Revision of the East Palaearctic species of the Leptocera (s. str.) fontinalis-group (Diptera, Sphaeroceridae)

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Abstract — Leptocera (s. str.) fontinalis-group comprises at least 8 species in the East Palaearctic. Two new species, viz., L. vomerata sp. n. and L. dyscola sp. n. (both from USSR: Amur area) are described; L. equispina L. PAPP, 1973, L. parafinalis L. PAPP, 1973 and L. spinitarsata L. PAPP, 1973 (all from Mongolia) are fully redescribed with figures of the male and female terminalia. New records of L. finalis (COLLIN, 1956) and L. caenosa (RONDANI, 1880) from the East Palaearctic areagiven and a key to the identification of the L. fontinalis-group of this area is presented. With 42 figures and an appendix recording L. nigra OLIVIER, 1813 from the East Palaearctic area.

The present study follows Roháček's (1982a) revision of the European species of the subgenus *Leptocera* (s. str.), but it is restricted to the *L. fontinalis*-group. This species-group comprises a number of closely related species (particularly in the East Palaearctic) that can hardly be recognized without knowledge of their male and female postabdominal structures. For this reason it appeared reasonable to redescribe the three Mongolian species described by L. Papp (1973). A small number of additional specimens from Amur area (USSR, Far East) received from Dr. A. Shatalkin (MGU) proved to be an extraordinarily useful contribution to our revision, containing two species new to science and some other species hitherto unrecorded from this area.

The Leptocera fontinalis-group was defined by Roháček (1982a) as follows: thorax without velvety spots; mid tibia with 2 posteroapical bristles subequal in length (either both short or both prolonged); some of the medial acrostichals more or less enlarged; male 5th sternum simple, without posterior lobes; telomere (surstylus) bipartite, with a characteristic anterior, finely haired projection and its hind part (see Fig. 2, HTE) with robust apical spines; postgonite angularly bent in proximal part (Fig. 3); female 8th sternum longer than wide; female 9th tergum not strikingly large compared to other parts of postabdomen; spermathecae not very elongate.

Defined in this way, the *L. fontinalis*-group includes 10 species in the Palaearctic Region, 8 of them occurring in the East Palaearctic. These are *L. fontinalis* (Fallén, 1826), *L. vomerata* sp. n., *L. equispina* L. Papp, 1973, *L. parafinalis* L. Papp, 1973, *L. finalis* (Collin, 1956), *L. spinitarsata* L. Papp, 1973, *L. dyscola* sp. n. and *L. caenosa* (Rondani, 1880). The remaining two species are known only from the West Palaearctic — *L. alpina* Roháček, 1982 and *L. oldenbergi* (Duda, 1918)*. *Leptocera nigrolimbata* Duda, 1925 (recorded from East Siberia by Duda 1938) is considered a species belonging to a different species-group of Oriental origin (see Roháček 1982a) and is therefore excluded from the present revision.

^{*}L. oldenbergi (Duda) has been known only from North, West and Central Europe until now (Roháček 1982a). In TMB there is a male of this species from USSR (Georgia, Gulripsch, 1. V. 1975, K. SIN leg.) which is an important record, extending its known distribution eastwards.

Acknowledgements — We are deeply indebted to Dr. A Shatalkin (MGU) for enabling us to study his material from Soviet Far East. Our thanks are further extended to Mr. B. R. Pitkin (British Museum, Natural History, London) who kindly improved the English of this paper and added valuable comments.

A b b r e v i a t i o n s of museums and collections are as follows: MGU — Moskovskij Gosudarstvennyj Universitet, Moscow (USSR); SMO — Slezské muzeum, Opava (Czechoslovakia); HNHM — Zoological Dept. Hungarian Natural History Museum, Budapest (Hungary).

KEY TO THE EAST PALAEARCTIC SPECIES OF THE LEPTOCERA (S. STR.) FONTINALIS-GROUP

Arista long or very long haired. Wings either distinctly greyish or 3rd—5th segments of male fore tarsus dilated, male periandrium with dense long hairs and female 7th tergum with long setiform hairs

Arista short to very short haired. Wings always brownish, male fore tarsi never dilated, periandrium with sparse short hairs and female 7th tergum with short setae except for those in posterior corners
 3

2 (1) Arista very long haired. Wings with brownish membrane. 3rd—5th segments of male fore tarsi dilated. Male periandrium with very dense and long hairs, pseudocerci strongly reduced (see Roháček, 1982a: Figs 60—61). Female 7th tergum with long setiform hairs, 9th tergum strongly reduced and spermathecae with characteristic body sculpture (Roháček, 1982a: Figs 65—68)

L. caenosa (RONDANI)

— Arista somewhat shorter haired. Wings distinctly greyish. Male fore tarsi not dilated. Male periandrium with long but sparse hairs (Fig. 28) and pseudocerci well developed (Fig. 29). Male 5th sternum (Fig. 31) and telomere (Fig. 32) characteristic. Female 7th tergum short haired except for long bristle in posterior corner and 9th tergum large (Fig. 33); body of spermatheacae without sculpture but with several small tubercles (Fig. 37)

L. dvscola sp. n.

3 (1) Posteroapical bristles and usually seta just above the long dorsal bristle on mid tibia long (Figs 21, 22)

 Posteroapical bristles and usually seta just above the long dorsal bristle on mid tibia small (Figs 4, 5)

4 (3) Anterior, finely pubescent, projection of fore part of telomere much shorter, distally hardly tapered and with strongly sclerotized anterior corner; posterior lobe of the fore part of telomere longer (higher) and triangular in lateral view (Roháček 1982a: Fig. 37). Female 9th tergum with a pair of dorsal setulae; cerci short haired (Roháček 1982a: Fig. 39)

L. finalis (COLLIN)

Anterior, finely pubescent, projection of fore part of telomere distinctly longer and with a tapered apex without strongly sclerotized anterior corner; posterior lobe of fore part of telomere shorter (lower) and suboblong in lateral view (Fig. 19). Female 9th tergum bare, fused with cerci which bear unusually long apical sinuate hair (Fig. 15)

