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A Revision of the Drosophilidae (Diptera) in East Siberia and Russian Far East: Taxonomy and Biogeography

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ABSTRACT—Compiling all the previous and new records, the most recent list of drosophilid species from East Siberia (56 spp.) and Russian Far East (120 spp.) is provided along with descriptions of five new species, supplementary descriptions of two known species, some nomenclatural changes (five new synonymies, a new homonymy, and a change in status of a taxon from the specific to the subspecific rank), and a key to all the species. Drosophilid faunas of these two regions are compared with those of surrounding six regions in the Northern Hemisphere. Russian Far East constitutes the northeastern Asiatic realm in drosophilid biogeography together with northeastern China and Hokkaido, northern Japan. On the other hand, East Siberia belongs to the northern Palearctic realm extending to northern Europe. The border between these two biogeographic realms lies on the Stanovoy Mts.

INTRODUCTION

A biota of a given area is a historical product of the past biological processes. It reflects not only the current climatic conditions but also the past climatic changes and the evolution of organisms having been taking place there. East Asia has retained a quite high biodiversity since the mid Tertiary Period in comparison with other temperate regions in the Northern Hemisphere. For example, the number of tree species in East Asia is six times more than that in Europe, and three times more than that in eastern North America (Latham and Ricklefs, 1993). East Asia is considered to have been a refuge for old Tertiary temperate elements which had developed in high latitudes surrounding the North Pole. There have been no distinct geographic barriers such as mountain ranges running east-westward, deserts, or seas in this region, which disturbed the southward retreat of those old temperate elements due to cooling climate after the mid Tertiary Period.

In this context, East Siberia and Far East of Russia are situated at a very important position for studying the development and evolution of temperate and boreal biotas in the Northern Hemisphere. Those link East Asia, northern Europe, and northern North America, and have been free from huge continental glaciers since the end of the Tertiary Period in contrast to areas at comparable latitudes in Europe and North America. However, the knowledge on their biotas and the explored areas are still limited due to their huge territories and the difficulty of access.

Recently, Sidorenko (1990a, b, 1993, etc.) brought much information about the drosophilid fauna of Russian Far East. Up to the present, a total of 97 species have been reported from there. On the other hand, the knowledge on the drosophilid fauna of East Siberia is quite limited; only 13 species have so far been reported from Siberia (Duda, 1935; Sidorenko, 1993; etc.). In 1992 to 1995 we made extensive and intensive surveys on drosophilid faunas of East Siberia in Yakutia, Irkutsk Region, and Buryatia and Krasnoyarsk Region and additional collections in Far East of Russia.

Compiling all the previous and new records, this paper presents the most recent list of drosophilid species from East Siberia and Russian Far East along with descriptions of new species, nomenclatural changes, and a key to all the species. In addition, faunal characteristics of these regions are compared with those of surrounding regions by biogeographic analyses.

MATERIALS AND METHODS

Faunal surveys

Intensive and extensive surveys on drosophilid faunas were carried out in a huge area of East Siberia from arctic tundra through tundra-taiga transition and taiga forests to steppe-forest areas in Yakutia (Tiksi, Zhigansk, Verkhoyansk, Oimyakonsky District, Tomponsky District, Yakutsk, Olekminsk, and Stanovoy Mts.), Irkutsk Region, and Buryatia and Krasnoyarsk Region. Fly collections were made during the summer season, June to August, in 1992 to 1995 by various methods: by traps with fermenting bananas or malt baits (Lakovaara *et al.*, 1969) and by net sweeping on herbaceous plants, fungi, tree saps, and tree trunks, and from cliff shelters and undersides of fallen logs. Some additional collections were also made in Far East

of Russia, especially in Ussuri Region, during the same period to supplement the data of its drosophilid fauna.

Biogeographic analyses

The faunal compositions of East Siberia (ESB) and Russian Far East (RFE; excluding Kamtchatka, Sakhalin, and Kuril Is.) were compared with those of six neighboring regions, based on the following data: Hokkaido, northern Japan (HKD; 150 spp.: Okada, 1988; Toda, unpubl.), northeastern China (NEC; 92 spp.: Watabe *et al.*, 1993a; Toda, unpubl.), Central Asia (CAS; Mongolia, Xinjiang, Kazakhstan, Uzbekistan, Tadjikistan, Turkmenia, and Kirgizia; 54 spp.: Okada, 1973; Máca, 1988, 1992; Gornostaev, 1989, 1991, 1992, 1995; Watabe *et al.*, 1993b), Russian Europe (REU; 60 spp.: Gornostaev, 1989), northern Europe (NEU; Finland, Norway, and Sweden; 61 spp.: Bächli and Rocha-Pité, 1981, 1984), and northern North America (NNA; Alaska and northwestern Canada; 25 spp.: Wheeler and Throckmorton, 1964; Toda, 1984).

Faunal similarity between two regions was evaluated by Jaccard's coefficient of similarity (Udvardy, 1969): $S = c/(a+b-c)$, where c is the number of species common to both regions and a or b is the number of species occurring in each region. The similarity matrix resulting from pairwise calculations was then subjected to UPGMA cluster analysis (by NTSYS program, version 1.70). The significance of grouping of regions was statistically tested by the bootstrap technique (Felsenstein, 1985): 1) The same number of species as the total were resampled randomly from the original data matrix without changing the distribution of each species among regions. In consequence, each bootstrap sample gave a new data matrix with the same set of regions but with some of the original species duplicated and others dropped by the process of sampling. 2) A new dendrogram was deduced from each bootstrap sample. 3) This process was repeated 1,000 times. 4) For each of regional clusters deduced from the original data matrix, the relative frequency of its occurrence in 1,000 dendrograms resulting from bootstrap samples was calculated. The obtained value gave the statistical confidence level for each cluster of regions.

Faunal components were classified into 11 chorological types: NA) Nearctic, HA) Holarctic, PN) eastern Palearctic to Nearctic, PA) Palearctic, WP) western Palearctic, CP) central Palearctic, EP) eastern Palearctic, SJ) Sino-Japanese, OR) Oriental, C) cosmopolitan or subcosmopolitan, and E) endemic. The faunal compositions of these chorological elements were compared among the eight regions and among localities within East Siberia and Russian Far East.

TAXONOMY

Description

Five new species discovered in the present study are described below along with supplementary descriptions of two known species.

Type specimens are deposited in the following institutions: Department of Biology, Shenyang Teachers' College, Shenyang, China (DBSC); Entomological Institute, Hokkaido University, Sapporo, Japan (EHU); Institute of Biology and Pedology, Vladivostok, Russia (IBP); Institute of Zoology, Academia Sinica, Beijing, China (IZB); Biological Department, North-East Normal University, Changchun, China (NENU); Yakutsk Institute of Biology, Yakutsk, Russia (YIB).

Amiota* (*Phortica*) *chi Toda & Sidorenko, sp. nov. (Fig. 1)

Diagnosis. Aedeagal median rod submedially with 1 pair of long, nearly straight, lateral processes extending posterodorsad, subbasally with 1 pair of long, asymmetric processes: right one longer than left one (Fig. 1C).

Male (M) and female (F). Head: Eye brownish red. Ocellar triangle and occiput black. Frontal vitta pollinose, black medially to dorsally, yellow ventrally, medially with several minute interfrontal setulae; median black patch anteriorly reaching to ptilinal fissure. Fronto-orbital plate black above, narrowly silvery white along eye margin. Face pollinose, yellow; carina grayish brown, broad, low. Clypeus medially white, laterally black. Gena grayish yellow to brown; postgena dark brown. Pedicel dark brown; 1st flagellomere grayish orange yellow; arista without terminal bifurcation; lower branches of arista usually absent, if present, minute. Palpus somewhat triangular, grayish yellow, basally blackish, with 1 prominent subapical and 2-4 moderate lateral setae.

Thorax orange brown, with brownish black patches and pollinose pattern. Postpronotal lobe pale yellow, with only 1 long seta. Prescutellar setae present. Acrostichal setulae in 10 irregular rows. Basal scutellar setae divergent; apicals crossed.

Wing hyaline. Veins grayish yellow; r-m and dm-cu crossveins clouded. Basal medial-cubital crossvein present. R_{2+3} slightly curved to costa at tip. R_{4+5} and M_1 distally slightly convergent. C_1 setae less differentiated. Halter white.

Legs grayish yellow; tibiae with 3 dark gray rings; femora dark gray except for apical portion; distal half of 4th tarsomere and whole of 5th darker. Preapical dorsal setae small, but present on all tibiae; apicals on fore and mid tibiae. Mid tarsus with 2 rows of cuneiform setulae on inner and outer sides; hind tarsus with 1 row of cuneiform setulae on outer side and 1 row of recurved setulae on underside. Fore and hind 1st tarsomeres each as long as 3 succeeding tarsomeres together; mid 1st tarsomere longer than the rest together.

Abdomen: Tergites yellow; 1st and 2nd black sublaterally and on lateral margins; 3rd and 4th with medially and laterally protruded, caudal black band and 1 pair of yellow patches near lateral margins; 5th with medially and laterally protruded, caudal black band; 6th nearly entirely black except for median line. Sternites grayish yellow.

Male terminalia (Fig. 1): Epandrium pubescent caudomedially to dorsally and anteroventrally, with 7-9 setae in caudomedial to dorsal part of each side and robust apodeme along anterior margin; anteroventral corner protruded; caudoventral margin slightly constricted. Surstylus basally broad, distally narrow, with several prensisetae irregularly arranged on apical margin, many setae basally and many setulae distally. Tenth sternite composed of 1 pair of lateral arms connecting surstyli with each other and somewhat quadrate median piece with caudal median process fused to pubescent plate. Cercus semicircular, separated from epandrium, densely setigerous and entirely pubescent. Membrane between epandrium and cercus entirely pubescent. Hypandrium narrow, arched; caudal ends contiguous to caudolateral corners of gonopod and anteroventral corners of epandrium. Gonopods fused, forming large posteromedian lobe anteriorly with elongate, spoon-shaped, vertical lobe.

Paramere distally tripartite; apical process with 3 teeth apically and 1 sensillum subapically; triangular median process and its basal area pubescent; proximal process slender, apically with 1 sensillum. Aedeagus composed of outer membranous tube and sclerotized median rod; outer membrane posteriorly connected to vertical lobe of gonopod; median rod curved ventrad and then forward, apically slightly dilated and bifid, basally connected to basal corners of vertical lobe by 1 pair of bridges and contiguous to apodeme by means of rod. Aedeagal apodeme with well developed, distally bifurcated vertical rod, apically contiguous to bases of parameres.

Measurements: BL (body length) = 3.43 mm in the holotype (range in 9 M and 5 F paratypes: 2.90-4.41 in M, 3.97-4.35 in F), ThL (thorax length) =1.75 mm (1.45-1.95 in M, 1.82-1.89 in F), WL (wing length) = 2.96 mm (2.59-3.21 in M, 3.37-3.65 in F), WW (wing width) = 1.20 mm (1.12-1.49 in M, 1.46-1.64 in F).

Indices: arb (dorsal branches of arista/ventral branches of arista) = 4 (3-4)/0 (0-1), FW/HW (frontal width/head width) = ne: not examined due to damage of the specimen (0.44-0.52), ch/o (maximum width of gena/maximum diameter of eye) = 0.13 (0.08-0.14), prorb (proclinate orbital/posterior reclinate orbital) = 1.10 (0.93-1.47), rcorb (anterior reclinate orbital/posterior reclinate orbital) = 0.51 (0.34-0.60), vb (subvibrissal/vibrissa) = 0.47 (0.30-0.60), dcl (anterior dorsocentral/posterior dorsocentral) = 0.52 (0.35-0.68), presctl (prescutellar/posterior dorsocentral) = 0.57 (0.31-0.56), sctl (basal scutellar/apical scutellar) = 1.10 (0.86-1.04), sterno (anterior katepisternal/posterior katepisternal) = 0.81 (0.78-1.06), orbito (distance between proclinate and posterior reclinate orbitals/distance between inner vertical and posterior reclinate orbital) = 1.24 (1.09-1.89), dcp (length distance between ipsilateral dorsocentrals/cross distance between anterior dorsocentrals) = 0.25 (0.22-0.32), sctlp (distance between ipsilateral scutellars/cross distance between apical scutellars) = 1.14, C = 2.21 (2.25-2.50), 4c = 1.78 (1.57-1.82), 4v = 3.42 (3.17-3.55), 5x = 1.33 (1.00-1.25), ac = 3.58 (2.92-3.60), M = 0.87 (0.77-1.00), C3F = 0.65 (0.66-0.76).

Holotype M, Russia: Komsomolsky Preserve, 50 km upper from mouth of R. Gorin, Khabarovsk Province, Far East, 28.VII.1990 (Sidorenko); in IBP.

Paratypes: Russia: Far East: 135M, 2F, Primorye: R. Ussuri, near Novomikhaylovka, 26.VII.1986 (Sidorenko); R. Ilistaya, near Nikolayevka, 24.VII.1986 (Sidorenko); R. Bolshaya Ussurka, 50 km east of Melnichnoe, 1.VIII.1986 (Sidorenko); 5 km south of Yakovlevka, 25,26.VII.1986 (Sidorenko); near Tsukanovo, 28.VI.1987 (Sidorenko); Vysokogorsk, 28.VII.1986 (Sidorenko); Novovladimirovka, 23.VIII.1985 (Sidorenko); 15 km upper from the mouth of R. Jigitovka, 30.VII.1986 (Sidorenko); 32 km south of Lazo, valley of R. Benevka, 16.VIII.1986 (Sidorenko); Ussurian Nature Reserve, valley of R. Komarovka, 9,20.VIII.1988, 20-22.VII.1994 (Sidorenko); Khabarovsk Province: Komsomolsky Nature Reserve, 50 km upper from the mouth of R. Gorin, 19,23,28.VII-1.VIII.1990 (Sidorenko); near Vanino, 14.VIII.1976 (Bodrova); Amur Region: Arkhara, 9.VI.1987 (Sidorenko); Khingansky Nature Reserve, near Kundur, 21-24.VII.1988 (Sidorenko); R. Nyukzha, 19.V.1976 (Soboleva); R. Khorogochi, 8.VI.1975 (Krylova); R. Yukhtami, 13.VII.1975 (Petrova); Irkutsk Region: 15 km east of Ust-Ordynskoe, 540 m, steppe, 31.VII-3.VIII.1994 (Sidorenko); Yakutia: Olekminsk, 4M, 3,5.VII.1993 (Watabe); Yakutsk: 1F, 23-25.VII.1992, 2M, 2F, 11-17.VIII.1992 (Takaku); 2M, 2F, 19,20.VII.1993 (Watabe); 1M, 11.VII. 1994 (Toda); 9M, 13F, 6.VII-17.VIII.1995 (Toda); 49M, 5F, Agayakan, Oimyakonsky, 2,3.VII.1994 (Toda); in EHU, IBP, and YIB. China: Jilin: Zoujia: 3M, 1F, 22.VI-1.VII.1990, 3M, 11-26.VII.1990 (Sun); 155M, 17F, Changbaishan, 30.VII-7.VIII.1990 (Sun); 5M, Benxi, Liaoning, 12.VIII.1991 (Hu); in DBSC, EHU, and NENU.

Distribution. Russia (Yakutia, Irkutsk, Amur, Khabarovsk, Primorye), China (Heilongjiang, Jilin, Liaoning).

Relationship. This species is closely related to *A. conifera* Okada, 1977 in having asymmetric basal processes on aedeagus, especially similar to its subspecies, *A. conifera takadai* Okada, 1977, in longer aedeagal basal processes, but distinguishable from the species in having long, nearly straight, lateral processes on aedeagus, *i.e.*, in *conifera* the lateral processes relatively short and sinuated. Similar long, straight, lateral processes are also seen on the aedeagus of *A. semivirgo* Máca, 1977, but its aedeagal basal processes are very short.

Etymology. The long lateral and basal processes of aedeagus look like Greek letter "chi" in lateral view, crossing each other.

