins  $R_s$ ,  $pCu$  and  $M_{1+2}$  present. Gonocoxites almost parallel-sided, with blunt medial lobes at the base, 1.8 times as long as wide, densely covered by swollen peritremae of setae. Gonostylus strongly curved basally, 1.2 times shorter than gonocoxites, strongly enlarged basally, 4.2 times as long as wide. Cerci with oviform lobes and wide triangular excision. Hypoproct 2.2 times narrower than cerci, with pointed lobes and excision. Aedeagus strongly enlarged basally, narrowed before apex and rounded on the end, unsclerotized. Base of genitalia with long sclerotized branched setose protrusions. Parameres look like unsclerotized curved plate with long setae near the base of genitalia.

FEMALE unknown.

RELATIONSHIPS. New species differs from other species of *Rhizomyia* by long and thin gonostylus, by additional veins of wing ( $M_{1+2}$ ,  $M_{3+4}$ ,  $pCu$ ), by presence of setose protrusion at the base of gonocoxites, and by very long stem of flagellomeres. New species more closes to *Rh. binaria* Mamaev, 1998 described from Kedrovaya Pad' Reserve, but differs from it by form of hypoproct with excision, by presence of basal outgrowths at the base of gonocoxites, by absence of inner subapical lobe on gonocoxites, by unsclerotized aedeagus, by very long gonostylus, and by large size of body.

***Rhizomyia arsenjevi* (Fedotova, 2004), comb. n.**

*Brachineurina* (sic!) *arsenjevi* Fedotova, 2004: 603, fig. 319, 11-21 [holotype - ♂, (slide 127 WT № 1): Russia, Primorskii krai, 30 km SE Ussuriisk, Kamenushka; in Zoological Institute, St.-Petersburg; studied].

NOTE. Based on diagnosis of the genus given above this species must be transferred from genus *Brachyneurina* Mamaev, 1967 to the genus *Rhizomyia*.

**TRIBE LEDOMYIINI GAGNÉ, 1985**

DIAGNOSIS. Antenna with 8-10 or a regular number of 12 sexually dimorphic flagellomeres. Parameres divided: one part setose, the other, usually longer, glabrous except for apical setae. The ovipositor short to elongate, but the cerci separated. Cosmopolitan tribe, including 6 genera and 53 species (Gagné, 2004).

**Genus *Ledomyia* Kieffer, 1894**

*Ledomyia* Kieffer, 1894: 201.

Type species – *Ledomyia lugens* Kieffer, 1894: 211.

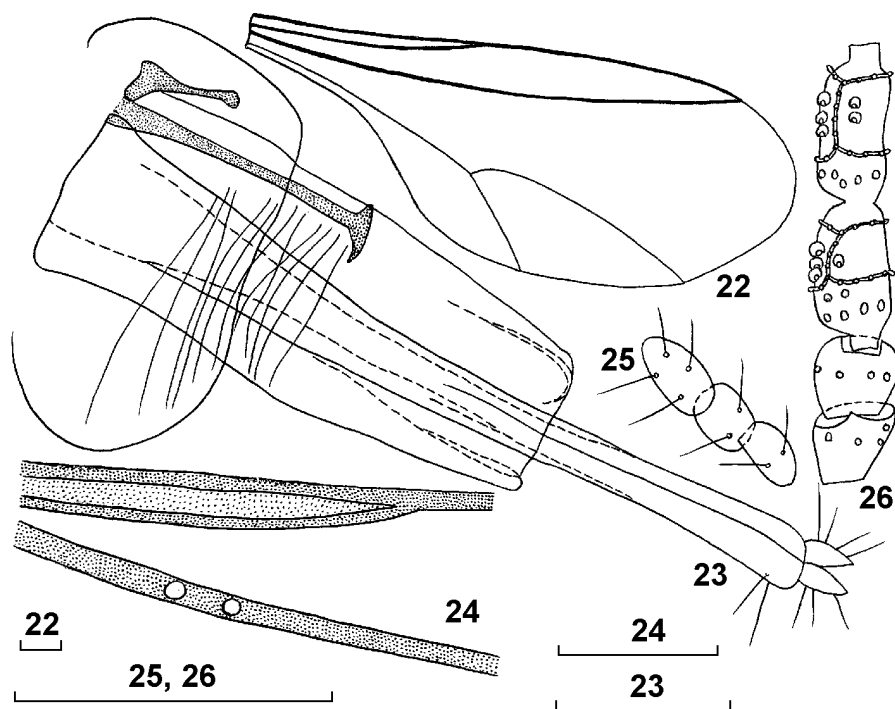
DIAGNOSIS. Wing broad,  $R_{4+5}$  joining costa before apex. Wing, body and legs conspicuously covered with scale; antennae 2+8 to 10, flagellomeres in male sub-cylindrical, in female elongate-cylindrical; ovipositor very long, apically with two terminal lamellae with two small, obtuse spines; female legs with claws toothed, in male only fore claws with tooth. Cosmopolitan genus with 15 species. Five species are recorded from Palaearctic Region (Skuhrová, 1997; Gagné, 2004). This genus is newly recorded for the fauna of the Russian Far East.