L. parafinalis L. PAPP

6

5 (3) Males
Females (female of L. vomerata sp. n. and L. spinitarsata unknown)

6 (5) Hind part of telomere with long setiform hairs concentrated in a cluster on its proximal part (Fig. 2)

- Hind part of telomere with long setiform hairs distributed along its whole length (i. e. also in distal part Figs 8, 24)
- 7 (6) Anterior projection of fore part of telomere more slender, posterior lobe of this fore part longer, robust, rounded and bearing long bristles on ventral margin, terminated by a long and robust posterior bristle (Roháček 1982a: Figs 21, 22); male 5th sternum with longer haired posteromedial membraneous area (Roháček 1982a: Fig. 18)

L. fontinalis (FALLÉN)

 Anterior projection of fore part of telomere more robust, posterior lobe of this fore part very short and wide, characteristically shaped and bearing short setae on ventral margin and a very thick but short, spine-like posterior bristle arising on darkly pigmented projection (Fig. 2); male 5th sternum with shorter finely haired posteromedial membraneous area (Fig. 6)

L. vomerata sp. n.

8 (6) Mid basitarsus with a long and stout ventral bristle (Fig. 27). Fore part of telomere with robust and short anterior finely pubescent projection armed by strongly sclerotized anterior thorn-like corner; posterior lobe of this fore part also unusually bulky and characteristically shaped ventrally; hind part of telomere short and stout (Fig. 24)

L. spinitarsata L. PAPP

Mid basitarsus with weaker ventral bristle (Fig. 11). Fore part of telomere with long and slender anterior finely pubescent projection without thorn-like corner; posterior lobe of this fore part anteriorly short, posteriorly rounded but of more subtle construction; hind part of telomere longer and slender (Fig. 8)

L. equispina L. PAPP

9 (5) 7th tergum distinctly shorter; posterior margin of 7th sternum simple; 8th sternum with posterior corners less projected; spermathecae without thorn-like tubercles in proximal part of body (Roнáček 1982a: Figs 42—45)

L. fontinalis (FALLÉN)

— 7th tergum distinctly longer (Fig. 12); 7th sternum posteromedially slightly, but distinctly, extended; 8th sternum with posterior corners more projected (Fig. 13); spermathecal body with thorn-like tubercles (Fig. 14)

L. equispina L. PAPP

Leptocera (Leptocera) fontinalis (FALLÉN, 1826)

For detailed redescription, figures of the male genitalia and female terminalia, synonymies, biology and distribution see Roháček (1982a). L. fontinalis has been recorded from the East Palaearctic only twice — by Petrova (1968) from Far East and by L. Papp (1974) from Mongolia. Unfortunately we were unable to examine these specimens to check their identification. We have not excluded the possibility that they (or some of them) might be L. vomerata sp. n. Although East Palaearctic records of L. fontinalis have not been confirmed, we have included this species in the key because its occurrence in this area is probable.

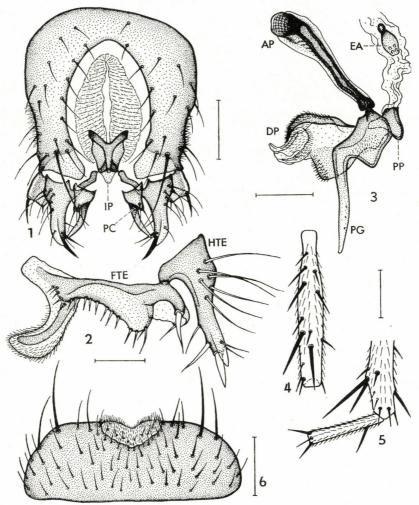
Leptocera (Leptocera) vomerata sp. n. \bigcirc (Figs. 1-6, 38)

Type material — Holotype &: USSR, Amurskaya obl., g. Zeya, 3 IX 1981, A. SHATAL-KIN leg. Deposited in MGU.

Description— σ . Total body length 2.30 mm; general colour brownish black, brown pollinose but subshiny. — Frons brown anteriorly to blackish posteriorly, dull. Orbits and interfrontalia somewhat silvery grey pollinose; narrow frontal triangle somewhat shiny. Cephalic chaetotaxy robust, also postverticals well developed, crossed. 3 interfrontals becoming longer anteriorad and 1 small in front of the longest one; lateral to the small interfrontal an additional weak setula. About 6 small additional setulae inside and below orbitals but only 2–3 uppermost longer. Frontal

lunule brown, dull. Face narrow with some minute hairs. Facial cavity blackish brown and rather shiny, gena dusted and dull. Genal bristle rather strong, three times the length of the setulae behind it. Eye diameter about 2.8 times as long as the smallest genal width. — Antenna e blackish, 3rd segment dark brown, shortly pilose. Arista about 3.9 times as long as antenna, relatively short haired (slightly longer than in L. fontinalis).

Thorax brownish black; mesonotum, despite greyish brown pollination, shining; pleurae dull. 2 humerals (also the internal rather long) and 1 microseta on humeral callus. 2+3 dorsocentrals, all directed posteriorly and becoming shorter anteriorad. 8-9 rows of acrostichal microsetae; 3(2+1) medial pairs of acrostichals distinctly enlarged though less than those of *L. fontinalis*; some small microsetae running between enlarged acrostichals also present. Scutellum large, long, with 4 pairs of