Amiota* (*Phortica*) *iota Toda & Sidorenko, sp. nov.
(Fig. 2)

Diagnosis. Aedeagal median rod apically much dilated, bilobed, and with 1 pair of acute, apical projections and 1 pair of small, subapical projections, basally with 1 pair of triangular lobes (Fig. 2C).

Some characters commonly seen in *A. chi* are not referred to in the following description.

Male. Head: Occiput dark brown. Frontal vitta black above, yellow below; median black patch anteriorly narrowing and not reaching to ptilinal fissure. Fronto-orbital plate dark brown above. Face pale yellow. Gena grayish yellow. Pedicel grayish orange yellow; 1st flagellomere grayish yellow; lower branches of arista minute. Palpus with 2-3 moderate lateral setae.

Thorax: Acrostichal setulae in 8 irregular rows.

Legs: Fore 1st tarsomere slightly longer than 3 succeeding tarsomeres together.

Male terminalia (Fig. 2): Surstylus elongate, slightly curved inward. Median piece of 10th sternite as long as broad and with triangular projection caudomedially; narrow pubescent plate present between 10th sternite proper and cerci. Cercus somewhat narrowly triangular. Hypandrium with 1 pair of small, triangular flaps on lateral inner sides. Distal median process of paramere shaped tongue-like, without ornamentation.

Measurements: BL = 3.53 mm (3.20-3.75), ThL = 1.73 mm (1.45-1.81), WL = 2.74 mm (2.50-2.90), WW = 1.17 mm

(1.06-1.31).

Indices: arb = 4 (3-4)/1 (1-2), FW/HW = ne (0.48-0.52), ch/o = ne (0.12-0.15), prorb = 1.20 (1.14-1.33), rcorb = 0.51 (0.47-0.63), vb = 0.47 (0.42-0.53), dcl = 0.51 (0.48-0.55), presctl = 0.54 (0.49-0.56), sctl = 1.11 (1.02-1.08), sterno = 1.00 (0.79-1.00), orbito = 1.43 (1.25-1.67), dcp = 0.29 (0.26-0.37), sctlp = 0.97 (0.92-1.04), C = 2.59 (2.34-2.62), 4c = 1.80 (1.44-1.81), 4v = 3.75 (2.90-3.53), 5x = 1.01 (0.88-1.24), ac = 3.43 (2.73-3.33), M = 0.93 (0.71-1.00), C3F = 0.66 (0.60-0.73).

Holotype M, Russia: vic. Gorny Khutor, Primorye, Far East, 5.VII.1990 (Sidorenko); in IBP.

Paratypes: Russia: Far East: 134M, Primorye: Novomikhaylovka, 26.VII.1986 (Sidorenko); R. Ilistaya, near Nikolayevka, 24.VII.1986 (Sidorenko); R. Bolshaya Ussurka, 50 km east of Melnichnoe, 1.VIII.1986 (Sidorenko); 5 km south of Yakovlevka, 25.VII.1986 (Sidorenko); Ussurian Nature Reserve, valley of R. Komarovka, 12,17,20.VIII.1988, 29.V.1990, 20-23.VII.1994 (Sidorenko); near Lenino, 27.VII.1986 (Sidorenko); Lazovsky Nature Reserve, 10 km west of Preobrazhenie, 15.VIII.1986 (Sidorenko); Petrov Is., 17.VIII.1986 (Sidorenko); in EHU and IBP. China: 6M, Changbaishan, Jilin, 1-5.VIII.1990 (Sun); 4M, Tianmushan, Zhejiang, 14.IX.1947; Liaoning: 11M, Shenyang, 8-10.VIII.1991 (Hu); 1M, Benxi, 12.VIII.1991 (Hu); 88M, Qianshan, 15,16.VIII.1991 (Hu); in DBSC, EHU, IZB, and NENU.

Other specimen examined: China: 1M, Huangshan, Anhui, 29.VIII.1991 (Chen).

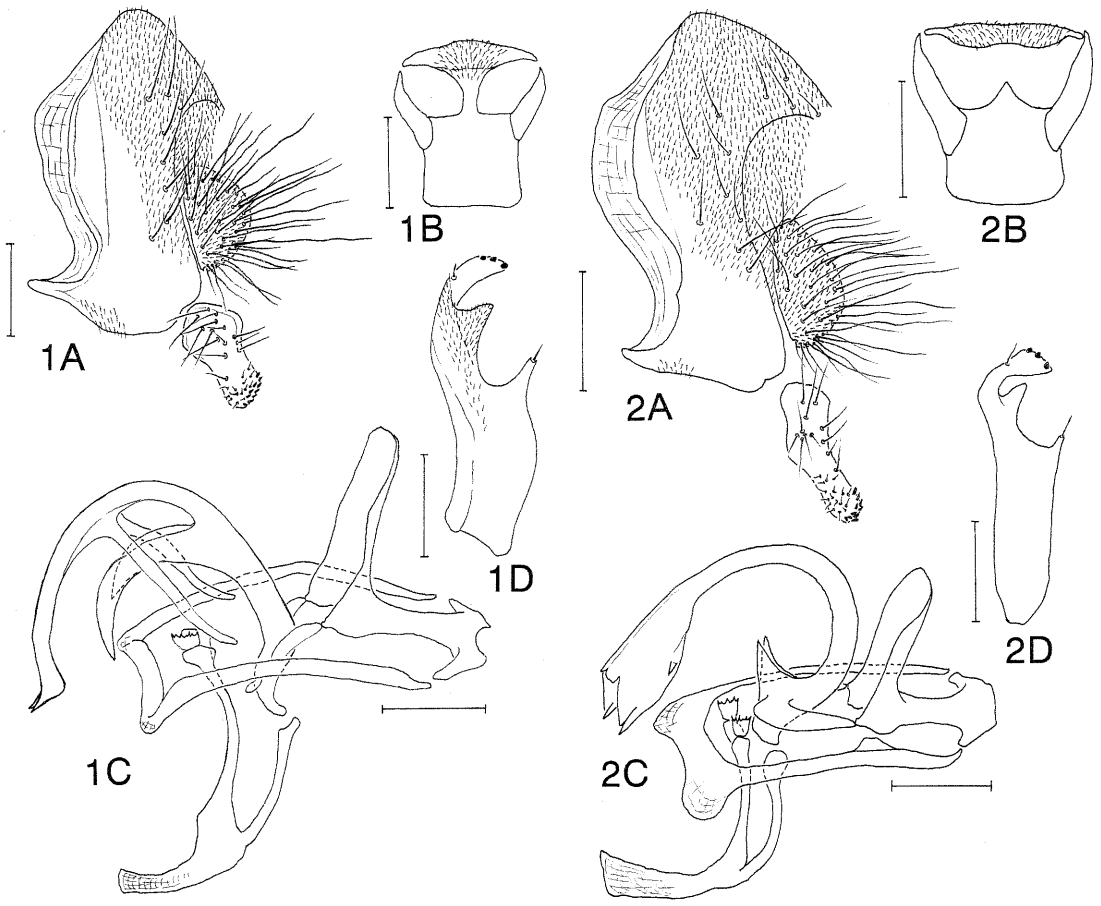
Distribution. Russia (Primorye), China (Jilin, Liaoning, Anhui, Zhejiang).

Relationship. This species resembles *A. kappa* Máca, 1977 in having one pair of triangular lobes on the basal part of aedeagus, but can be clearly distinguished from it by the diagnostic characters, *i.e.*, in *kappa*, the aedeagal median rod apically not dilated and bifurcated; the aedeagal basal lobe small, but reared from the much thickened median rod proper.

Etymology. Meaning the closeness to "kappa" in the Greek alphabet.

Hirtodrosophila baikalensis Watabe, Toda, & Sidorenko, sp. nov.
(Fig. 3)

Diagnosis. Scutum with diffuse, dark brown, longitudinal stripes, especially paler along dorsocentral lines; epandrium dorsally slightly broader than ventral lobe (Fig. 3B); prensisetae



Figs. 1 and 2. 1. *Amiota (Phortica) chi* Toda & Sidorenko, sp. nov. (M paratype from Zoujia, Jilin, northeastern China). 2. *Amiota (Phortica) iota* Toda & Sidorenko, sp. nov. (M paratype from Changbaishan, Jilin, northeastern China). A, Epandrium, surstylus, and cercus; B, 10th sternite and pubescent plate; C, hypandrium, gonopod, and aedeagus (ventrolateral view); D, paramere. (Scale-line = 0.1 mm)

arranged in concave row on surstylus (Fig. 3C).

Male and female. Head: Eye dark red. Ocellar triangle and occiput dark brown. Frontal vitta yellowish brown, anteriorly paler and with a few interfrontal setulae. Fronto-orbital plate glossy, dark brown, broad, not reaching to anterior margin of frons. Face yellowish brown, darker on median line and ventral margin; carina almost undeveloped. Clypeus dark brown. Gena yellowish brown, much darker on anterior and ventral margins; postgena dark brown. Antenna grayish brown. Palpus grayish brown, usually with 1 short, somewhat prominent seta at apex.

Thorax: Postpronotal lobe pale brown, with 2 stout setae: upper one longer. Acrostichal setulae in 6 regular rows. Scutellum dark brown, darker on posterior margin. Basal scutellar setae parallel or slightly convergent; apicals crossed. Thoracic pleura dark brown.

Wing slightly fuscous. Veins grayish yellow; r-m and dm-cu crossveins clear. R_{2+3} slightly curved to costa at tip; R_{4+5} and M_1 distally slightly convergent. C_1 seta 1. Halter entirely white.

Legs dark brown, paler at joints. Preapical dorsal seta present only on hind tibia; apical on mid tibia. Fore 1st tarsomere as long as 3 succeeding tarsomeres together; mid and hind 1st tarsomeres each as long as the rest together.

Abdomen: Tergites dark brown; 2nd to 5th each anteromedially paler (Fig. 3A). Sternites dark brown, rectangular.

Male terminalia (Fig. 3B-E): Epandrium dark brown, posteriorly pubescent on upper half, with 5-7 setae submedially to dorsally and 6-8 on ventral lobe. Surstylus concaved distally, with 7-9 prensisetae on distal margin, many setae on ventral outer and inner surfaces. Cercus dark brown, pointed at caudoventral corner, entirely pubescent, with 28-32 setae on lateral surface and several setulae near caudoventral apex. Hypandrium with large, median lobe gradually narrowing caudally and pubescent apically and 1 pair of short paramedian setae at apices of lateral processes. Gonopods almost degenerated. Paramere elongate, with a few short setae submedially and setulae apically. Aedeagus long, gently curved ventrad proximally; distiphallus somewhat oblong, with serration of spinules submedially on lateral sides and 1 pair of minute, triangular flaps dorso-subapically.

Female terminalia: Oviscapt distally broad, proximally narrow, apically slightly protruded and with 2 large, peg-like ovisensilla: terminal one larger; 4 large, peg-like ovisensilla present on dorsocaudal margin, and 6 small ones and 1 subapical trichoid ovisensillum on ventral margin; anteroventral

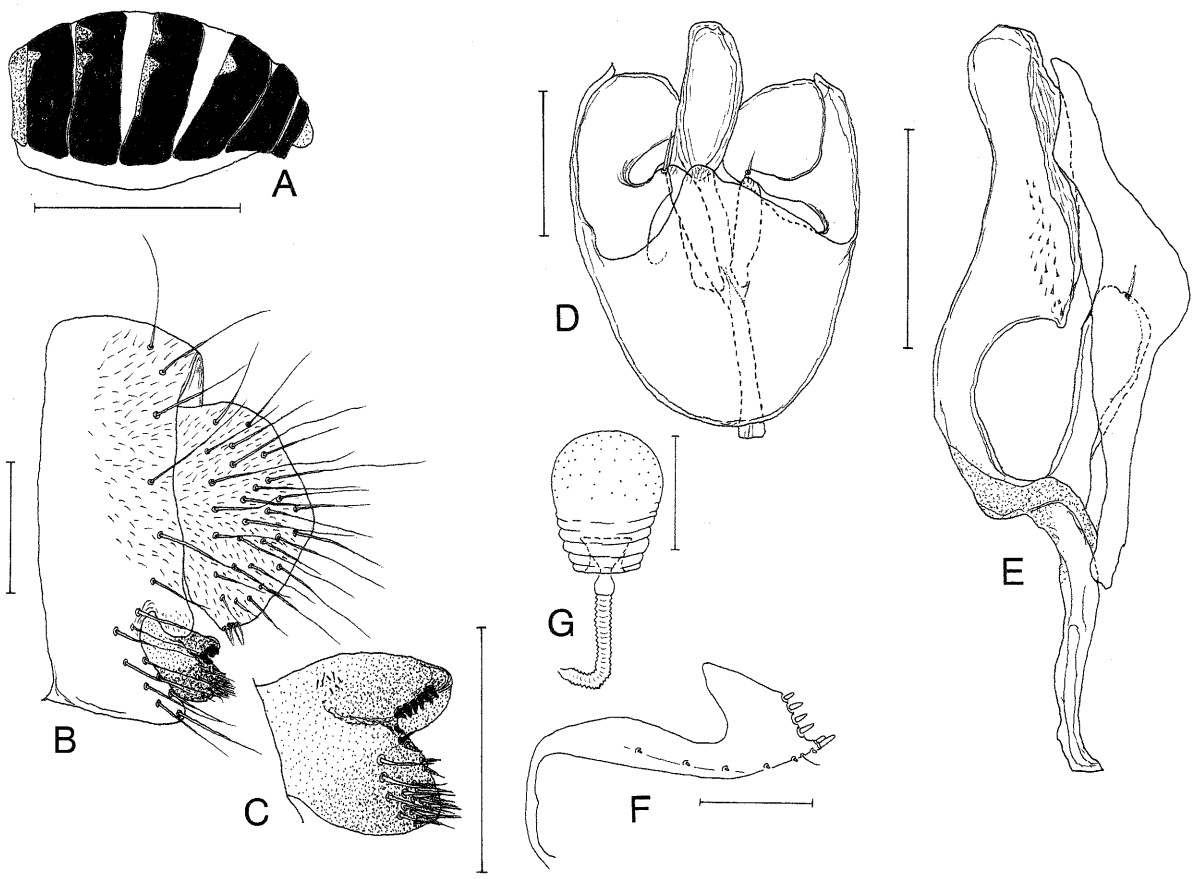


Fig. 3. *Hirtodrosophila baikalensis* Watabe, Toda & Sidorenko, sp. nov. (M paratype from Changbaishan, Jilin, northeastern China; F paratype from Baikal, Solzan, Irkutsk Region, East Siberia, Russia). A, Abdomen; B, epandrium, surstylus, and cercus; C, surstylus; D, hypandrium, aedeagus, and paramere (ventral view); E, ditto (lateral view); F, oviscapt; G, spermatheca. (Scale-line = 1.0 mm in A, 0.1 mm in the others)

bridge narrow, long (Fig. 3F). Spermathecal capsule slightly longer than broad, slightly narrowing and strongly wrinkled in basal half, with minute warts sparsely on distal half surface; introvert shallow, distally dilated; duct much dilated within introvert (Fig. 3G).

Measurements: BL = ne (2.48-3.00 mm in M, 2.11-2.74 mm in F), ThL = 0.98 mm (1.00-1.08 in M, 1.05-1.10 in F), WL = 2.46 mm (2.40-2.60 in M, 2.49-2.52 in F), WW = 1.06 mm (1.16-1.24 in M, 1.12-1.13 in F).

Indices: arb = 4 (3-4)/1 (1), FW/HW = 0.53, (0.46-0.51), ch/o = 0.30, prorb = 0.93 (0.75-1.00), rcorb = 0.40 (0.29-0.50), vb = 0.17, dcl = 0.52 (0.36-0.62), sctl = 0.88 (0.82-0.88), sterno = 0.42 (0.62-0.67), orbito = 0.83 (0.78-0.90), dcp = 0.39 (0.36-0.62), sctlp = 0.86, C = 2.28 (2.28-2.67), 4c = 0.93, 4v = 1.63 (1.63-1.78), 5x = 1.58 (1.33-1.38), ac = 3.45 (3.00-3.60), M = 0.45, C3F = 0.44 (0.33-0.40).