***Ledomyia eminens* Fedotova et Sidorenko, sp. n.**

Figs 22-26

MATERIAL. Holotype - ♀, (slide 211): Russia, Primorskii krai, Vladivostok, 28.V 2004 (V. Sidorenko).





Figs 22-26. *Ledomyia eminens* sp. n., female: 22) wing; VII-VIII abdominal segments and ovipositor; 24) vein *C*,  $R_{1+2}$  and  $R_{4+5}$  with pores; 25) palpi; 26) sscape, pedicel, F1 and F2. Scale line - 0.1 mm.

DESCRIPTION. FEMALE. Body length 1.37 mm, wing length 1.07 mm, wing width 0.46 mm. Eye bridge well developed. Last segments of flagellum lost. Flagellomeres with 2 rings of sensorial filae, connected by commissures, with short distal stem on mid flagellomeres. F1 with very short basal stem, distal stem absents; 1.9 times as long as wide, 1.1 times as long as F2. Basal node of F2 6 times as long as distal stem. Palpi 3-segmented, its ratio 1:1:1.3, 2nd and 3rd segments swollen. Tarsal claws lost. Wing strongly rounded, maximally enlarged medially, 2.6 times as long as wide. Vein  $R_{1+2}$  joining *C* far before wing middle,  $R_{4+5}$  strongly curved distally, joining *C* far before of wing apex.  $R_{4+5}$  2.2 times as long as  $R_{1+2}$ , with two pores in basal 1/3. Fork *Cu* located at more long distance from the base of wing than point of joining  $R_{1+2}$  to *C*. Wing between veins *C* and  $R_{1+2}$  dark. VII and VIII abdominal segment with dorsal strongly sclerotized structures, former 3.1 times longer than latter. Ovipositor (IX abdominal segment) 6.9 times as long as wide, completely sclerotized, strongly enlarged proximally, gradually narrowed distally, with long setae at the end. Apical sclerotized plates pointed, covered by long setae, 1.2 times as long as wide.

MALE unknown.

RELATIONSHIPS. New species differs from other known species of *Ledomyia* by 3-segmented palpi (4-segmented in other species), by joining vein  $R_{4+5}$  far before wing apex (near wing apex in other species), by presence of forked *Cu*, by IX segment strongly enlarged to the base, by absence obtuse spines on apical plates of ovipositor, and by presence distal stem on female flagellomeres.

#### TRIBE DASINEURINI FELT, 1925

DIAGNOSIS. Male flagellomeres with definite necks; wing with  $R_{4+5}$  joining *C* slightly before wing apex; ovipositor protractile; VIII female abdominal tergite longer than VII and divided longitudinally; male genitalia with parameres gradually tapering from base to apex and nearly as long as aedeagus. Cosmopolitan tribe, including 44 genera and 816 species (Skuhrová, 1997; Gagné, 2004).

#### Genus *Lathyromyza* Rübsaamen, 1916

*Lathyromyza* Rübsaamen, 1916: 491.

Type species – *Cecidomyia schlechtendali* Kieffer, 1886: 328.