Figs 1-6. Leptocera (s. str.) vomerata sp. n. (holotype): 1 = male genitalia caudally (aedeagal complex omitted); 2 = telomere laterally; 3 = aedeagal complex laterally (right postgonite omitted); 4 = left mid tibia dorsally; 5 = apex of mid tibia and basitarsus posteriorly; 6 = 5th male sternum. — A b b r e v i a t i o n s: AP = aedeagal apodeme, DP = distiphallus, EA = ejaculatory apodeme, FTE = fore part of telomere, HTE = hind part of telomere, IP = intraperiandrial sclerite, PC = pseudocercus, PG = postgonite, PP = phallophore. — S c a l e s: Figs 1, 3 = 0.1 mm, Fig. 2 = 0.05 mm, Figs. 4-6 = 0.2 mm

marginal scutellar bristles, as usual. 2 sternopleurals, the posterior strong and long. — Legs blackish brown, except for the slightly paler trochanters, knees and tarsi. Chaetotaxy of mid tibia as in Figs 4, 5, thus with short posteroapical pair of bristles. Basitarsus with a strong ventral bristle. Ratio t_2 : mt_2 (= mid tibia: mid basitarsus) = 1.97. — Wing (Fig. 38) with pale brownish membrane and brown veins. First costal sector sparsely haired. Chardly reaching beyond R_{4+5} . R_{2+3} long, very slightly bent up to C. R_{4+5} distinctly curved up to C but less than that of L fontinalis. — Discal cell of medium length, tapered distally, with short pigmented processes of M_{1+2} and M_{3+4} beyond t_p , the latter being continued by a colourless venal fold. A long and sinuate. Alula large, broad, apically tapered. Wing measurements: length 2.30 mm, width 0.95 mm, C-index = 2.02, t_a - t_p : t_p = 3.00. Halteres dirty yellowish brown.

A b d o men dark brown, pollinose, subshiny. Terga finely and sparsely haired; 3rd-5th tergum with long bristles in posterior corners (becoming longer posteriorad). Sterna densely and shortly setulose. 5th sternum is the widest sternum (Fig. 6), rather densely setulose on disc, with some longer bristles at posterior margin and with small membraneous and finely pubescent posteromedial area

which is smaller and with finer pilosity than that of L. fontinalis.

Genitalia. — Periandrium (Fig. 1) shortly and sparsely haired but with a long caudal bristle and dense micropubescence lateroproximaly. Hypandrium relatively long, Y-shaped. Intraperiandrial sclerite large, subanal plate absent. Pseudocerci relatively removed each from other and bearing comparatively short hairs and a slender ventral projection. Telomere (Fig. 2) bipartite. The fore part very wide and short (low), with long, bent, finely pubescent (particularly on inner side) anterior projection; its posterior lobe highly characteristic with respect to the shape and pigmentation, armed by short setulae and 1 robust posterior spine arising on darkly pigmented projection. Hind part of telomere bearing a group of long setiform hairs on proximal half (as in *L. fontinalis*) and 1 robust apical spine and 2 anterior bristles in distal half; also the external apical small pale projection developed as usual. Aedeagal complex (Fig. 3) most resembling that of *L. fontinalis* in having similarly shaped postgonite but the structure of distiphallus is slightly different (more curved dorsal sclerite, finely spinulose ventral part). Ejaculatory apodeme well developed.

o unknown.
Distribution — Known only from unique holotype male from the USSR: Far East, Amur area.

Discussion — L. vomerata sp. n. seems to be closely allied to L. fontinalis (FALLÉN) because it has similarly formed telomere (particularly its hind part) and aedeagal complex (especially postgonite). It can hardly be distinguished from the latter species by outer features (although R_{4+5} is somewhat less curved and acrostichal macrochaetae are shorter); the main differences can be found in the structure and armature of the fore part of telomere and male 5th sternum.

Leptocera (Leptocera) equispina L. PAPP, 1973 (Figs. 7—14, 49)

Leptocera (Leptocera) equispina L. PAPP, 1973, Acta zool. hung., 19: 423, & q.

Type material — Holotype &: Mongolia, Central aimak, Ulan-Baator, Zaisan im Bogdo ul, 1600 m, Exp. Dr. Z. Kaszab, 1966, 6 VI 1966 (Nr. 499). — Paratypes: 1 ç: Mongolia, Bulgan aimak, zw. Somon Chischig-Öndör, 1390 m, Exp. Dr. Z. Kaszab, 1968, 15 VI-23 VII 1968 (Nr. 965); 1 ç: Bulgan aimak, 7 km NW von Somon Chanžargalant, 1350 m, Exp. Dr. Z. Kaszab, 1968, 16 VI 1968 (Nr. 969). All in HNHM (examined).

Description: — & Total body length 1.73 mm; general colour brownish black, dark greyish brown pollinose, subshiny. — He ad brownish black; frontal triangle rather shining, interfrontalia and orbits silvery grey dusted and glittering; rest of frons blackish grey dusted, dull. Cephalic chaetotaxy as in L. fontinalis; postverticals weak but crossed. 3 stronger and 1 small interfrontals (recognized from basal scars); about 5 minute additional setulae inside and below orbitals. Carina brown, facial cavity blackish and rather shining. Carina somewhat prominent between antennal bases. Gena greyish dusted, genal bristle rather long but thin. Eye normal in size, its diameter about 3.5 times as long as the smallest genal width. Antennae blackish brown with paler 3rd segment. Arista about 3.6 times as long as antenna, short haired.

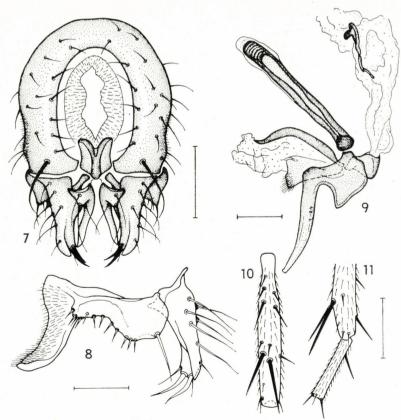
Thorax brownish black; mesonotum more shining despite brownish grey pollination; pleurae duller. 2 humerals plus 1 microseta on humeral callus. 5(2+3) dorsocentrals becoming shorter anteriorad; 8 rows of acrostichal microsetae in front of suture; medial acrostichals hardly enlarged,