Holotype M, Russia: Baikal, Solzan, Irkutsk Region, 13.VIII.1994 (Sidorenko); in IBP.

Paratypes: Russia: 3M, 1F, same data as holotype; 1F, Angarsk, Irkutsk Region, 6.VIII.1994 (Sidorenko); 1M, Ussurian Nature Reserve, valley of R. Komarovka, 21.VII.1994 (Toda); in EHU and IBP. China: 3M, Changbaishan, Jilin, 4,5.VIII.1990, from underside of fallen trees and cliff shelters (Sun); in EHU and NENU.

Distribution. Russia (Irkutsk, Primorye), China (Jilin).

Relationship. This species is closely related to *Hi. pseudonokogiri* (Kang, Lee, & Bahng, 1965), but can be clearly distinguished from it by the diagnostic characters, *i.e.*, in *pseudonokogiri*, scutum nearly unicolorous; epandrium dorsally much broader than ventral lobe; prensisetae arranged in nearly straight row on surstylus.

Etymology. Pertaining to the type locality.

Scaptomyza* (*Hemiscaptomyza*) *taigensis Sidorenko & Toda, sp. nov.
(Fig. 4)

Diagnosis. Epandrium with small projection at insertion of surstylus (Fig. 4A); oviscapt relatively broad, triangular apically (Fig. 4D).

Male and female. Head: Eye bright red, with thin pile. Ocellar triangle brownish black; ocelli reddish yellow; ocellar seta long. Occiput brownish black. Frontal vitta yellowish orange. Fronto-orbital plate grayish brown, anteriorly whitish yellow. Face white; carina high in middle part, narrow. Clypeus yellow. Gena pale yellow. Pedicel yellowish brown, with 2 stout setae; 1st flagellomere yellow; terminal bifurcation of arista moderate. Palpus yellow, with 2 long, stout terminal setae and 1 subterminal one.

Thorax: Scutum yellowish brown, with 3 dark brown longitudinal stripes: mid stripe between dorsocentral setae, running through entire length of scutum and scutellum; outer pair broad, beginning from postpronotal lobe and running parallel to dorsocentral lines. Scutellum yellowish brown, paler at bases of scutellar setae. Postpronotal lobe brownish black, with 2 stout setae: upper one longer. Acrostichal setulae in 2 rows; a few setulae sometimes present between dc- and ac-lines. Mesopleuron yellowish brown or dark brown, darker in upper part. Basal scutellar setae convergent; apicals bent upright, convergent and crossed.

Wing with distinct black spot at apex of R_{4+5} in male (black spot pale in female) and sometimes small indistinct black spot at apex of M_1. C_1 setae 2: lower one longer. Halter yellowish brown.

Legs yellow. Preapical dorsal setae on fore and mid tibiae; apical seta on mid tibia.

Abdomen: Tergites black. Sternites brownish gray. Pleural membrane pale gray.

Male terminalia (Fig. 4A-C): Epandrium with 6-8 setae only on ventral margin. Surstylus with 8-9 prensisetae arranged in straight row. Cercus with 18-22 setae on upper half and tuft of setulae at caudoventral apex. Aedeagus long, proximally broad, distally narrow. Paramere broad, but short, without sensilla. Hypandrium triangular, with 1 pair of long processes on lateral lobes.

Female terminalia: Oviscapt with 13-15 peg-like ovisensilla and 1 subterminal trichoid one on ventral margin (Fig. 4D).

Measurements: BL = 2.70 mm (2.50-2.60 in M, 2.60-3.00 in F); ThL = 1.00 mm (1.00-1.05 in M, 1.05-1.15 in F); WL = 2.30 mm (2.30-2.40 in M, 2.60-2.90 in F); WW = 0.95 mm (0.95-1.00 in M, 1.10-1.25 in F).

Indices: arb = 4 (4)/1 (1); FW/HW = 0.50 (0.46-0.56); ch/o = 0.27 (0.16-0.27); prorb = ne (0.66-1.00); rcorb = 0.38 (0.33-0.50); vb = 0.63 (0.56-0.63); dcl = 0.82 (0.60-0.82); sctl = 1.53 (1.40-1.53); sterno = ne (0.40-0.53); orbito = 0.80 (0.66-0.80 in M, 0.30-0.40 in F); dcp = 0.82 (0.75-0.83); sctlp = 1.10 (0.91-1.10 in M, 1.09-1.16 in F); C = 3.35 (3.13-3.57); 4c = 0.62 (0.58-0.66); 4v = 1.35 (1.33-1.38); 5x = 1.35 (1.18-1.55); ac = 2.38 (2.10-2.62); M = 0.40 (0.37-0.43); C3F = 0.49 (0.43-0.57).

Holotype M, Russia: 30 km SE Chuguevka, Primorye, 1.VI.1993 (Sidorenko); in IBP.

Paratypes: Russia: 2M, same data as holotype; 2M, 3F, Irkutsk Region, 10 km east of Baikal, Solzan, 500 m, forest, 13.VIII.1994 (Sidorenko); in IBP.

Distribution. Russia (Irkutsk, Primorye).

Relationship. This species resembles *Sc.* (*H.*) *okadai* Hackman, 1959 in general appearance, especially in body coloration, but can be distinguished from the latter by the diagnostic characters, *i.e.*, in *okadai*, epandrium truncate below, without small projection at insertion of surstylus; oviscapt slender.

Etymology. Pertaining to "taiga", coniferous forest vegetation dominating in vast areas of Siberia.

Scaptomyza* (*Hemiscaptomyza*) *carinata Okada, 1973
(Fig. 5)

Scaptomyza (Hemiscaptomyza) carinata Okada, 1973, Ann. Hist.-nat. Mus. Nat. Hung., 65: 274.

Male and female. Head: Ocellar triangle dark brown; ocelli

red; ocellar seta rather long. Occiput brownish black. Frontal vitta brownish yellow, anteriorly paler. Fronto-orbital plate dark brown, anteriorly paler. Pedicel brownish yellow, with 2 stout setae; 1st flagellomere pale yellowish gray. Palpus pale yellow, with 2 stout terminal setae.

Thorax: Scutellum yellowish brown. Postpronotal lobe slightly paler. Mesopleuron yellowish brown, darker in upper part.

Wing with indistinct black spot at apex of R_{4+5} in male. Veins yellow. Halter pale gray.

Legs yellow. Preapical dorsal setae on all tibiae; apicals on fore and mid tibiae. Fore 1st tarsomere as long as 2 succeedings together.

Abdomen: Tergites yellowish brown: posterior ones darker. Sternites pale grayish brown.

Male terminalia (Fig. 5): Epandrium pubescent caudomedially to dorsally, with triangular projection at caudoventral apex and 7-9 setae near ventral margin. Surstylus with 15-16 prensisetae in deeply concave row. Cercus pubescent except for anteroventral portion, with 24-27 setae and a row of several setulae around caudoventral corner. Tenth sternite large, strongly convex dorsad, medially notched and triangularly pointed at caudal end. Aedeagus slender, distally partially bilobed, longer than apodeme. Paramere oval, apically somewhat pointed and with 3-4 minute sensilla. Hypandrium anteriorly triangular, with 1 pair of large lateral lobes each bearing 1 paramedian seta and 1 long process parallel to aedeagus on inner margin; hypandrial process not exceeding tip of aedeagus.

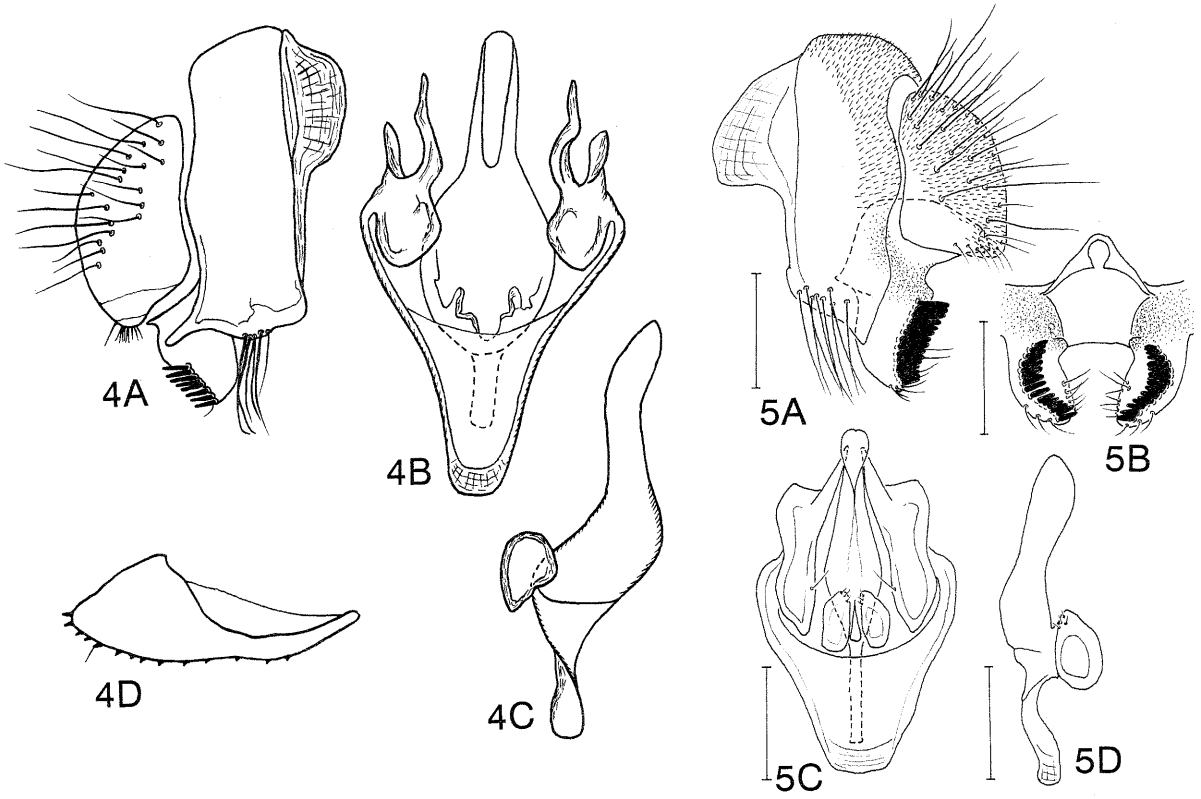
Measurements: BL = 2.20-2.40 mm in M, 2.30-2.80 mm in F; ThL = 0.80-0.85 mm in M, 0.85 mm in F; WL = 2.10-2.15 mm in M; 2.10 mm in F; WW = 0.80-0.85 mm in M and F.

Indices: arb = 4/1; FW/HW = 0.45-0.46; ch/o = 0.10-0.14; prorb = 0.71-0.75; rcorb = 0.31-0.56; vb = 0.53-0.66; dcl = 0.53-0.83; sctl = 1.50-1.78; sterno = 0.55-0.58; orbito = 0.67-0.89; dcp = 0.70-0.80; sctlp = 0.89-1.10; C = 2.78-3.38; 4c = 0.64-0.82; 4v = 1.47-1.76; 5x = 1.25-1.80; ac = 2.29-2.77; M = 0.43-0.50; C3F = 0.44-0.47.

Specimens examined: Russia: Yakutia: 50M, 23F, Agayakan, Oimyakonsky, 2,3.VII.1994 (Toda); 37M, 10F, Geological St. at mouth of R. Kurbelyah, Tomponsky, 6,7.VII.1994 (Toda); 5M, 7F, At mouth of R. Rosomakha, 150 km east of Khandyga, Tomponsky, 8.VII.1994 (Toda); Yakutsk: 2M, 20.VII.1993 (Watabe); 28M, 17F, 11,12.VII.1994 (Toda); 12M, 23F, Olekminsk, 1-3.VIII.1993 (Watabe); Stanovoy Mts.: 2F, R. Chulmakan, 13.VII.1995 (Toda); 1F, Nagornyi, 16.VII.1995 (Toda).

Distribution. Russia (Yakutia), Mongolia.

Remarks. This species was described on the basis of only female specimens collected from Mongolia (Okada, 1973). The characters of external morphology and female terminalia observed in the specimens from East Siberia are completely



Figs. 4 and 5. 4. *Scaptomyza (Hemiscaptomyza) taigensis* Sidorenko & Toda, sp. nov. (the holotype; F paratype from Baikal, Solzan, Irkutsk Region, East Siberia, Russia). A, Epandrium, surstylus, and cercus; B, hypandrium, aedeagus, and parameres (ventral view); C, aedeagus and paramere (lateral view); D, oviscapt. 5. *Scaptomyza (Hemiscaptomyza) carinata* Okada, 1973 (M specimen from Olekminsk, Yakutia, East Siberia, Russia). A, Epandrium, surstylus, and cercus; B, 10th sternite and surstyli (caudal view); C, hypandrium, aedeagus, and parameres (ventral view); D, aedeagus and paramere (lateral view). (Scale-line = 0.1 mm)

consistent with the original description. Its male terminalia are here described and figured for the first time.

Scaptomyza* (*Scaptomyza*) *yakutica Sidorenko & Toda, sp. nov.
(Fig. 6)

Diagnosis. Arista without ventral branches; hypandrium quadrate (Fig. 6C); oviscapt proximally broad (Fig. 6E).

Some characters commonly seen in *Sc. taigensis* are not referred to in the following description.

Male and female. Head: Frontal vitta brownish yellow, anteriorly paler and with several interfrontal setulae arranged in V-shaped row. Face yellow; carina low, narrow. Clypeus yellowish brown. Gena pale yellow. Pedicel grayish yellow. Palpus pale yellow.

Thorax dark gray. Postpronotal setae 2: upper one only slightly longer. Acrostichal setulae in 4 rows. Basal scutellar setae parallel to slightly divergent.

Wing hyaline. Veins grayish yellow; crossveins clear. C_1 setae 2, subequal. Halter pale grayish yellow.

Legs yellow; tarsi distally grayish brown. First tarsomere of male fore leg as long as 2 succeeding tarsomeres together; that of female fore leg and those of mid and hind legs in both sexes each as long as 3 succeedings together.

Abdomen: Tergites dark brownish gray. Sternites gray. Pleural membrane pale grayish white.

Male terminalia (Fig. 6A-D): Epandrium pubescent mediocaudally to dorsally, somewhat angled at caudoventral corner, with 15-17 setae medially to ventrally. Surstylus somewhat quadrate, with 13-15 prensisetae in slightly concave row on distal margin, 2-4 small setae on ventral part of outer mesal surface, and tuft of dense recurved setae around caudoventral corner to ventral part of inner surface. Cercus large, somewhat oblong, ventrally broad and round, pubescent except for ventral margin, bearing 31-35 setae, caudoventrally with folded triangular flap bearing several setulae. Tenth sternite very large, composed of median lobe and 1 pair of lateral ones; lateral lobe fused to surstylus. Aedeagus distally bilobed, broad, round; aedeagal guide developed; apodeme shorter than aedeagus. Paramere small, somewhat triangular in lateral view, usually with 3 minute sensilla. Hypandrial lateral lobe with 1 short process parallel to aedeagus on inner margin but without paramedian seta.

Female terminalia: Oviscapt with 20-22 marginal peg-like ovisensilla and 14-16 lateral ones arranged in 3 irregular rows (Fig. 6E).

Measurements: BL = 2.40 mm (2.30-2.40 in M; 2.70-2.80 in F); ThL = 0.85 mm (0.85-0.95 in F); WL = 2.30 mm (2.35-2.40 in F); WW = 0.90 (0.90-0.95 in F).

Indices: arb = 4 (4)/0 (0); FW/HW = 0.47 (0.59-0.67); ch/o = 0.20 (0.17-0.20); prorb = 1.00 (0.81-1.00); rcorb = 0.57 (0.56-0.60); vb = 0.73 (0.64-0.83); dcl = 0.71 (0.71-0.76); sctl = 1.58 (1.58-1.75); sterno = 0.52 (0.45-0.50); orbito = 0.62 (0.45-0.62); dcp = 0.94 (0.80-0.94); sctlp = 1.38 (1.11-1.56); C = 3.39 (3.39-3.67); 4c = 0.67 (0.59-0.67); 4v = 1.44 (1.34-1.60); 5x = 1.00 (1.00-1.50); ac = 2.57 (2.00-2.57); M = 0.33 (0.33-0.48); C3F = 0.50 (0.42-0.56).