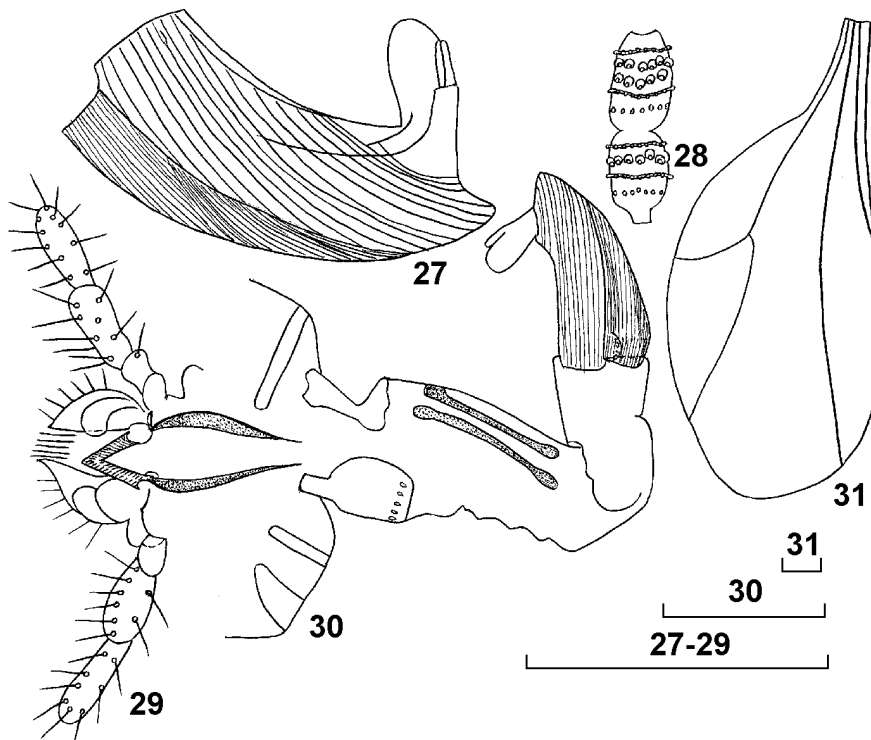
DIAGNOSIS. Ovipositor with long upper lamella, lower lamella very long and slender, both lamellae setose and with large subapical lobe on ventral side of ovipositor. Palaearctic genus with 3 species, associated with Fabaceae (Rübsaamen, 1916; Fedotova, 1984, 1991; Skuhrová, 1997; Gagné, 2004). This genus is newly recorded for the fauna of the Russian Far East.

#### *Lathyromyza recedens* Fedotova et Sidorenko, sp. n.

Figs 27-31

MATERIAL. Holotype - ♀, (slide 210): Russia, Primorskii krai, Vladivostok, 28.V 2004 (V. Sidorenko).

DESCRIPTION. FEMALE. Body length 1.79 mm, wing length 1.43 mm, wing width 0.63 mm. Last segments of flagellum lost. Flagellomeres without distal stem, with 2 rings of sensorial filae. F1 with basal stem, 1.6 times as long as wide, almost equal in length with F2. Palpi 3-segmented, located on palpiger, its ratio 1:2:2.1, 2nd segment swollen, 3rd - almost parallel-sided. Tarsal claws lost. Wing strongly rounded, maximally enlarged distally, 2.3 times as long as wide. Vein  $R_{1+2}$  joining *C* near wing middle,  $R_{4+5}$  strongly curved distally, joining *C* far before of wing apex. Fork *Cu* located at almost equal distance from the base of wing and point of joining  $R_{1+2}$  to *C*. Mid abdominal tergites look like distal thin sclerotized plate, distally with one row of setae, densely covered by scales. VIII tergite whole and with additional pair of strongly sclerotized elongated plates. Mid abdominal sternites interrupted, consist of two sclerotized plates. VIII sternite whole. VIII abdominal segment rectangularly curved dorsally. Ovipositor (IX abdominal segment) with strongly sclerotized base



Figs 27-31. *Lathyromyza recedens* sp. n., female: 27) ovipositor; 28) F1 and F2; 29) mouth parts; 30) VII-X abdominal segments; 31) wing. Scale line - 0.1 mm.

and unsclerotized apical plates, located dorso-caudally. IX abdominal segment strongly sclerotized ventrally, 2.5 times as long as wide, X segment 2.5 times as long as wide. Apical plate almost rounded, 2.4 times as long as ventral plate.

MALE unknown.

RELATIONSHIPS. New species differs from other known species of the genus *Lathyromyza* by 3-segmented palpi, by strongly enlarged and very short base of IX segment (not 3.7-6.0 times as long as wide), and by elongated flagellomeres. New species more closely to *L. florum* Rübsaamen, 1916 from Germany and Kazakhstan (Rübsaamen, 1916; Fedotova, 1984), but differs by less pointed apex of sclerotized part of ovipositor, by ovipositor 2.5 times (3.6 in *florum*) as long as wide, by short unsclerotized stem between sclerotized part and apical plates of ovipositor, and by curved vein  $R_{4+5}$  close to apex of wing.

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