only 3 pairs of them longer than other microsetae. Scutellum large, rounded triangular, with 4 pairs of scutellars as usual. 2 sternopleurals (large posterior, short anterior) and 1 microseta between them but arising more ventrally. — Legs brown, trochanters, knees and tarsi pale brown. Chaetotaxy of mid tibia (Figs 10, 11); posteroapical bristles short, subequal in length. Ratio $t_2 : mt_2 = 1.88$, thus mt_2 (mid basitarsus) rather long and slender. — Wing (Fig. 39) with brownish membrane; veins brown. C not extended beyond R_{4+5} . First costal sector sparsely and long haired. R_{2+3} slightly sinuate, R_{4+5} slightly curved up to C. Discal cell of medium length, with rather long processes of M_{1+2} and M_{3+4} beyond t_p , the former continued by colourless venal fold reaching wing margin. Alula rather large but tapered apically. Wing measurements: length 1.79 mm, width 0.77 mm, C-index = 1.62, $t_a - t_p : t_p = 2.62$. Halteres yellow with pale brownish knob.

Abd om en brownish black, rather shiny. Terga sparsely haired except for the long bristles in posterior corners of 4th and 5th tergum. Syntergum 1+2 basally paler pigmented. Sterna more densely, short haired. 5th sternum extremely like that of *L. alpina*, having similar chaetotaxy as well

as extent of membraneous, finely pilose, posteromedial area.

Genitalia rather narrow in caudal view, see Fig. 7. Periandrium shortly setose except for the long caudal bristle. Hypandrium rather long, Y-shaped. Intraperiandrial sclerite well developed and subanal plate absent. Pseudocerci rather long haired and with a long, slender ventral projection. Telomere (Fig. 8) resembling that of *L. alpina* but the anterior finely pubescent projection much longer and posterior long bristle and other short setulae differently positioned on the posterior lobe of the fore part of telomere. Hind part of telomere long and slender, with more posterior setiform hairs than in *L. alpina* and the anterior bristles situated closely each other and 2 thicker bristles on apex are



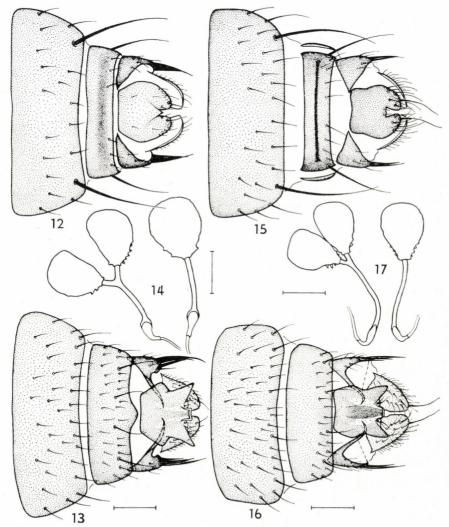
Figs 7-11. Leptocera (s. str.) equispina L. PAPP (holotype): 7 = male genitalia caudally (aedeagal complex omitted); 8 = telomere laterally; 9 = aedeagal complex laterally (right postgonite omitted); 10 = left mid tibia dorsally, 11 = apex of mid tibia and mid basitarsus posteriorly. — S c a l e s:

Fig. 7 = 0.1 mm, Figs 8, 9 = 0.05 mm, Figs 10, 11 = 0.2 mm

equal in length and thickness. Aedeagal complex (Fig. 9) highly similar to that of *L. alpina* but dorsal sclerite of the distiphallus unhaired and postgonite slightly differently shaped. Ejaculatory apodeme well developed.

 \circ . Head, thorax, legs, wing and preabdomen as in the male unless mentioned otherwise. Total body length 2.26–2.34 mm; ratio t_2 : $mt_2=1.89-1.90$. Wing measurements: length 2.14–2.38 mm; width 0.87–0.98 mm, *C*-index = 1.45–1.56, $t_{\rm a}$ – $t_{\rm p}$: $t_{\rm p}=2.67$ –3.08. 5th sternum unmodified, densely shortly setulose.

Postabdomen (Figs 12, 13). 6th tergum rather sparsely haired and with a long bristle in posterior corners. 7th tergum short, transverse, with darker but diffuse transverse pigmentation. 8th tergum divided into 2 plates, each with 4 thick bristles on posterior margin and with a narrow projection reaching into ventral side of postabdomen. 9th tergum fused with cerci, plate-shaped, with pair of



Figs 12–14. Leptocera (s. str.) equispina L. Papp (paratype): 12 = female postabdomen dorsally; 13 = dtto ventrally; 14 = spermathecae. — Figs 15–17. Leptocera (s. str.) parafinalis L. Papp (paratype): 15 = female postabdomen dorsally; 16 = dtto ventrally; 17 = spermathecae. — S c a - l e s: Figs 14, 17 = 0.05 mm, others = 0.1 mm

minute dorsal setulae. 6th sternum simple, shortly setulose. 7th sternum with 4 longer setae besides a number of short setulae and somewhat posteromedially extended. 8th sternum characteristic in having very projecting posterior corners. 9th sternum very complex but membraneous anteriorly; ventrally shortly densely setulose and divided into two sclerites. Spermathecae (Fig. 14) with some tubercles on proximal part of body and the duct (sclerotized part) shorter than in *L. parafinalis* or *L. finalis* but longer than in *L. alpina*. Cerci fused with 9th tergum and much smaller than in *L. alpina*; they are rather short haired (see Fig. 12).

Distribution — Known only from type specimens from Mongolia (Central and Bulgan aimaks, PAPP 1973).

Discussion — This species belongs to the *L. finalis*-subgroup constituted by species with similarly formed aedeagal complex and characteristically haired hind part of telomere. Besides *L. equispina*, this subgroup includes also *L. alpina* Roháček, *L. parafinalis* L. Papp, *L. finalis* (Coll.), *L. spinitarsata* L. Papp and *L. dyscola* sp. n. In the form of telomere (particularly as regards the posterior lobe of its fore part), male 5th sternum and wing venation *L. equispina* most resembles *L. alpina* Roháček, 1982 but this species has much shorter anterior projection of the fore part of telomere, dorsally fine haired distiphallus, different postgonite, simple female 7th sternum, 8th sternum with less projecting posterior corners and much better differentiated cerci (fused with 9th tergum in *L. equispina*).