Holotype M, Russia: Yakutsk, Yakutia, 11.VII.1994 (Toda); in IBP.

Paratypes: Russia: Yakutsk: 2M, 9F, same data as holotype except for 11,12.VII.1994 (Toda); 1 F, 20.VII.1993 (Watabe); 24M, 37F, 8.VII.1995 (Toda); in EHU, IBP, and YIB.

Distribution. Russia (Yakutia).

Relationship. This species is closely related to *Sc.* (*Sc.*) *graminum* (Fallén, 1823), but can be distinguished from the latter by the diagnostic characters, *i.e.*, in *graminum*, arista with 1 ventral branch; hypandrium anteriorly narrowing; oviscapt slender.

Etymology. Pertaining to the type locality.

Scaptomyza* (*Scaptomyza*) *baechlii Sidorenko, 1993
(Fig. 7)

Scaptomyza (Scaptomyza) baechlii Sidorenko, 1993, Entomofauna, 14: 263.

The following description supplements and partly revises the original one.

Male terminalia (Fig. 7): Epandrium pubescent mediocaudally to dorsally, sharply pointed at ventral apex. Cercus pubescent except for ventral portion, with several setulae at caudoventral corner. Tenth sternite large; lateral lobes fused to surstyli. Distiphallus dorsally pointed. Paramere short, triangular in lateral view, distally pubescent. Hypandrial lateral lobes with 1 pair of paramedian setae , pubescent around paramedian setae, and 1 pair of process triangular in lateral view present on inner margins.

Indices: ch/o = 0.17-0.20; prorb = 0.80; rcorb = 0.40; vb = 0.40-0.50; dcl = 0.67; sctl = 1.40-1.50; sterno = 0.50-0.60; orbito = 0.40-0.50; dcp = 0.67; sctlp = 1.25.

Specimens examined: Russia: the holotype, Mt. Vysokaya, northern Primorye, 1500 m, ex light trap, 30,31.VIII.1990 (Sidorenko), in IBP; 2M, Baikal, Solzan, Irkutsk Region, 13.VIII.1994 (Sidorenko).

Distribution. Russia (Irkutsk, Primorye).

Remarks. The distiphallus was originally figured round in lateral view (Sidorenko, 1993). However, this had been mistaken due to insufficient treatment of the specimen with KOH solution. We confirmed the dorsally pointed distiphallus also in the holotype.

Nomenclatural changes

Five new synonymies and a new homonymy were revealed in the present study. And, a taxon having been treated as a species was changed in status to the subspecific rank by comparing specimens from allopatric populations.

Stegana* (*Steganina*) *ctenaria Nishiharu, 1979

Stegana (Steganina) ctenaria Nishiharu, 1979, Kontyu, 47: 38.

Stegana (Steganina) lacunata Krivosheina, 1987, Species composition and biology of drosophilid flies of the genus *Stegana* Meigen (Diptera, Drosophilidae) of the Soviet Union. In F. N. Pravdin (ed.), "Ecology and Morphology of Insects Inhabiting fungi": 33. **Syn. nov.**

Krivosheina (1987) described *St. lacunata* based on specimens from Russian Far East but figured neither male nor female terminalia in the original description. Notwithstanding, external morphological characters, e.g., coloration and shape of frontal vitta, facial carina, palpus, thorax, and abdominal tergites as well as various measurements and indices, are identical with those of *St. ctenaria*. Since *St. ctenaria* is common in Russian Far East and can be easily distinguished from any other species known from this region by external characters, we regard here *St. lacunata* Krivosheina as a junior synonym of *St. ctenaria* Nishiharu.

Amiota* (*Amiota*) *subtusradiata Duda, 1934

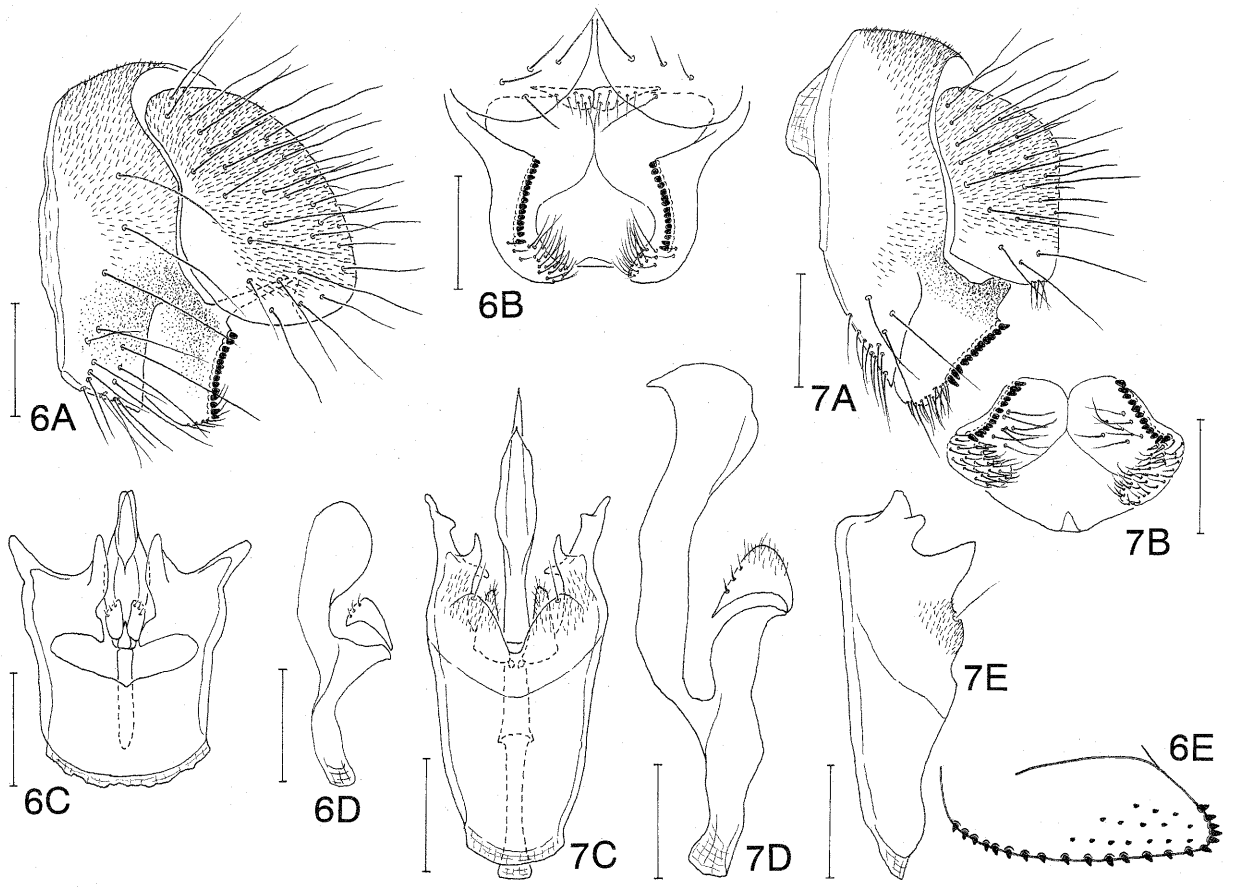
Amiota subtusradiata Duda, 1934, Die Fliegen Pal. Geg., 58g: 32.

Amiota (Amiota) subtusradiata: Máca, 1980, Acta ent. bohemoslov., 77: 336.

Amiota (Amiota) neochungi Takada, Beppu & Toda, 1979, J. Fac. Gener. Edu., Sapporo Univ., 14: 110. **Syn. nov.**

Máca (1980) pointed out the closeness between *A. subtusradiata* and *A. neochungi* but refrained from synonymizing them. In the present study we (M.J.T. and V.S.S.) compared some specimens collected from East Siberia, Russian Far East, and Hokkaido, including the holotype of *A. neochungi*, with the lectotype of *A. subtusradiata* designated by Máca (1980), and concluded that *A. neochungi* Takada, Beppu & Toda is a junior synonym of *A. subtusradiata* Duda.

Specimens examined: Finland: the lectotype of *A. subtusradiata*, M, Tvarminne, R. Frey lgt. Russia: Yakutsk: 1M, 9-18.VII.1993 (Watabe), 1F, 6-20.VII.1995 (Toda); 1M, Komsomolsky Nature Reserve, 50 km upper from the mouth of R. Gorin, Khabarovsk Province, 30.VII.1990 (Sidorenko); 1M, Nikolaevka, R. Ilistaya, Primorye, 24.VII.1986 (Sidorenko). Japan: Hokkaido: the holotype of *A. neochungi*, M, Misumai,



Figs. 6 and 7. 6. *Scaptomyza (Scaptomyza) yakutica* Sidorenko & Toda, sp. nov. (M and F paratypes from Yakutsk, East Siberia, Russia). A, Epandrium, surstylus, and cercus; B, 10th sternite, surstyli, and ventral portion of cerci (caudal view); C, hypandrium, aedeagus, and parameres (ventral view); D, aedeagus and paramere (lateral view); E, oviscapt. 7. *Scaptomyza (Scaptomyza) baechlii* Sidorenko, 1993 (M specimen from Baikal, Solzan, Irkutsk Region, East Siberia, Russia). A, Epandrium, surstylus, and cercus; B, 10th sternite and surstyli (caudal view); C, hypandrium, aedeagus, and parameres (ventral view); D, aedeagus and paramere (lateral view); E, hypandrium (lateral view). (Scale-line = 0.1 mm)

Sapporo, 20.VIII.1975 (Toda), in EHU; 1M, Rishiri Is., 9.VIII.1994 (Tsuchiai); 2M, Kôryûkôzan, near Sapporo, 21.VIII-16.IX.1975 (Toda); Tomakomai: 1M, 15-22.VII.1982, 2M, 20-26.VII.1983 (Toda).

Distribution. Europe (Finland, Poland), Russia (European part, Yakutia, Khabarovsk, Primorye), Japan (Hokkaido).

Amiota* (*Amiota*) *subtusradiata quadrata Takada & Toda, 1981, stat. nov.

Amiota (Amiota) quadrata Takada & Toda, 1981, J. Fac. Gener. Edu., Sapporo Univ., 18A: 2.

Máca (1980) noted that there is a species close to *A. subtusradiata* in North America. Takada and Toda (1981) described a new species closely related to *A. subtusradiata* (cited as *A. neochungi*) under the name of *A. quadrata* based on specimens collected from northeastern Canada. This may be the same with the taxon noted by Máca (1980). In the present study M.J.T. compared precisely the type-series of *A. quadrata* with Eurasian specimens of *A. subtusradiata*, and found only a very slight difference in the paramere between them, *i.e.*, the Nearctic specimens having the broader basal lobe of paramere. It can be inferred from this slight morphological difference and their allopatric distributions that *quadrata* should be treated as a subspecies of *A. subtusradiata*.

Specimens examined: Canada: the holotype (M), the allotype (F), 21M and 6F paratypes, Inuvik, Northwest Territories, 31.VII-8.VIII.1980 (Toda); in EHU.

Distribution. Canada (Northwest Territories).

Hirtodrosophila subarctica (Hackman, 1969)

Drosophila (Hirtodrosophila) subarctica Hackman, 1969, Notul. Ent., 49: 69.

Nesiodrosophila sufflava Takada, Beppu & Toda, 1979, J. Fac. Gener. Edu., Sapporo Univ., 14: 117. **Syn. nov.**

Examination of the holotype of *N. sufflava* Takada, Beppu & Toda convinced M.J.T. that the species is identical to *Hi. subarctica* Hackman. This species is common in East Siberia.

Specimens examined: Japan: the holotype of *N. sufflava*, M, Tomakomai, Hokkaido, 29.VII.1977 (Toda & Minami); in EHU. Russia: Yakutia: 1M, 1F, Verkhoyansk, 11.VII.1993 (Watabe); 1M, 33F, Geological St. at mouth of R. Kurbelyah, Tomponsky, 7.VII.1994 (Toda); 55M, 101F, Yakutsk, 6.VII-17.VIII.1995 (Toda & Vinokurova); 18M, 4F, Nagornyi, Stanovoy Mts., 16,17.VII.1995 (Toda).

Distribution. Europe (northern Scandinavia), Russia (Yakutia), Japan (Hokkaido).

Drosophila* (*Drosophila*) *limbata von Roser, 1840

Drosophila limbata von Roser, 1840, Corresp. wurttemb. landwirtsch. Ver., 17: 62.

Drosophila (Drosophila) limbata: Duda, 1935, Drosophilidae, 86; Hsu, 1949, Univ. Texas Bubl., 4920: 101; Bächli and Burla, 1985, Insecta Helvetica Fauna, 7 Diptera Drosophilidae, 72; Bächli, 1990, Stuttgarter Beitr. Naturk., Ser. A, 443: 6.

Drosophila (Drosophila) mutandis Tan, Hsu & Sheng, 1949, Univ. Texas Publ., 4920: 198. **Syn. nov.**

D. mutandis has been a questionable species since it was described originally based on specimens from Quizhou, southern China, by Tan *et al.* (1949), who gave no information on the male terminalia. The materials which they used for the description have never been found anywhere. Recently, a lot of specimens of which external morphology is completely consistent with the original description of *D. mutandis* were collected from a wide range in China. M.J.T. compared carefully some of these Chinese specimens with European ones of *D. limbata* and could not find any differences in morphology including male terminalia between them. We synonymize here *D. mutandis* Tan, Hsu & Sheng with *D. limbata* von Roser.

Specimens examined: England: 5M, 8F, B. Shorrocks det. Japan: Ashoro, Hokkaido: 1M, 1F, 1-18.VI.1977, 3M, 1F, 20.VII-2.VIII.1977 (Beppu). China: Liaoning: 1M, Qianshan, 15,16.VIII.1991 (Hu); 1M, Shenyang, 8-10.VIII.1991 (Hu); 1F, Shennongjia, Hubei, 28.VII.1992 (Watabe).

Distribution. Widespread in Europe, Russia (European part, Amur), China (Heilongjiang, Jilin, Liaoning, Beijing, Shaanxi, Hubei, Sichuan, Guizhou, Guangxi, Yunnan), Japan (Hokkaido).

Drosophila* (*Drosophila*) *rellima Wheeler, 1960

Drosophila rellima Wheeler, 1960, Southwest. Nat., 5: 162.

Drosophila (Drosophila) metakuntzei Okada, 1973, Ann. Hist.-nat. Mus. Nat. Hung., 65: 278. **Syn. nov.**

M.J.T. compared Siberian specimens agreeing well with the original description of *D. metakuntzei* with specimens of *D. rellima* from northwestern Canada, and confirmed that *D. metakuntzei* Okada is a junior synonym of *D. rellima* Wheeler.

Specimens examined: Canada: Northwest Territories: 13M, 10F, Tuktoyaktuk, 13-26.VII.1980 (Toda); 87M, 87F, Inuvik, 31.VII-11.VIII.1980 (Toda). Russia: Yakutia: 2M, 2F, Verkhoyansk, 11.VII.1993 (Watabe); Yakutsk: 2M, 2F, 7.VII.1993 (Watabe), 8M, 2F, 28.VI-11.VII.1994 (Toda).

Distribution. Northern Canada, northern and western USA, Russia (Yakutia), Mongolia.

Drosophila* (*Drosophila*) *shaitanensis Sidorenko, nom. nov.

Drosophila (Drosophila) neomakinoi Sidorenko, 1995, Far East. Entomol., 8: 2 [holotype M, Russia: Mt. Vysokaya, Primorye, 1500 m, ex light trap, 2-3.IX.1990 (Sidorenko);

in IBP]. Nom. preocc. (nec Singh & Gupta, 1981).