Leptocera (Leptocera) parafinalis L. PAPP, 1973 (Figs. 15—22, 40)

Leptocera (Leptocera) parafinalis L. PAPP, 1973, Acta zool. hung., 19: 424, & Q.

Type material— Holotype &: Mongolia, Bajan-Ölgij aimak, am Fluss Chovd gol bei der Stadt Ölgij, 1750 m, Exp. Dr. Z. Kaszab, 1968, 30 VI 1968 (Nr. 1046). — Paratypes: 2 &, 2 & with same data; 1 &: Bajan-Ölgij aimak, im Tal des Flusses Chavcalyn gol, 25 km O von Somon Cagannuur, 1850 m, 3 VII 1968 (Nr. 1056); 1 & 1 &: Chövsgöl aimak, 3 km SW von Somon Burenchaan, 1650 m, 21 VI – 16 VII 1968 (Nr. 993); 1 &: Chövsgöl aimak, 8 km N von Somon Alagerdene, am Fluss Egijn gol, 1600 m, 17 VII 1968 (Nr. 1119); 1 &: Uvs aimak, 8 Rand des Sees Örög nuur, 1500 m, 28 VI – 5 VII 1968 (Nr. 1036); 1 &, 1 &: Uvs aimak, am Fluss Baruunturuun gol neben Somon Baruunturuun, 1280 m, 25 VI 1968 (Nr. 1012); 1 &: Central aimak, 11 km OSO von Somon Bajanzogt, 1600 m, 13 VI–26 VII 1968 (Nr. 945), all Exp. Dr. Z. Kaszab, 1968; 1 &: Central aimak, Tosgoni ovoo, 5–10 km N von Ulan-Baator, 1500–1700 m, 23–24 VII 1967 (Nr. 926), Exp. Dr. Z. Kaszab, 1967; 1 &: Central aimak, SO von Somon Bajancogt, 1600 m, 4 VII 1964 (Nr. 264); 1 &: Central aimak, 12 km SO von Ulan-Baator, Nucht i. Bogdo ul, 1500 m, 6 VII 1964 (Nr. 273), both Exp. Dr. Z. Kaszab, 1964. All types in HNHM (examined).

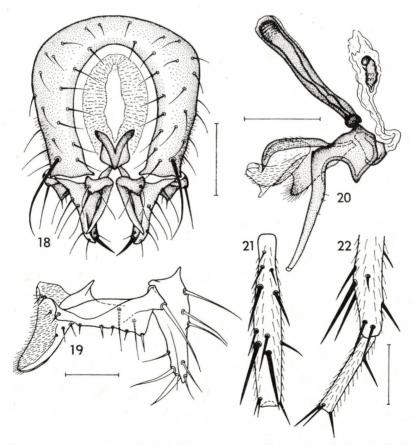
Description— σ . Total body length 1.78–2.26 mm; general colour brownish black, dark greyish brown pollinose, subshiny. — He ad brownish black. Frons almost black, only anteriorly brown. Interfrontalia and orbits silvery grey pollinose and somewhat glittering, rest of frons dull. Cephalic bristles as in *L. finalis*, robust. Postverticals thin but well developed and crossed. 3 strong interfrontals becoming longer anteriorad and 1 small in front of them; 2 additional microsetae situated lateral to the latter small interfrontal. 4–6 small additional setulae inside and below orbital bristles. Frontal lunule brown but facial cavity blackish and somewhat shiny. Gena blackish brown and dull; genal bristle comparatively strong. Eye diameter about 3.7 times as long as the smallest genal width. Antennae blackish, 3rd segment dark brown. Arista about 3.3 times as long as antenna, short haired.

Thorax brownish black, mesonotum subshiny, pleurae heavily greyish brown dusted and dull. 2 humeral bristles and 1 microseta on humeral callus. 5(2+3) dorsocentrals becoming shorter anteriorad. 9 rows of acrostichal microsetae between dorsocentrals in front of the suture. 2 (1+1) medial pairs of acrostichals enlarged but less than in L. fontinalis; also prescutellar medial acrostichal pair somewhat enlarged. Scutellum rounded triangular, large, with 4 pairs of scutellar bristles. 2 sternopleurals, the posterior very robust, its tip reaching the upper margin of mesopleuron. — Legs robust (femora in particular) dark to blackish brown but trochanters, knees and tarsi paler brown. Chaetotaxy of mid tibia (Figs 21, 22) distinguished by very long and robust bristles. The most characteristic is an unusally long dorsal seta above the distal proximal long bristle and very long posteroapical bristles. Mid basitarsus with strong ventral bristle. Ratio t_2 : $mt_2 = 1.93-2.06$. — Wing (Fig. 40) with pale brownish membrane, veins brown. C not overpassing R_{4+5} . First costal

sector long and sparsely haired. R_{2+3} long and parallel to C, apically bent to it. R_{4+5} strongly curved up to C (as in L. fontinalis). Discal cell of medium length, with short process of M_{1+2} and longer one of M_{3+4} beyond $t_{\rm p}$, the former continued by colourless venal fold reaching wing margin. Alula large, somewhat tapered apically and rounded. Wing measurements: length 1.82-2.34 mm, width 0.75-1.01 mm, C-index = 1.60-1.82, $t_{\rm a}$ - $t_{\rm p}$: $t_{\rm p}$ = 2.67-3.46. Halteres with yellow stem and dark, greyish brown knob.

A b d o m e n brownish black and despite some pollination shiny. Syntergum 1+2 medially somewhat paler pigmented. Terga sparsely and shortly haired, only bristles in posterior corners of 4th and 5th tergum long. Sterna more densely but rather finely haired. 5th sternum as in L. spinitarsata or L. finalis.

Genitalia similar to that of L. finalis. Periandrium (Fig. 18) with a long caudal bristle besides other short setosity. Hypandrium Y-shaped. Intraperiandrial sclerite well developed; subanal plate absent. Pseudocerci slender, each with long and narrow ventral projection and with 2 shorter and one long setiform hairs on proximal part. Telomere (Fig. 19) bipartite. Its fore part characterized by simple, but rather long and finely haired anterior projection and very short (low) flat posterior lobe armed by short setulae, except for 2 longer internal setiform hairs and a very long posterior bristle arising on a short projection. Hind part of telomere long and slender, with only 3 posterior setiform hairs on proximal half and with 3 anterior (1 spine-like, 1 thick) and 2 external setae in distal half. Aedeagal complex (Fig. 20) similar to that of L. spinitarsata and L. finalis, but distin-



Figs 18–22. Leptocera (s. str.) parafinalis L. PAPP (paratype): 18 = male genitalia caudally (aedeagal complex omitted); 19 = telomere laterally; 20 = aedeagal complex laterally (right postgonite omitted); 21 = left mid tibia dorsally; 22 = apex of mid tibia and mid basitarsus posteriorly. — S c a l e s:

Figs 18, 20 = 0.1 mm, Fig. 19 = 0,05 mm, Figs 21, 22 = 0.2 mm

guished particularly by very long and slender postgonite with characteristic apex. Distiphallus

highly similar to that of L. finalis. Ejaculatory apodeme present, well developed.

 \circ . Head, thorax, legs, wing and preabdomen as in male unless mentioned otherwise. Total body length 2.02–2.42 mm; ratio t_2 : $mt_2=1.81-1.95$. Wing measurements: length 2.14–2.56 mm, width 0.83–1.05 mm, C-index = 1.61–2.00, t_a – t_p : $t_p=2.36-3.20$. 5th sternum unmodified, densely setulose.

Postabdomen (Figs 15, 16). 6th tergum simple, transversely oblong, with a long bristle in posterior corners. 7th tergum short, very transverse, with a narrow, darkly pigmented, transverse stripe. 8th tergum divided into 2 lateral plates, each bearing about 3 bristles and a slender ventral projection reaching far on ventral side of postabdomen. 9th tergum darkly pigmented, completely fused with cerci and without dorsal setulae. 6th sternum simple, shortly uniformly setulose. 7th sternum narrower than 6th sternum, with 4 longer setae besides short setulae on posterior margin. 8th sternum plate-shaped, flat, rather long, with projecting posterior corners and with 2 small setulae on each side of the posteromedial structure. Internally there is a "spectacles-shaped" sclerite round the vagina though much less distinctly developed then in some groups of the *Limosina* complex (see Roháček 1982b). 9th sternum anteriorly of complex structure but membraneous, posteriorly divided into 2 pieces and ventrally densely setulose. Spermathecae (Fig. 17) egg- to pear-shaped, with thorn-like tubercles on proximal part of body and with very long and slender sclerotized parts of ducts. Cerci fused with 9th tergum and unusually long haired, especially their apical sinuate hair almost as long as 9th tergum and cerci together.

Distribution — Widely distributed in Mongolia (Bajan-Ölgij, Chövsgöl, Uvs, Central, Archangaj and Bajanchongor aimaks) (PAPP 1973, 1974) but unrecorded from adjacent areas till now.

D is c uss i on — L. parafinalis is closely related to L. finalis (Coll.) and resembles it in outer body features as well as general construction of the male genitalia and female terminalia. However, it can be safely distinguished from L. finalis by longer and more robust bristles on mid tibia (see Figs 21, 22), more upcurving R_{4+5} , shape of the fore part of telomere, slender pseudocerci, long and very slender postgonite, characteristic bare 9th female tergum fused with long haired cerci etc.

Leptocera (Leptocera) finalis (COLLIN, 1956)

Material examined — USSR: 1 &: Amurskaya obl., g. Zeya, 8 VIII 1981, A. SHATALKIN; 1 &: ibid., 15 VIII 1981; 1 &: 31 VIII 1981; 1 &: 12 IX 1981 (1 & HNHM, others MGU).

For redescription, figures of the male and female tarminalia, distribution and biology see Rohá-Ček 1982a. L. finalis has previously been recorded only from northern areas in Europe, south to England, Denmark and North Poland l. c. New to the East Palaearctic.

Leptocera (Leptocera) spinitarsata L. PAPP, 1973 (Figs 23-27, 41)

Leptocera (Leptocera) spinitarsata L. PAPP, 1973, Acta zool. hung., 19: 424, &.

Type material—Holotype o: Mongolia, Chentej aimak, 150 km ONO von Öndörchaan, 10 km S von Kerulen, 1000 m, Exp. Dr. Z. KASZAB, 1965, 30 VII 1965 (Nr. 331). Deposited in HNHM (examined).

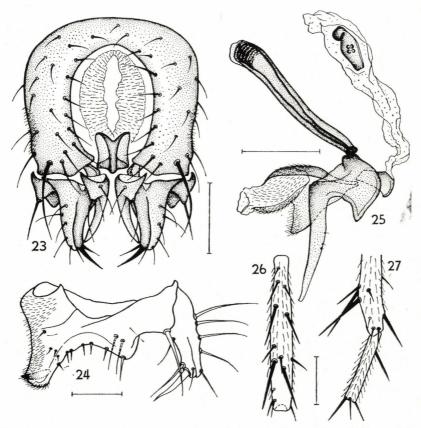
Description— & Total body length 2.30 mm, general colour brownish black, dark greyish brown pollinose, dull.— He a d brownish black. Frons brown to reddish brown anteriorly to black posteriorly. Narrow interfrontalia and orbits silvery grey, rest of frons brownish grey pollinose. Cephalic bristles strong. Postverticals thin but crossing; 3 stronger interfrontals becoming longer anteriorad and 1 small and weak one more anteriorly; an additional microseta laterad to latter interfrontal seta. About 5 minute additional setulae inside and below orbitals. Frontal lunule, face and gena brown, dusted. Facial cavity dark brown, rather shiny. Genal bristle of medium length. Eye normal, its diameter about 3.2 times as long as the smallest genal width. Antennae blackish, 3rd segment dark brown. Arista about 3.9 times as long as antenna, short haired.