Key to species of the Drosophilidae of East Siberia and Russian Far East

1. Posterior reclinate orbital seta situated nearer to inner vertical seta than to proclinate orbital; cerci present in female. (Subfamily Steganinae) 2
— Posterior reclinate orbital situated nearer to proclinate orbital than to inner vertical; cerci lost in female. (Subfamily Drosophilinae) 6
2. Bm-cu crossvein present. 3
— Bm-cu crossvein absent. (Genus *Leucophenga* Mik) 28
3. R_{4+5} and M_1 distally strongly convergent; ventral surface of costal vein between R_{2+3} and R_{4+5} with several sclerotized, peg-like spinules. (Genus *Stegana* Meigen) 16
— R_{4+5} and M_1 nearly parallel or slightly convergent distally; spinules absent on ventral surface of costal vein between R_{2+3} and R_{4+5}, if present, minute and numerous in number. 4
4. Arista micropubescent. 5
— Arista plumose. (Genus *Amiota* Loew) 34
5. Facial carina prominent, somewhat broad and nose-like in lateral view; R_{2+3} and R_{4+5} each with round, dark spot on apex. (Genus *Gitona* Meigen) ..... *G. distigma* Meigen
— Facial carina low and rather narrow, not nose-like in lateral view; wing without dark spots. (Genus *Cacoxenus* Loew, subgenus *Paracacoxenus* Hardy) 33
6. One pair of prescutellar setae present. (Genus *Scaptodrosophila* Duda) 50
— Prescutellar setae absent. 7
7. Anterior reclinate orbital seta situated anteriorly to proclinate orbital. (Genus *Chymomyza* Czerny) 53
— Anterior reclinate orbital situated laterally or posteriorly to proclinate orbital. 8
8. Preapical dorsal seta absent on fore tibia. 9
— Preapical dorsal present on fore tibia; if absent, scutum medially with distinct, longitudinal stripe bifurcated posteriod. 10
9. Costal lappet developed at subcostal break; anterior dorsocentral seta minute or absent; scutum strongly convexed. (Genus *Mycodrosophila* Oldenberg) 69
— Costal lappet undeveloped; anterior dorsocentral present, not minute; scutum not strongly convexed. (Genus *Hirtodrosophila* Duda) 56
10. Fronto-orbital plate anteriorly as broad as length of pedicel; postpronotal lobe with only 1 long seta; male 6th sternite with transverse combs of black teeth. (Genus *Microdrosophila* Malloch) ... *Mi. cristata* Okada
— Fronto-orbital plate not so much broadened anteriorly. 11
11. Head broader than thorax; ocellar setae situated outside triangle made by ocelli. (Genus *Nesiodrosophila* Wheeler & Takada) 116
— Head as broad as thorax. 12
12. Acrostichal setulae in 2 or 4 rows; if acrostichals in 4 rows, mid katepisternal seta shorter than anterior one. (Genus *Scaptomyza* Hardy) 123
— Acrostichals in 4 or more rows; if in 4 rows, mid katepisternal longer than anterior. 13
13. Mid katepisternal seta longer than anterior one. (Genus *Lordiphosa* Basden, part) 117
— Mid katepisternal shorter than anterior. 14
14. Scutum strongly convex; body glossy black; ocellar triangle large; frontal vitta posteriorly very narrow. (Genus *Lordiphosa*, part) ..... *Lo. mommai* (Takada & Okada)
— Scutum weakly convex as usual. 15
15. Ocellar setae situated outside triangle made by ocelli; paramere bilobed; oviscapt apically triangularly pointed. (Genus *Lordiphosa*, part) 122
— Ocellar setae situated inside triangle made by ocelli. (Genus *Drosophila* Fallén) 75
16. Frons and face making obtuse angle in profile; face without black markings. (Subgenus *Stegana* Meigen) 17
— Frons and face rectangular in profile; face often with black band below. (Subgenus *Steganina* Wheeler) 20
17. Thorax yellow. 18
— Thorax brownish black. 19
18. Wing black; palpus black; clypeus yellow; ac-index = *ca.* 5.5. ..... *St. sibirica* (Duda)
— Wing lighter; palpus yellow; clypeus brownish black; ac = 8.5-10.0. ..... *St. singularis* Sidorenko
19. Mid and hind tibiae black. ..... *St. furta* Linne
— Mid and hind tibiae yellow. ..... *St. taba* Okada
20. Body size large; wing length 3.4-4.0 mm. 21
— Body size small; wing length less than 3.3 mm. 23
21. Surstylus with 1 strongly chitinized prensiseta. ..... *St. hypoleuca* Meigen
— Surstylus with 3-7 prensisetae. 22
22. Clypeus black; 3rd to 5th sternites very wide, twice or more wider than long; surstylus with 3-5 prensisetae. ..... *St. masanoritodai* Okada & Sidorenko
— Clypeus yellow; 3rd to 5th sternites not so wide, less twice wider than long; surstylus usually with 7 prensisetae. ..... *St. ctenaria* Nishiharu
23. Surstylus very broad, apically round. ..... *St. sidorenkoi* Hu & Toda
— Surstylus not broad, strongly curved inward. 24
24. Aedeagus widened proximally, constricted at junction to apodeme. ..... *St. baechlii* Laštovka & Máca
— Aedeagus proximally not wider than distally, smoothly passing into apodeme. 25
25. Surstylus distally narrowing. 26
— Surstylus distally not narrowing, apically more or less truncate. 27
26. Mesonotum and most of wing veins brownish black to black; basal width of hypandrial apodeme *ca.* 1/3 of hypandrial width; gonopod parallel-sided, not longer than

wide, without posterior process. ..... *St. coleoptrata* (Scopoli)

— Body and wing veins yellowish brown to brown; hypandrial apodeme nearly as wide as hypandrium itself; gonopod triangularly elongated, much longer than wide, medially with short posterior process. ..... *St. longifibula* Takada

27. Scutum with distinct longitudinal stripes; surstylus apically somewhat narrowing; paramere present; gonopod dorsomedially with acute projection. ..... *St. xuei* Hu & Toda

— Scutum nearly entirely yellowish brown to brown, or with obscure longitudinal stripes; surstylus apically somewhat truncate; paramere absent; acute projection present dorso-apically on gonopod. ..... *St. nigrithorax* Strobl

28. Wing with dark markings. 29

— Wing without dark markings, though sometimes darkened on anterior margin. 30

29. Wing with 5 dark markings below subcostal break, on r-m and dm-cu crossveins, and at apices of R_{2+3} and R_{4+5}. ..... *Le. quinquemaculipennis* Okada

— Wing with 4 dark markings; marking at apex of R_{4+5} absent. ..... *Le. quadripunctata* (de Meijere)

30. Abdominal tergites with black spots. ..... *Le. maculata* (Dufour)

— Abdominal tergites with black caudal bands. 31

31. Black caudal bands on abdominal tergites narrow, laterally not protruded (except for that on 2nd tergite). ..... *Le. sorii* Kang, Lee & Bahng

— Black caudal bands on abdominal tergites broad, laterally protruded. 32

32. Black caudal bands on 4th and 5th tergites medially protruded to reach anterior margin of each tergite; ac-index = *ca.* 2.0. ..... *Le. stackelbergi* Duda

— Black caudal band on 5th tergite medially protruded to reach anterior margin of the tergite; ac = *ca.* 2.6. ..... *Le. todai* Sidorenko

33. Epandrium narrow; surstylus separated from epandrium; apex of hind tibia slightly swollen, with short thorns. ..... *Ca. romankovae* (Sidorenko)

— Epandrium broad dorsally; surstylus fused to epandrium; apex of hind tibia normal, without short thorns. ..... *Ca. kaszabi* Okada

34. Postpronotal lobe and wing base with distinct milky white spots; anterior reclinate orbital seta as long as or slightly shorter than other orbitals; ventral surface of costal vein between R_{2+3} and R_{4+5} with numerous minute spinules. (Subgenus *Amiota* Loew) 35

— Postpronotal lobe and wing base without milky white spots; anterior reclinate orbital distinctly shorter than other orbitals; ventral surface of costal vein without spinules. (Subgenus *Phortica* Schiner) 48

35. Thorax yellowish or tannish brown. 36

— Thorax dark brown or black. 37

36. Large species *ca.* 4.0 mm in body length (BL); paramere very long, slender, straight; oviscapt (= 8th sternite) wider than long, with numerous short, stout setae. ..... *A. stylopyga* Wakahama & Okada

— Medium species (BL = *ca.* 3.0 mm); paramere neither very long nor straight; oviscapt longer than wide, usually with 10 fine setae on posterior portion. ..... *A. trifurcata* Okada

37. Femora and mid and hind tibiae black, except for knee joints. ..... *A. albilabris* (Roth)

— Legs unicolorous, pale yellow. 38

38. Male 4th sternite very large, twice as long and wide as others, dark brown except for posterior portion; 1st and 2nd tergites medially widely pale yellow. ..... *A. subtusradiata* Duda

— Male 4th sternite not so large. 39

39. Epandrium dorsomedially strongly constricted or separated into 2 lateral lobes. 40

— Epandrium dorsomedially broad. ..... *A. subfurcata* Okada

40. Epandrium dorsomedially separated into 2 lobes. .. 43

— Epandrium dorsomedially not separated. 41

41. Epandrium ventrally pointed; surstylus usually with 5 prensisetae. ..... *A. eos* Sidorenko

— Epandrium ventrally round; surstylus with 9-10 prensisetae. 42

42. Paramere and its basal process apically round and dilated. ..... *A. clavata* Okada

— Paramere and its basal process apically pointed. ..... *A. elongata* Okada

43. Male 4th tergite laterally broadened and protruded downward. 45

— Male 4th tergite laterally neither broadened nor protruded downward. 44

44. Male hind 2nd tarsomere triangularly dilated, wider than long. ..... *A. delta* Takada, Beppu & Toda

— Male hind 2nd tarsomere not dilated, longer than wide. ..... *A. todai* Sidorenko

45. Paramere distally bifurcated. ..... *A. falcilis* Takada, Beppu & Toda

— Paramere not bifurcated. 46

46. Paramere weakly sclerotized, nearly entirely hirsute; its basal process sclerotized, slender, longer than paramere, without branches. ..... *A. palpifera* Okada

— Paramere strongly sclerotized, not hirsute. 47

47. Basal process of paramere with branch half or more as long as process itself. ..... *A. aquilotaurusata* Takada, Beppu & Toda

— Basal process of paramere with short branch. ..... *A. taurusata* Takada, Beppu & Toda

48. Frons with small, roundish, black patch on and around ocellar triangle; aedeagus without basal process. ..... *A. okadai* Máca

— Frons with large, triangular, black patch much expanding posteriorly; aedeagus with basal processes. 49

49. Aedeagus apically much dilated, basally with 1 pair of symmetric, triangular lobes, submedially without

processes. ..... *A. iota* sp. nov.

— Aedeagus apically not dilated, basally with 1 pair of long, curved, asymmetric processes, submedially with 1 pair of long lateral processes extending posterodorsad. ..... *A. chi* sp. nov.

50. Body yellow; C-index = *ca.* 3.0. .... *Sd. puncticeps* (Okada)

— Body black; C = *ca.* 2.0. 51

51. Relative length of anterior reclinate orbital seta to posterior (recorb) *ca.* 0.5; acrostichal setulae in 8 rows; epandrium not protruded at anteroventral corner; hypandrium with 1 pair of paramedian setae; aedeagus not hirsute; oviscapt with 1 lateral peg-like and 1 short subapical trichoid ovisensillum. .... *Sd. coracina* (Kikkawa & Peng)

— Recorb = *ca.* 0.25; acrostichal setulae in 6 rows; epandrium strongly protruded at anteroventral corner; hypandrium usually with 5 pairs of paramedian setae; aedeagus hirsute; oviscapt with 2 lateral peg-like and 1 long subapical trichoid ovisensillum. 52

52. Frons with 1 pair of distinct silvery longitudinal stripes on fronto-orbital plates; aedeagus only slightly longer than paramere; cercus ventrally not narrowing and without thick hair tuft. ..... *Sd. throckmortoni* (Okada)

— Silvery longitudinal stripe on fronto-orbital plate indistinct; aedeagus much longer than paramere; cercus ventrally narrowing and with thick hair tuft. .... *Sd. rufifrons* (Loew)

53. Frons and thorax yellowish. 54

— Frons and thorax blackish. 55

54. Hypandrial process submedially with 1 long, stout seta; surstylus with less than 8 prensisetae; oviscapt with 1 long, trichoid ovisensillum submedially on ventral margin in addition to subapical trichoid one. .... *Ch. distincta* (Egger)

— Hypandrial process submedially without long seta; surstylus with more than 10 prensisetae; oviscapt without long, trichoid ovisensillum submedially on ventral margin. ..... *Ch. fuscimana* (Zetterstedt)

55. Costal cell clouded; fore leg entirely black. .... *Ch. costata* (Zetterstedt)

— Costal cell hyaline; fore leg white on distal 4 tarsomeres. ..... *Ch. caudatula* Oldenderg

56. Wing with 3 large, conspicuous black markings. .... *Hi. macromaculata* (Kang & Lee)

— Wing hyaline or fuscous, without conspicuous black markings. 57

57. Third and 4th abdominal tergites each with medially interrupted caudal band or spots. 58

— Third and 4th abdominal tergites each with medially uninterrupted caudal band or nearly entirely dark brown. 66

58. Caudal bands on abdominal tergites separated into spots, or constricted sublaterally. 63

— Caudal bands on abdominal tergites neither separated into spots nor constricted sublaterally. 59

59. Dm-cu crossvein clouded. 60

— Dm-cu crossvein clear. 61

60. Thoracic pleura with 1 broad, dark brown, longitudinal stripe above, pale yellow below. .... *Hi. alboralis* (Momma & Takada)

— Thoracic pleura unicolorous, brown. .... *Hi. subarctica* (Hackman)

61. Arista with only 1 ventral branch; 5th abdominal tergite with caudal band medially uninterrupted. .... *Hi. quadrivittata* (Okada)

— Arista with 2 or more ventral branches; 5th abdominal tergite with caudal band medially interrupted. 62

62. Scutum with 4 diffuse, dark brown, longitudinal stripes; male wing fuscous, especially darker in anterodistal portion; oviscapt apically round. .... *Hi. toyohiokadai* (Sidorenko)

— Scutum nearly unicolorous; wing hyaline; oviscapt apically triangular. .... *Hi. histrioides* (Okada & Kurokawa)

63. Frons medially with distinct, black, longitudinal stripe; scutum with 3 distinct, black, longitudinal stripes posteriorly fused with each other. 64

— Frons medially without distinct, longitudinal stripe; scutum with stripes otherwise. 65

64. First flagellomere dark gray; epandrium not elongated below; row of marginal ovisensilla longer than half of oviscapt. ..... *Hi. trivittata* (Strobl)

— First flagellomere pale gray; epandrium elongated below; row of marginal ovisensilla shorter than half of oviscapt. ..... *Hi. trilineata* (Chung)

65. Palpus distally dark gray; scutum with 4 or 6 distinct, narrow, dark brown, longitudinal stripes almost on whole length. ..... *Hi. sexvittata* (Okada)

— Palpus pale yellow; scutum with indistinct, dark brown stripes sometimes seen only in anterior part. .... *Hi. ussurica* (Duda)

66. Acrostichal setulae in 8 rows. .... *Hi. nokogiri* (Okada)

— Acrostichal setulae in 6 rows. 67

67. First costal section apically slightly swollen and darkened; C-index less than 2.0; male 3rd and 4th abdominal tergites nearly entirely dark brown. .... *Hi. kangi* (Okada & Lee)

— First costal section apically neither swollen nor darkened; C-index more than 2.0; male 3rd and 4th abdominal tergites each with caudal band. 68

68. Scutum nearly unicolorous; epandrium dorsally much broader than ventral lobe; surstylus with prensisetae arranged in nearly straight row. .... *Hi. pseudonokogiri* (Kang, Lee & Bahng)

— Scutum with diffuse, dark brown, longitudinal stripes; areas along dorsocentral lines especially paler than other parts; epandrium dorsally slightly broader than ventral lobe; surstylus with prensisetae arranged in concave row. ..... *Hi. baikalensis* sp. nov.