Thorax brownish black, dark brown pollinose. Mesonotum only slightly shining, pleurae dull. 2 humeral bristles (the external very long) and 1 microseta on humeral callus. 5(2+3) dorso-

centrals becoming shorter anteriorad. 9 rows of acrostichal microsetae; medially 3 incomplete pairs of distinctly enlarged acrostichals and 1 row of microsetae running between them. Prescutellar medial acrostichal pair hardly enlarged. Scutellum large, rounded triangular, with 4 pairs of marginal scutellar bristles. 2 sternopleurals, the posterior one very long and robust, almost reaching up to upper margin of mesopleuron. — Legs rather slender, brown with paler trochanters, knees and tarsi. Chaetotaxy of mid tibia (Fig. 26) characterized by robust bristles but posteroapical setae shorter than in L. finalis or L. parafinalis. Mid basitarsus with very strong ventral bristle, see Fig. 27. Ratio t_2 : $mt_2 = 2.05$. — Wing (Fig. 41) with pale brownish membrane, veins brown. C not extended beyond R_{4+5} . R_{2+3} rather parallel to C, apically upcurved to C. R_{4+5} strongly curved up to C (more than in L. fintinalis). Discal cell of medium size, with distinct processes of M_{1+2} and M_{3+4} beyond t_p , the former continued by colourless venal fold reaching wing margin. Alula big but tapered apically. Wing measurements: length 2.32 mm, width 0.95 mm, C-index = 1.80, t_a - t_p : t_p = 2.86. Halteres dirty yellow with somewhat darker stem.

A b d o m e n brownish black, subshiny. Syntergum 1+2 basally slightly paler pigmented. Terga sparsely haired but with long bristles in posterior corners; those of 5th tergum particularly long, longer than length of 4th and 5th tergum together. Sterna with short and more dense hairs. 5th sternum as in L. finalis; also its membraneous posteromedial finely pubescent area as in that species

Genitalia. Periandrium rather broad (Fig. 23) with the usual long caudal bristle; otherwise shortly setulose. Hypandrium rather long, Y-shaped. Subanal plate not developed; intraperi-



Figs 23-27. Leptocera (s. str.) spinitarsata L. PAPP (holotype): 23 = male genitalia caudally (aedeagal complex omitted); 24 = telomere laterally; 25 = aedeagal complex laterally (right postgonite omitted); 26 = left mid tibia dorsally; 27 = apex of mid tibia and basitarus posteriorly. — S c a l e s:

Figs 24, 25 = 01. mm, Fig. 23 = 0.05 mm, Figs 26, 27 = 0.2 mm

andrial sclerite distinct. Pseudocerci robust including their long ventral projection. Telomere (Fig. 24) very bulky. Fore part of telomere with thick, short anterior ventral projection finely haired and bearing darkly pigmented apical thorn-like corner; posterior lobe of this fore part with 2 robust lobes; the anterior of them with only very short setulae, the other carrying a long bristle. Hind part of telomere also unusually robust (in contrast to all relatives) and armed by a robust spine and 2 anterior setae and by a row of long setae posteriorly. Aedeagal complex (Fig. 25) similar to those of *L. finalis* or *L. parafinalis* but slightly differing in shape of distiphallus and postgonite. Ejaculatory apodeme relatively large. 9 unknown.

Distribution — Known only from unique holotype male from Mongolia (Chentej aimak) (L. Papp 1973).

D is c u s s i o n — L. spinitarsata undoubtedly belongs to L. finalis-subgroup (cf. the formation of the aedeagal complex and telomere). It can be best recognized by its strongly upcurved R_{4+5} , long and stout ventral bristle on mid basitarsus and distinctive male genitalia (robust pseudocerci, telomere bulky and characteristically formed).

Leptocera (Leptocera) dyscola sp. n. ♂ ♀ (Figs 28–37, 42)

Type material — Holotype &: USSR, Amurskaya obl., g. Zeya, 25 VIII 1981, A. Shatakin leg. — Allotype & with same data but collected 25 VII 1981; paratypes: 1 &, 1 &: same locality, 15 VIII and 28 VIII 1981 respectively, both A. Shatakin leg.; 1 &: same locality, 5 VII 1981, A. Ozerov leg. — Holotype, allotype and 1 & paratype in MGU, 1 & paratype in HNHM and 1 & paratype in SMO.

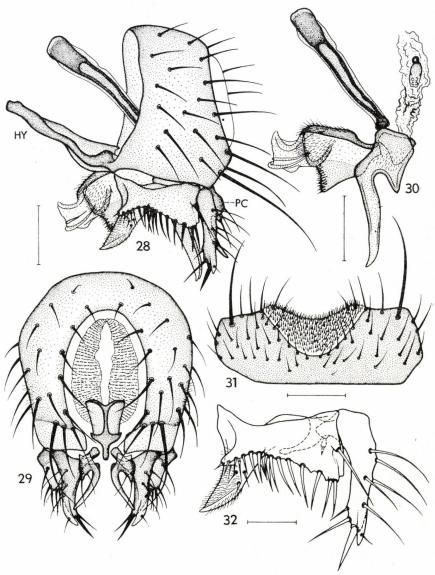
Description— & Total body length 2.18–2.38 mm; general colour brownish black, subshiny.— He a d almost black, dull. Frons anteriorly brown, posteriorly black. Frontal and ocellar triangle, orbits and interfrontalia silvery grey pollinose and glittering. Cephalic bristles robust but postverticals rather small though with apices crossing. 3 interfrontals becoming longer anteriorad and 1 very minute seta in front of them; 1–2 microsetae laterad to the latter small interfrontal also present. 4–5 small additional setulae inside and below orbitals; 2 uppermost somewhat stronger. Frontal lunule pale greyish pollinose; facial cavity black and rather shining despite some brown pollination; gena black but densely greyish dusted and dull. Genal bristle of medium length. Eye normal, its diameter about 3.1 times as long as the smallest genal width. Antennae black with brown 3rd segment. Arista rather long haired (but shorter than that of *L. caenosa*) and about 4.4–4.6 times as long as antenna.