69. Bm-cu crossvein not clouded. 70

— Bm-cu crossvein clouded. 73
70. Palpus dark gray, distally much dilated. .... *My. planipalpis* Kang, Lee & Bahng
— Palpus yellow, distally not dilated. 71
71. Second and 3rd abdominal tergites nearly entirely black. ..... *My. celesta* Sidorenko
— Second and 3rd abdominal tergites pale yellow, each with medially interrupted, black, caudal band. 72
72. Caudal band on 4th abdominal tergite medially interrupted. ..... *My. poecilogastra* (Loew)
— Caudal band on 4th abdominal tergite medially uninterrupted. .... *My. nigropteropleura* Kang, Lee & Bahng
73. Wing distally hyaline; cloud below costal lappet small, not extending below R_{2+3}. ..... *My. japonica* Okada
— Wing distally more or less fuscous especially along R_{2+3}, R_{4+5}, and M_1; cloud below costal lappet extending below R_{2+3}. 74
74. Palpus pale yellow; 6th abdominal tergite mostly black. ..... *My. takachihonis* Okada
— Palpus dark gray; 6th abdominal tergite mostly pale yellow. ..... *My. shikokuana* Okada
75. Subapical dorsal seta absent on fore tibia; scutum with distinct, black, longitudinal stripes: median one bifurcated posteriod. (Subgenus *Dorsilopha* Sturtevant) ..... *D. busckii* Coquillett
— Subapical dorsal seta present on fore tibia. 76
76. Ventral lobe of epandrium well developed, heavily setigerous, with setae curved and as long as ventral lobe itself. (Subgenus *Spinodrosophila* Duda) .... *D. bondarenkoi* Sidorenko
— Ventral lobe of epandrium as ordinary, usually setigerous, but with only several, not so long setae. 77
77. Male with sex-combs on 1st and 2nd tarsomeres of fore leg; black caudal bands on abdominal tergites, if present, uninterrupted at middle; if body dark brown, C3F < 0.5, and palpus somewhat triangular, with 1 prominent apical seta. (Subgenus *Sophophora* Sturtevant) 78
— Male without sex-combs on fore leg; black caudal bands on abdominal tergites, if present, interrupted at middle; if body dark brown, C3F > 0.5, or palpus with several long setae. (Subgenus *Drosophila* Fallén) 86
78. Body mainly black; paramere slender, with setulae arranged on its nearly entire length; testis not or only slightly coiled; ventral receptacle short, slightly folded. 79
— Body mainly yellowish brown; paramere not slender, if slender, with setulae not occupying its entire length; testis coiled a few times; ventral receptacle usually long, folded several times. 81
79. Acrostichal setulae in 6 rows; 1st sex-comb usually consisting of 2 teeth, and 2nd one of 1 tooth; oviscapt dark gray. ..... *D. helvetica* Burla
— Acrostichal setulae in 8 rows; sex-combs consisting of more than 5 teeth; oviscapt pale yellow. 80
80. Thoracic pleura and basal abdominal tergites yellowish brown; male fore 1st tarsomere as long as 2nd one, with long sex-comb covering nearly its entire length; oviscapt usually with 4 lateral ovisensilla. .... *D. alpina* Burla
— Thoracic pleura and basal abdominal tergites dark brown; male fore 1st tarsomere *ca.* 1.5 times longer than 2nd, with short sex-comb covering less than half of its length; oviscapt usually with 2 lateral ovisensilla. .... *D. bifasciata* Pomini
81. Palpus with a few prominent setae. 82
— Palpus with only 1 prominent seta at tip. 83
82. C3F = *ca.* 0.4; epandrium caudosubventrally with large, semicircular flap; oviscapt dorso-apically with distinct longitudinal suture. ..... *D. simulans* Sturtevant
— C3F = *ca.* 0.25; epandrium caudosubventrally with small, triangular flap; oviscapt without distinct suture. .... *D. melanogaster* Meigen
83. C3F = *ca.* 0.3 or less; male wing with oval, black patch around apex of R_{2+3}; oviscapt apically pointed. .... *D. suzukii* (Matsumura)
— C3F = *ca.* 0.5 or more; male wing without black patch; oviscapt apically not pointed. 84
84. Hypandrium caudomedially with large expansion bearing 1 pair of paramedian setae; aedeagus subapically with claws; distal portion of oviscapt triangular. 85
— Hypandrium caudomedially without expansion; aedeagus subapically without claws; distal portion of oviscapt quadrate. ..... *D. auraria* Peng
85. Male 6th sternite bare; subapical claws on aedeagus large; distal portion of oviscapt small. .... *D. biauraria* Bock & Wheeler
— Male 6th sternite setigerous; subapical claws on aedeagus small; distal portion of oviscapt large. .... *D. subauraria* Kimura
86. Presutural supra-alar setae present. .... *D. testacea* von Roser
— Presutural supra-alars absent. 87
87. Fore femur with ctenidial small spines on ventromesal surface. ..... *D. immigrans* Sturtevant
— Fore femur without ctenidial spines. 88
88. Scutum with scattered black patches at bases of setae and setulae; C3F = *ca.* 0.4. ..... *D. hydei* Sturtevant
— Scutum without scattered black patches. 89
89. Body black or brownish black; cercus fused to epandrium. 90
— Body yellow to dark brown; cercus separated from epandrium. 101
90. Palpus with only 1 prominent seta at tip. 91
— Palpus with several long setae. 96
91. Aedeagus apically without claw; spermatheca nearly quadrate in lateral view, apically indented, with large pimply spots on outer surface. .... *D. ezoana* Takada & Okada
— Aedeagus apically with claw; spermatheca oval, or bell-shaped, without spots on outer surface. 92

92. Subvibrissal seta more than 1/2 length of vibrissa; aedeagus short, much broadened medially; spermatheca strongly wrinkled at base. ..... *D. virilis* Sturtevant
— Subvibrissal less than 1/3 length of vibrissa. 93
93. Distal half of aedeagus nearly straight and narrow; spermatheca as long as broad, bell-shaped, flattened apically. ..... *D. montana* Patterson & Wheeler
— Distal half of aedeagus gently recurved and moderate in width; spermatheca longer than broad, roundish apically. 94
94. Aedeagus yellow; epandrium with 2 setae on dorsal half; surstylus with 6 or less prensisetae; spermatheca medium-sized, with sporadic horizontal wrinkles on base. ..... *D. lummei* Hackman
— Aedeagus brown; epandrium without setae on dorsal half; surstylus with more than 7 prensisetae; spermatheca very large, or with oblique wrinkles on basal surface. 95
95. Body moderate in size, BL = *ca.* 3.0 mm in male and *ca.* 3.5 mm in female; aedeagus short, middle part *ca.* 1.5 times broader than distal part; spermatheca moderate in size, with oblique wrinkles on basal surface. ..... *D. littoralis* Meigen
— Body large, BL = *ca.* 3.5 mm in male and *ca.* 4.0 mm in female; aedeagus moderate in length, middle part as broad as distal part; spermatheca large, lacking oblique wrinkles on basal surface. ..... *D. kanekoi* Watabe & Higuchi
96. Scutellum yellowish; black caudal bands on abdominal tergites interrupted straight at middle. ..... *D. moriwakii* Okada & Kurokawa
— Scutellum entirely black. 97
97. C3F less than 0.5. 98
— C3F more than 0.6. 99
98. Abdominal tergites pale yellow, each with somewhat diffuse, medially interrupted, dark gray, caudal band; distiphallus short, broad, not curved ventrad. ..... *D. tsigana* Burla & Gloor
— Abdominal tergites entirely brownish black; distiphallus long, apically narrowing, strongly curved ventrad. ..... *D. sordidula* Kikkawa & Peng
99. Arista usually with 7 branches excluding terminal fork; abdominal tergites each with black caudal band narrowing at middle; male 6th abdominal sternite longer than broad; spermatheca heavily folded at base. ..... *D. lacertosa* Okada
— Arista usually with 5 branches; abdominal tergites nearly entirely black. 100
100. Male abdominal 6th sternite broader than long, with caudal projection at middle; oviscapt with strong, black ovisensillum at caudo-dorsal tip. ..... *D. okadai* Takada
— Male abdominal 6th sternite longer than broad, without caudal projection; oviscapt with weak, yellow ovisensillum at caudo-dorsal tip. ..... *D. neokadai* Kaneko & Takada
101. Arista with only 1 small, ventral branch. 102
— Arista with 2 or more ventral branches. 103
102. Aedeagus with apicolateral processes longer than aedeagal width; oviscapt usually with 3 lateral ovisensilla near dorsal margin. ..... *D. shaitanensis* nom. nov.
— Aedeagus with apicolateral processes shorter than aedeagal width; oviscapt usually with 4 lateral ovisensilla on submedial mesal surface. ..... *D. makinoi* Okada
103. Acrostichal setulae in 6 rows. 104
— Acrostichal setulae in 8 rows. 111
104. Black caudal bands on abdominal tergites divided into spots. 105
— Black caudal bands on abdominal tergites not divided into spots. 109
105. Second to 5th abdominal tergites each with 6 black spots; outermost ones on lateral margins. 106
— Second to 5th abdominal tergites each with 4 black spots. 107
106. Wing apically clouded. ..... *D. nigromaculata* Kikkawa & Peng
— Wing apically not clouded. ..... *D. transversa* Fallén
107. Aedeagus apically with prominent recurved claw; dorsal margin of oviscapt prominently expanded and more or less sclerotized. 108
— Aedeagus apically without recurved claw; dorsal margin of oviscapt neither prominently expanded nor sclerotized. ..... *D. brachynephros* Okada
108. Unciform claw of distiphallus curved; dorsal expansion of oviscapt quadrate, strongly sclerotized. ..... *D. curvispina* Watabe & Toda
— Unciform claw of distiphallus nearly straight; dorsal expansion of oviscapt triangular, less strongly sclerotized. ..... *D. unispina* Okada
109. Subvibrissal seta stout, slightly shorter than vibrissa. ..... *D. limbata* von Roser
— Subvibrissal weak, shorter than half length of vibrissa. 110
110. C3F *ca.* 0.6; surstylus usually with 8 prensisetae on distal margin; lateral ovisensilla and terminal one of marginals long, trichoid. ..... *D. parakuntzei* Okada
— C3F *ca.* 0.5 or less; surstylus with 12-15 prensisetae on distal margin; lateral ovisensilla and terminal one of marginals short, peg-like. ..... *D. rellima* Wheeler
111. Dm-cu crossvein clear. 112
— Dm-cu crossvein clouded. 114
112. C3F = *ca.* 0.8. ..... *D. calidata* Takada, Beppu & Toda
— C3F less than 0.5. 113
113. Subvibrissal seta as long as or slightly shorter than vibrissa. ..... *D. funebris* (Fabricius)
— Subvibrissal about half as long as vibrissa. ..... *D. multispina* Okada
114. Subvibrissal seta stout, longer than half length of vibrissa. 115
— Subvibrissal weak, not differentiated from other orals. ..... *D. phalerata* Meigen
115. Black caudal bands on 2nd to 4th abdominal tergites

triangular; 6th abdominal tergite entirely pale yellow in female and with median black patch in male; cercus ventrally elongate and apically with black teeth. ..... *D. histrio* Meigen

— Caudal bands on 2nd to 4th abdominal tergites trapezoid; 6th abdominal tergite with median dark brown patch in female and nearly entirely dark brown in male. ..... *D. kunztei* Duda

116. C-index = *ca.* 3.0; wing slightly fuscous; epandrium with several very long setae on caudoventral margin; surstylus usually with 6 prensisetae. ..... *Ne. okadai* Nishiharu

— C = *ca.* 2.0; wing hyaline; setae on epandrium not so long; surstylus with 2 stout prensisetae. ..... *Ne. magnidentata* (Lee)

117. Scutum blackish brown to black. ..... *Lo. nigricolor* (Strobl)

— Scutum yellow, yellowish brown to light brown. 118

118. Male with longitudinal sex-combs covering entire lengths of 1st and 2nd tarsomeres of fore leg; female with several very stout setae on caudal margins of 4th to 6th abdominal tergites. ..... *Lo. magnipectinata* (Okada)

— Sex-combs absent on male fore leg, or sex-comb on 1st tarsomere not covering its entire length; female with usual setae on caudal margins of abdominal tergites. 119

119. C3F *ca.* 0.6 or more. ..... *Lo. hexasticha* (Papp)

— C3F *ca.* 0.3 or less. 120

120. Acrostichal setulae in 4 rows; male without sex-combs on fore leg. ..... *Lo. collinella* (Okada)

— Acrostichal setulae in 6 rows; male with sex-combs. 121

121. Caudal bands on abdominal tergites medially interrupted. ..... *Lo. clarofinis* (Lee)

— Caudal bands on abdominal tergites medially not interrupted. ..... *Lo. stackelbergi* (Duda)

122. Caudal bands on abdominal tergites medially interrupted; cercus elongated caudoventrad; surstylus with 8-9 prensisetae; outer lobe of paramere asymmetric. ..... *Lo. tenuicauda* (Okada)

— Caudal bands on abdominal tergites medially not interrupted; cercus not elongated caudoventrad; surstylus usually with 12 prensisetae; outer lobe of paramere symmetric. .... *Lo. pseudotenuicauda* (Toda)

123. Postpronotal lobe with only 1 prominent seta; acrostichal setulae in 2 rows. (Subgenus *Parascaptomyza* Duda) ..... *Sc. pallida* (Zetterstedt)

— Postpronotal setae 2. 124

124. Lower postpronotal seta hardly more than half as long as upper one; hind trochanter with 1 black, spine-like seta. (Subgenus *Hemiscaptomyza* Hackman) 125

— Postpronotal setae subequal in size; hind trochanter without spine-like seta. (Subgenus *Scaptomyza* Hardy) 133

125. Male. 126

— Female. 130

126. Wing without black spot at apex. ..... *Sc. trochanterata* Collin

— Wing with black spot at apex. 127

127. Epandrium caudoventrally with triangularly pointed projection. 128

— Epandrium ventrally truncate, without triangular projection. ..... *Sc. okadai* Hackman

128. Surstylus usually with 9 prensisetae. ..... *Sc. taigensis* sp. nov.

— Surstylus with more than 12 prensisetae. 129

129. Surstylus with 15-18 prensisetae arranged in deep concave row. ..... *Sc. carinata* Okada

— Surstylus usually with 13 prensisetae arranged in nearly straight row. .. *Sc. unipunctum unipunctum* Zetterstedt

130. Wing with small, indistinct spot at apex of R_{4+5}; oviscapt apically pointed. 131

— Wing without spot at apex of R_{4+5}; oviscapt apically round. 132

131. Oviscapt narrow. ..... *Sc. okadai* Hackman

— Oviscapt broad. ..... *Sc. taigensis* sp. nov.

132. Oviscapt narrow. ..... *Sc. trochanterata* Collin

— Oviscapt broad. ..... *Sc. carinata* Okada

133. Acrostichal setulae in 2 rows. ..... *Sc. subsplendens* (Duda)

— Acrostichal setulae in 4 rows. 134

134. Arista with 1 or more ventral branches. 136

— Arista without ventral branches. 135

135. Distiphallus pointed dorsally; oviscapt with 1 row of ovisensilla. ..... *Sc. baechlii* Sidorenko

— Distiphallus not pointed dorsally; oviscapt with 4 rows of ovisensilla. ..... *Sc. yakutica* sp. nov.

136. A short setula present between posterior reclinate orbital seta and inner vertical seta. 137

— Such setula absent. 138

137. Body color yellow to grayish yellow; distiphallus dorsally pointed; hypandrium somewhat quadrate; surstylus short. ..... *Sc. flava* Fallén

— Body color yellowish gray to dark gray; distiphallus dorsally roundish; hypandrium anteriorly narrowing; surstylus long. ..... *Sc. montana* Wheeler

138. Palpus apically with only 1 prominent seta; aedeagus apically pointed; cercus small, subventrally constricted; oviscapt apically triangular, without lateral peg-like ovisensilla. ..... *Sc. consimilis* Hackman

— Palpus apically with more than 1 prominent seta; aedeagus apically round; cercus large; oviscapt apically not triangular, with numerous lateral peg-like ovisensilla. 139

139. Ventral portion of cercus strongly curved anteriorly; oviscapt broad, apically round, submedially constricted. ..... *Sc. polygonia* Okada

— Ventral portion of cercus not curved anteriorly; oviscapt narrow, apically somewhat truncate, not constricted submedially. ..... *Sc. graminum* (Fallén)

Remarks. Females of most species of the subgenus

Amiota are, if not impossible, very difficult to identify to species solely by external morphology. Females of *Sc. unipunctum unipunctum* were not examined in the present study.

BIOGEOGRAPHY

Figure 8 shows the results of cluster and bootstrap analyses for the faunal similarity among East Siberia, Russian Far East, and six surrounding regions. Three regions of eastern Palearctic, RFE, NEC, and HKD, formed a compact cluster (bootstrap value = 99.0% for RFE+NEC and 100.0% for RFE+NEC+HKD), and two regions of western Palearctic, REU and NEU, did another one (bootstrap value = 100.0%). REU+NEU was clustered with ESB and CAS subsequently at slightly low bootstrap values (76.4% in both clusterings). NNA was rather independent from the Palearctic regions, although it was connected with the cluster of REU+NEU+ESB+CAS in about 20% of bootstrap samples.

Table 1 shows the number of species of each chorological element and its percent in the fauna of each region. The three regions of eastern Palearctic, HKD, NEC, and RFE, are quite rich in fauna; the total numbers of species in these regions are about twice of those in the other Palearctic regions concerned. Their faunas are dominated by EP elements which are considered to be adapted to cool-temperate deciduous forests in this area, and include in more or less proportions SJ elements distributed mainly in warm-temperate evergreen broad-leaved forests from southern Japan to southern China and even a little number of subtropical or tropical OR elements.

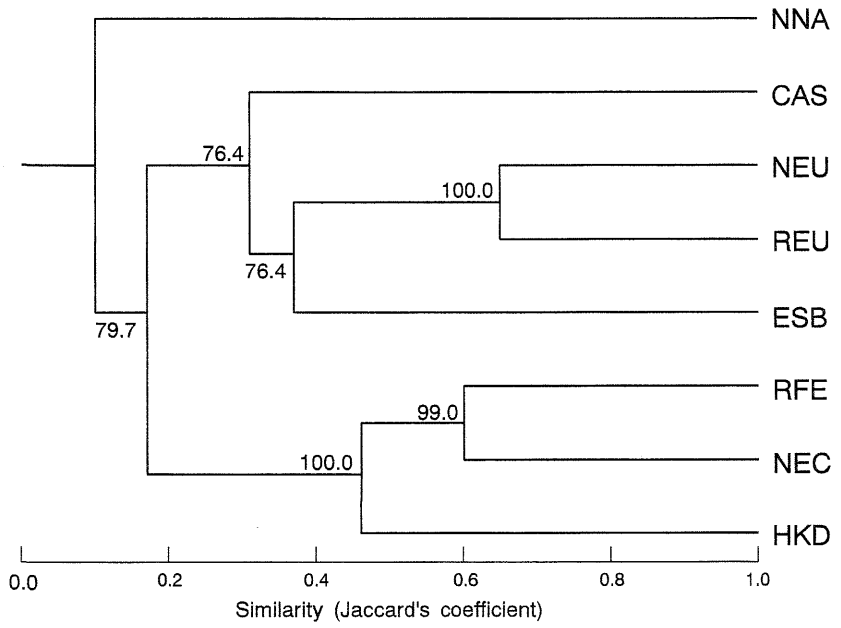


Fig. 8. Dendrogram resulting from UPGMA cluster analysis for the drosophilid faunal similarity (evaluated by Jaccard's coefficient) among East Siberia, Russian Far East, and six surrounding regions (see text for abbreviations of regions). The bootstrap confidence level (from 1,000 replications) is indicated at node of each cluster.

Table 1. Faunal compositions of chorological elements in eight regions of northern Holarctic (see text for abbreviations of regions and chorological elements).

Region:	HKD		NEC		RFE		ESB		CAS		REU		NEU		NNA	
Element	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%
NA	12	0.7	–	–	–	–	–	–	–	–	–	–	–	–	10	40.0
HA	5	3.3	3	3.3	7	6.1	9	16.1	5	9.3	9	15.0	10	16.4	9	36.0
PN	–	–	–	–	–	–	1	1.8	1	1.9	–	–	–	–	1	4.0
PA	22	14.7	18	19.6	24	20.9	26	46.4	13	24.1	22	36.7	21	34.4	–	–
WP	–	–	–	–	–	–	–	–	10	18.5	21	35.0	20	32.8	–	–
CP	–	–	–	–	–	–	1	1.8	3	5.6	–	–	–	–	–	–
EP	59	39.3	42	45.7	53	46.1	11	19.6	2	3.7	–	–	–	–	–	–
SJ	30	20.0	12	13.0	15	13.0	1	1.8	1	1.9	–	–	–	–	–	–
OR	10	6.7	4	4.3	3	2.6	–	–	–	–	–	–	–	–	–	–
C	8	5.3	8	8.7	8	7.0	5	8.9	7	13.0	8	13.3	8	13.1	3	12.0
E	15	10.0	5	5.4	5	4.3	2	3.6	12	22.2	–	–	2	3.3	2	8.0
Total	150		92		115		56		54		60		61		25	

On the other hand, the faunas of ESB, CAS, REU, and NEU are characterized by the predominance of PA and HA elements which are considered to be adapted to boreal forests. The fauna of ESB seems to be intermediate in the composition of chorological elements between those of eastern Palearctic and of western Palearctic, including a number of EP elements. CAS occupying a rather arid zone in the central part of Eurasia has a particular fauna with relatively high endemicity. It should be noted that *D. rellima* was confirmed to be distributed from Mongolia through East Siberia and northern Canada to central and western USA (Nebraska, Oregon, and California; Wheeler, 1983). This type of distribution covering eastern part of Eurasia and western part of North America had never been known in the Drosophilidae. *D. rellima* is very common in East Siberia and northern Canada (Toda, 1985).

To reveal the distribution patterns of drosophilid flies within East Siberia and Russian Far East, faunal comparison was made in smaller geographic scale. The total numbers of species and the faunal compositions of chorological elements were compared among 12 localities extending from cool-temperate zone to arctic tundra zone: USR) Ussuri region, KBR) Khabarovsk region, AMR) Amur region, IKT) Irkutsk and

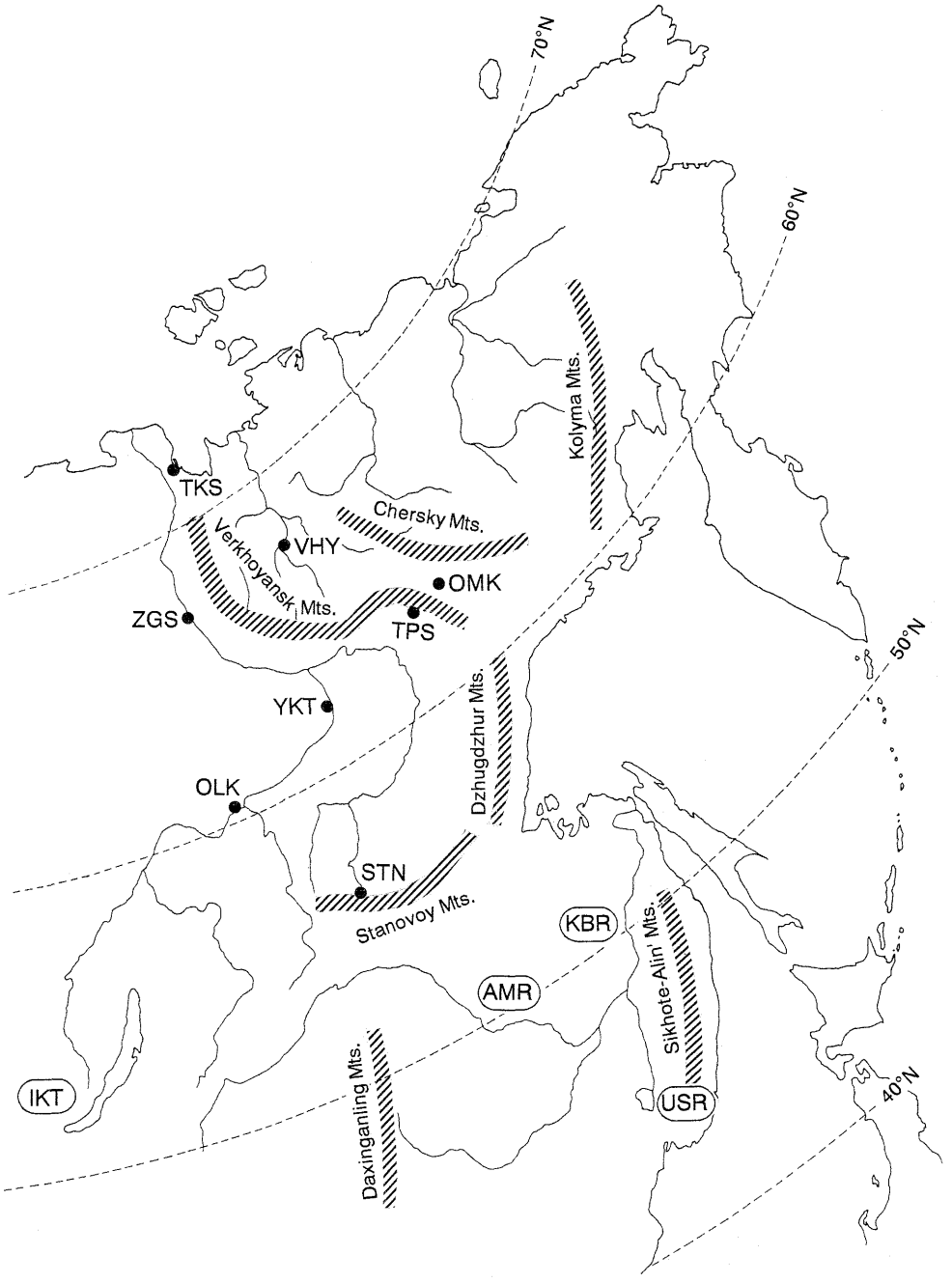


Fig. 9. Map of northeastern Eurasia, indicating 12 localities of which drosophilid faunas were compared (see Fig. 10), main mountain ranges, and big rivers.

Buryatiya regions, STN) northern side of Stanovoy Mts., OLK) Olekminsk, YKT) Yakutsk, TPS) Tomponsky, OMK) Oimyakonsky, VHY) Verkhoyansk, ZGS) Zhigansk, and TKS) Tiksi (Figs. 9 and 10). Faunal data for the first four regions were obtained by compiling collection records from several localities within the respective regions. The total number of species so far recorded is extraordinarily large in USR. However, this may be partly due to intensive surveys in this region. The same could be said for YKT. In other words, the total numbers of species at other localities, especially KBR and AMR, may be underestimated, more species waiting to be discovered there. In spite of the incompleteness of faunal surveys, it is obvious that there is a trend of northward decrease in species diversity. The faunal composition of chorological elements also changes from south to north. Warm-temperate to tropical elements (SJ+OR) occur only in the four southernmost regions but can not cross the Stanovoy Mts. Cool-temperate elements (mainly EP) decrease gradually their proportions from Russian Far East to middle part of East Siberia but do not invade the Arctic Circle. On the other hand, Boreal elements (PA and HA) increase their proportions northward and constitute the majority of faunas in taiga-tundra transitional zone within the Arctic Circle. Tundra zone is virtually free from wild drosophilids. Only a cosmopolitan domestic species, *D. melanogaster*, was collected in a heated fruit shop at Tiksi.

In conclusion, Russian Far East belongs to the northeastern Asiatic realm in drosophilid biogeography, whereas East Siberia forms the northern Palearctic realm together with Europe. There is a large "waterfall" of species diversity accompanied with abrupt change in faunal composition between Russian Far East and East Siberia. The border between these two biogeographic realms may lie on the Stanovoy Mts. Most of mountain ranges in northeastern Eurasia run generally north-southward (Fig. 9). Only the Stanovoy Mts. run east-westward. Eastern Asiatic elements of drosophilids which are adapted to warmer climates may be strongly restricted to expand their ranges northward by this distribution barrier.

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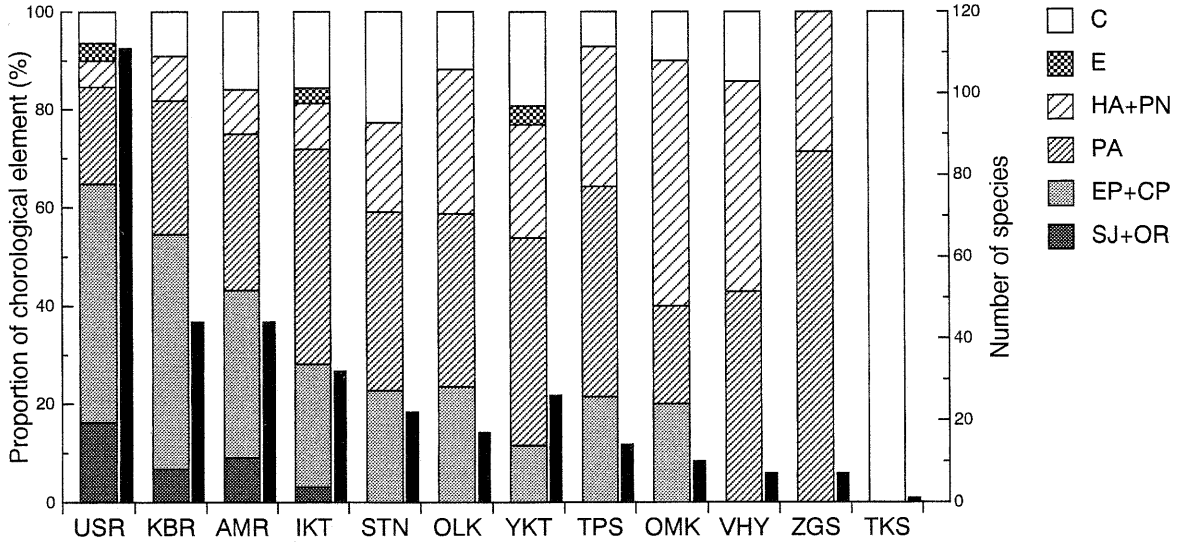

Fig. 10. The total numbers of drosophilid species so far recorded (black bars) and faunal compositions of chorological elements at 12 localities within East Siberia and Russian Far East (see text for abbreviations of localities and chorological elements).

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Appendix: A check list of drosophilid species in East Siberia and Russian Far East, with information on geographic distribution (∗ new record)

Amiota (Amiota) albilabris (Roth, 1860)
Russia (Far East); Japan, Korea, ne. China, Europe
A. (A.) aquilotaurusata Takada, Beppu & Toda, 1979
Russia∗ (Far East); Japan, ne. and n. China∗
A. (A.) clavata Okada, 1971
Russia (Far East); Japan, ne. China∗
A. (A.) delta Takada, Beppu & Toda, 1979
Russia (Far East); Japan, ne. China∗
A. (A.) elongata Okada, 1971
Russia (Far East); Japan, Korea, ne. China∗
A. (A.) eos Sidorenko, 1989
Russia (Far East); ne. China
A. (A.) falcilis Takada, Beppu & Toda, 1979
Russia∗ (Far East); Japan
A. (A.) palpifera Okada, 1971
Russia (Far East); Japan, ne. China∗
A. (A.) stylopyga Wakahama & Okada, 1958
Russia (Far East, E. Siberia∗); Japan, Korea, ne. China∗
A. (A.) subfurcata Okada, 1971
Russia (Far East); Japan, ne. to sw. China, Taiwan
A. (A.) subtusradiata subtusradiata Duda, 1934
Russia (Far East, E. Siberia∗, European); Japan∗, Europe
A. (A.) taurusata Takada, Beppu & Toda, 1979
Russia (Far East); Japan, ne. China∗
A. (A.) todai Sidorenko, 1989
Russia (Far East); ne. China∗
A. (A.) trifurcata Okada, 1968
Russia∗ (Far East); Japan
A. (Phortica) chi Toda & Sidorenko, sp. nov.
Russia∗ (Far East, E. Siberia); ne. China∗
A. (P.) iota Toda & Sidorenko, sp. nov.
Russia∗ (Far East); ne. and c. China∗
A. (P.) okadai Máca, 1977
Russia∗ (Far East); Japan, Korea, ne. to sw. China
Cacoxenus romankovae Sidorenko, 1990
Russia (Far East)
Ca. (Cacoxenus) cincta (Rondani, 1856)
Russia (E. Siberia, Crimea, European); Europe
Ca. (Paracacoxenus) kaszabi (Okada, 1973)
Russia∗ (E. Siberia); Mongolia, Czechoslovakia
Gitona distigma Meigen, 1830
Russia (Far East, E. Siberia∗, Caucasus, European); ne. to nw. China, Mongolia, Kazakhstan, Europe
Leucophenga maculata (Dufour, 1839)
Russia (Far East∗, Caucasus, Crimea); Japan, Korea, ne. to nw., and c. China, Ryukyu Is., Taiwan, Java, Sri Lanka, New Guinea, Turkmenistan, Kirgizia, Uzbekistan, Kazakhstan, Tadjikistan, Europe
Le. quadripunctata (de Meijere, 1908)
Russia (Far East); Japan, Korea, ne. and sw. China, Taiwan, Oriental Region, New Guinea, Australia
Le. quinquemaculipennis Okada, 1956
Russia (Far East, E. Siberia∗); Japan, Korea, ne. China, Ryukyu Is.
Le. sorii Kang, Lee & Bahng, 1965
Russia (Far East); Japan, Korea

Le. stackelbergi Duda, 1934
Russia (Far East, Siberia)
Le. todai Sidorenko, 1991
Russia (Far East); Japan
Stegana (Stegana) furta (Linne, 1766)
Russia (Far East, E.∗ and W. Siberia, European); Mongolia, Kazakhstan, Europe
Ste. (Stegana) sibirica Duda, 1934
Russia (Far East)
Ste. (Stegana) singularis Sidorenko, 1990
Russia (Far East); Japan∗
Ste. (Stegana) taba Okada, 1971
Russia∗ (Far East); Japan, Korea
Ste. (Steganina) baechlii Laštovka & Máca, 1982
Russia (Far East); Japan, Europe
Ste. (Steganina) coleoptrata (Scopoli, 1763)
Russia (Far East, Crimea, European); Europe, Canada, USA
Ste. (Steganina) ctenaria Nishiharu, 1979
Russia (Far East); Japan, Korea, c. China∗
Ste. (Steganina) hypoleuca Meigen, 1830
Russia (Far East, E.∗ and W. Siberia, Caucasus, Crimea, European); Europe
Ste. (Steganina) longifibula Takada, 1968
Russia (Far East, European); Japan, ne. China, Europe
Ste. (Steganina) masanoritodai Okada & Sidorenko, 1992
Russia (Far East); Japan, ne. China∗
Ste. (Steganina) nigrithorax Strobl, 1898
Russia (Far East); Japan, Korea, c. China, Taiwan, Europe
Ste. (Steganina) sidorenkoi Hu & Toda, 1994
Russia (Far East)
Ste. (Steganina) xuei Hu & Toda, 1994
Russia (Far East); ne. and n. China
Chymomyza caudatula Oldenberg, 1914
Russia (Far East, E. Siberia∗, European); Japan, ne. and nw. China, Europe, N. America
Ch. costata (Zetterstedt, 1838)
Russia (Far East, E. Siberia∗, European); Japan, Korea, ne. and nw. China, Europe, n. Canada
Ch. distincta (Egger, 1862)
Russia (Far East, E. Siberia∗, European); Japan, Europe
Ch. fuscimana (Zetterstedt, 1838)
Russia (Far East, E. Siberia∗, European); Japan, ne. China∗, Europe
Drosophila (Dorsilopha) busckii Coquillett, 1901
Russia (Kuril Is., Far East, E. Siberia∗, Caucasus, European); cosmopolitan
D. (Drosophila) brachynephros Okada, 1956
Russia (Far East); Japan, Korea, ne. to c. China, India
D. (D.) calidata Takada, Beppu & Toda, 1979
Russia∗ (Far East); Japan, ne. China∗
D. (D.) curvispina Watabe & Toda, 1984
Russia (Kuril Is., Far East); Japan, Korea, ne. China∗
D. (D.) ezoana Takada & Okada, 1957
Russia (Far East, E. Siberia∗); Japan, ne. and nw. China, n. Europe
D. (D.) funebris (Fabricius, 1787)
Russia (Kuril Is., Far East, W. and E. Siberia, Caucasus, European); cosmopolitan
D. (D.) histrio Meigen, 1830
Russia (Kuril Is., Far East, Siberia, European); Japan, Korea, ne. to sw. China, Europe, n. Africa
D. (D.) hydei Sturtevant, 1921
Russia (Far East, Caucasus, European); cosmopolitan
D. (D.) immigrans Sturtevant, 1921
Russia (Far East, E. Siberia∗, Caucasus, European); cosmopolitan
D. (D.) kanekoi Watabe & Higuchi, 1979
Russia∗ (Far East); Japan, ne. to s. China
D. (D.) kuntzei Duda, 1924
Russia (Far East, Siberia, Caucasus, European); Japan, Korea, ne. to sw. China, Iran, Europe, n. Africa
D. (D.) lacertosa Okada, 1956
Russia (Kuril Is., Far East); Japan, Korea, ne. to sw. China, Ryukyu Is., Taiwan, Burma, Nepal, India
D. (D.) limbata von Roser, 1840
Russia (Far East, E. Siberia∗, European); Japan, ne. to sw. China, Europe
D. (D.) littoralis Meigen, 1830
Russia (Far East, E. Siberia∗, Caucasus, European); nw. China, Europe
D. (D.) lummei Hackman, 1972
Russia (E. Siberia∗, Caucasus, European); Japan, Scandinavia
D. (D.) makinoi Okada, 1956
Russia (Kuril Is.); Japan, Korea, ne. and n. China∗
D. (D.) montana Patterson & Wheeler, 1942
Russia (E. Siberia∗, European); Japan, Europe, Alaska, n. and w. Canada, w. and nw. USA
D. (D.) moriwakii Okada & Kurokawa, 1957
Russia∗ (Far East); Japan, ne. China∗
D. (D.) multispina Okada, 1956
Russia∗ (Far East); Japan, ne. China∗, India
D. (D.) neokadai Kaneko & Takada, 1966
Russia∗ (Far East); Japan, ne. to sw. China
D. (D.) nigromaculata Kikkawa & Peng, 1938
Russia (Kuril Is., Far East); Japan, Korea, ne. China
D. (D.) okadai Takada, 1959
Russia (Kuril Is., Far East); Japan
D. (D.) parakuntzei Okada, 1973
Russia (E. Siberia∗, Middle Asia); Mongolia
D. (D.) phalerata Meigen, 1830
Russia (E. Siberia∗, Caucasus, European); nw. China, Iran, Lebanon, Europe, Azores, n. Africa
D. (D.) rellima Wheeler, 1960
Russia∗ (E. Siberia); Mongolia∗, n. Canada, n. and w. USA
D. (D.) shaitanensis Sidorenko, nom. nov.
Russia (Far East, E. Siberia∗)
D. (D.) sordidula Kikkawa & Peng, 1938
Russia (Far East); Japan, Korea, ne. China∗
D. (D.) testacea von Roser, 1840
Russia (Far East, E. and W. Siberia, Caucasus, European); Korea, ne., nw., and sw. China, India, Mongolia, Iran, Turkey,

Europe
D. (D.) transversa transversa Fallén, 1823
Russia (Far East, E. Siberia∗, Caucasus, European); ne. and nw. China, Mongolia, Uzbekistan, Kazakhstan, Europe
D. (D.) tsigana Burla & Gloor, 1952
Russia∗ (Far East); Japan, Korea, ne. and sw. China, w. Europe
D. (D.) unispina Okada, 1956
Russia (Far East); Japan, Korea, ne. China∗, Ryukyu Is.
D. (D.) virilis Sturtevant, 1916
Russia (Far East, Caucasus, European); cosmopolitan
D. (Sophophora) alpina Burla, 1948
Russia (E. Siberia∗); Japan, Korea, Mongolia, nw. China, Europe
D. (So.) auraria Peng, 1937
Russia (Far East); Japan, Korea, ne. to sw. China, India
D. (So.) biauraria Bock & Wheeler, 1972
Russia (Far East); Japan, Korea, ne. China∗
D. (So.) bifasciata Pomini, 1940
Russia (Kuril Is., Far East, E. and W. Siberia, Caucasus, European); Japan, Korea, ne. and nw. to sw. China, Taiwan, India, Kazakhstan, Uzbekistan, Europe
D. (So.) helvetica Burla, 1948
Russia (Far East, E. Siberia∗, Caucasus); Japan, Korea, India, Europe
D. (So.) melanogaster Meigen, 1830
Russia (Far East, E. and W. Siberia, Caucasus, European); cosmopolitan
D. (So.) simulans Sturtevant, 1919
Russia (Far East, Caucasus); cosmopolitan
D. (So.) subauraria Kimura, 1983
Russia∗ (Far East); Japan, ne. China∗
D. (So.) suzukii (Matsumura, 1931)
Russia (Far East); Japan, Korea, ne. to sw. China, Ryukyu Is., Hainan Is., Thailand, Burma, n. India, Bonin Is., Hawaii
D. (Spinodrosophila) bondarenkoi Sidorenko, 1993
Russia (Far East)
Hirtodrosophila alboralis (Momma & Takada, 1954)
Russia (Kuril Is., Far East); Japan, Korea, ne. China
Hi. baikalensis Watabe, Toda & Sidorenko, sp. nov.
Russia∗ (Far East, E. Siberia); ne. China∗
Hi. histrioides (Okada & Kurokawa, 1957)
Russia (Kuril Is., Far East, E. Siberia∗); Japan, Korea, ne. and sw. China, Burma
Hi. kangi (Okada & Lee, 1961)
Russia∗ (Far East); Japan, Korea, sw. China∗
Hi. macromaculata (Kang & Lee, 1961)
Russia (Far East); Japan, Korea
Hi. nokogiri (Okada, 1956)
Russia (Far East, E. Siberia∗); Japan, Korea, ne. and c. China
Hi. pseudonokogiri (Kang, Lee & Bahng, 1965)
Russia (Far East); Japan, Korea
Hi. quadrivittata (Okada, 1956)
Russia (Far East); Japan, Korea, s. and sw. China
Hi. sexvittata (Okada, 1956)
Russia (Kuril Is., Far East); Japan, Korea, ne. China
Hi. subarctica (Hackman, 1969)
Russia∗ (E. Siberia); Japan∗, n. Scandinavia
Hi. toyohiokadai (Sidorenko, 1990)
Russia (Far East, E. Siberia∗); ne. China∗, Slovakia
Hi. trilineata (Chung, 1960)
Russia (Kuril Is., Far East); Japan, Korea, ne. China∗
Hi. trivittata (Strobl, 1893)
Russia (Kuril Is., Far East, Siberia, Altaj, Crimea, European); Japan, Korea, ne. China∗, Europe, Oriental Region
Hi. ussurica (Duda, 1935)
Russia (Far East); Japan, ne. China∗
Lordiphosa clarofinis (Lee, 1959)
Russia∗ (Far East); Japan, Korea, c. to sw. China∗
Lo. collinella (Okada, 1968)
Russia (Kuril Is., Far East); Japan, Korea, ne. to sw. China, Mongolia
Lo. hexasticha (Papp, 1971)
Russia (E. Siberia∗, European); Finland, Romania, Hungary
Lo. magnipectinata (Okada, 1956)
Russia (Kuril Is., Far East); Japan, Korea, ne. China∗
Lo. mommai (Takada & Okada, 1960)
Russia (Kuril Is.); Japan
Lo. nigricolor (Strobl, 1898)
Russia (Far East∗, E. Siberia∗, European), Japan, N. Korea, ne. and nw. China, Finland, Austria, Germany
Lo. pseudotenuicauda (Toda, 1983)
Russia (Kuril Is.); Japan, Korea
Lo. stackelbergi (Duda, 1935)
Russia (Far East); Japan, Korea, ne. to c. China, Ryukyu Is.
Lo. tenuicauda (Okada, 1956)
Russia (Far East); Japan, Korea, ne. China, Ryukyu Is.
Mycodrosophila celesta Sidorenko, 1992
Russia (Far East)
My. japonica Okada, 1956
Russia (Far East); Japan, Korea, ne. and c. China
My. nigropteropleura Kang, Lee & Bahng, 1965
Russia (Far East); Japan∗, Korea
My. planipalpis Kang, Lee & Bahng, 1966
Russia (Far East); Japan, Korea, c. and sw. China∗
My. poecilogastra (Loew, 1874)
Russia (Far East, Caucasus, Crimea, European); Japan, Korea, ne. to sw. China, Iran, Europe
My. shikokuana Okada, 1956
Russia (Far East); Japan, Korea, ne. China∗
My. takachihonis Okada, 1956
Russia (Far East); Japan, Korea, ne. to sw. China, Ryukyu Is.
Nesiodrosophila magnidentata (Lee, 1964)
Russia (Far East); Korea
Ne. okadai Nishiharu, 1981
Russia∗ (Kuril Is.); Japan, Korea
Scaptodrosophila coracina (Kikkawa & Peng, 1938)
Russia (Kuril Is., Far East); Japan, Korea, ne. to sw. China, Ryukyu Is., Borneo, Burma∗, India

Sd. puncticeps (Okada, 1956)
Russia (Kuril Is.); Japan, Korea, c. and sw. China∗
Sd. rufifrons (Loew, 1873)
Russia (Far East∗, E. Siberia∗, Caucasus, European); Japan, ne. and n. China, Europe
Sd. throckmortoni (Okada, 1973)
Russia (Far East); Japan, Korea, ne. and c. China
Scaptomyza (Hemiscaptomyza) carinata Okada, 1973
Russia∗ (E. Siberia); Mongolia
Sc. (H.) okadai Hackman, 1959
Russia (Kuril Is., Far East, E. Siberia∗); Japan
Sc. (H.) taigensis Sidorenko & Toda, sp. nov.
Russia∗ (Far East, E. Siberia)
Sc. (H.) trochanterata Collin, 1953
Russia∗ (E. Siberia); Europe, Alaska, n. Canada, Manitoba, Newfoundland
Sc. (H.) unipunctum (Zetterstedt, 1847)
Russia (E.∗ and W. Siberia, European), Tadjikistan, Kazakhstan, Europe, Alaska
Sc. (Parascaptomyza) pallida (Zetterstedt, 1847)
Russia (Far East, Siberia, Caucasus, European); cosmopolitan
Sc. (Scaptomyza) baechlii Sidorenko, 1993
Russia (Far East, E. Siberia∗)
Sc. (Sc.) consimilis Hackman, 1955
Russia (Kuril Is., Far East, E. Siberia∗, European); Japan, ne. and nw. China, Finland
Sc. (Sc.) flava (Fallén, 1823)
Russia (Far East, E.∗ and W. Siberia, European); Japan, Mongolia, nw. China, Uzbekistan, Afghanistan, Europe, Canary Is., Madeira, Azores
Sc. (Sc.) graminum (Fallén, 1823)
Russia (Far East, E. and W. Siberia, Caucasus, European); holarctic
Sc. (Sc.) montana Wheeler, 1949
Russia∗ (E. Siberia); w. Europe, n. Nearctic
Sc. (Sc.) polygonia Okada, 1956
Russia∗ (E. Siberia); Japan, Korea, ne. to nw. China, Ryukyu Is., Bonin Is.
Sc. (Sc.) subsplendens (Duda, 1935)
Russia (Far East); n. to sw. China∗
Sc. (Sc.) yakutica Sidorenko & Toda, sp. nov.
Russia∗ (E. Siberia)