Thorax brownish black, grey to greyish brown pollinose. Mesonotum somewhat shining, scutellum and pleurae more heavily dusted and dull. 2 humerals (the external very long) and 1 microseta on humeral callus. 5(2+3) dorsocentrals becoming shorter anteriorad, the most posterior longer than scutellum. 2-3 (1+1 or 2+1) pairs of medial acrostichals only slightly enlarged and 1-2 rows of acrostichal microsetae running between them. 8-10 rows of acrostichal microsetae between dorsocentrals on suture. Scutellum large and long, rounded triangular, with 2 very long and 2 short bristles as usual. 2 sternopleurals, the anterior small, the posterior very long. — Legs blackish, only trochanters, knees and tarsi brown to yellowish brown. Chaetotaxy of mid tibia (Figs 35, 36) with a small dorsal seta above the distal robust bristle, 3 anteroapical bristles subequal in length and 2 slightly longer posteroapical ones; mid basitarsus with robust ventral bristle. Ratio $t_2: mt_2 = 1.84-1.97$. — Wing (Fig. 42) with unusually pale greyish (not brownish) membrane and pale brown veins. C not extended beyond R_{4+5} . First costal sector long and sparsely setulose. R_{2+3} rather straight, apically slightly bent up to C. R_{4+5} also comparatively slightly curved up to C. Discal cell medium-sized, distally tapered, with very short pigmented process of M_{1+2} and usually longer one of M_{3+4} beyond t_b . Alula large, broad, apically tapered. Wing measurements: length 2.14-2.30 mm, width 0.91-0.98 mm, C-index = 1.51-1.79, t_a-t_p : $t_p=2.86-3.33$. Halteres yellow to dirty orange.

A b d o men blackish brown, greyish brown pollinose, subshiny. Terga and sterna rather densely setulose. Syntergum 1+2 with large pale pigmented mediobasal area. 3rd-5th tergum with long bristles in posterior corners besides short setae on disc. Sterna becoming wider posteriorad and densely setulose. 5th sternum (Fig. 31) rather densely and shortly setulose but with a very long (longer than length of 5th sternum) bristle in posterior corners. Membraneous, finely spinulose posteromedial area largest among relatives, almost as large as that of *L. oldenbergi*.

Genitalia — Periandrium (Figs 28,29) rather densely and long setose compared to that of allied species, with a long caudal bristle; also some bristles adjacent to it relatively long. Hypandrium robust, Y-shaped. Intraperiandrial sclerite large, subanal plate not developed. Pseudocerci

slender, their proximal part distinctly pointed and with 3 usual setae; their distal projection very slender. Telomere (Fig. 32) with hind part similar to that of *L. finalis* and related species but its fore part highly characteristic, with pointed but not very long anterior projection and with flat posterior lobe richly armed by relatively long and thick bristles on ventral margin and with a long posterior bristle. Aedeagal complex (Fig. 30) similar to that of species belonging to *L. finalis*-subgroup, but its distiphallus distinctly spinulose on ventral lobe. Postgonite large, strongly angular, with slightly bent and apically pointed distal part; its proximal part with fine pubescence in the middle-

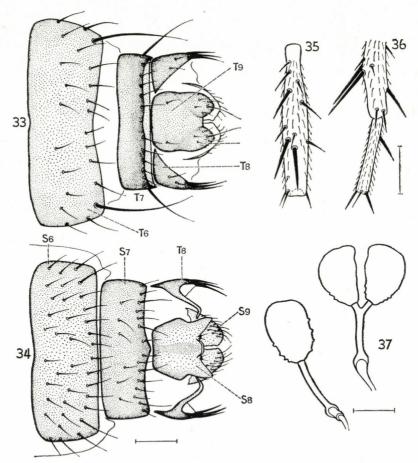


Figs 28-32. Leptocera (s. str.) dyscola sp. n. (paratype): 28 = male genitalia laterally; 29 = dtto caudally (aedeagal complex omitted); 30 = aedeagal complex laterally (right postgonite omitted); 31 = 5th male sternum; 32 = telomere laterally. — A b b r e v i a t i o n s: HY = hypandrium, PC = pseudocercus. — S c a l e s: Fig. 31 = 0.2 mm, Fig. 32 = 0.05 mm, others = 0.1 mm

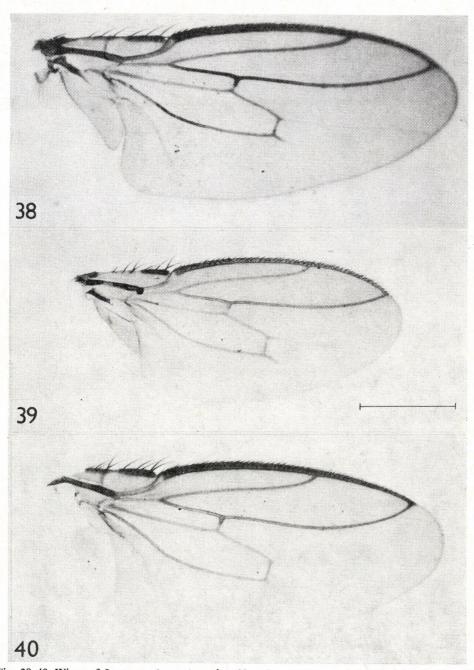
of external side (this micropubescence probably present in all related species, see e. g. also Fig. 3, but apparently overlooked previously). Ejaculatory apodeme present but rather small.

 \circ . Head, thorax, legs, wing and preabdomen as in the male unless mentioned otherwise. Total body length 2.06-2.58 mm. Ratio t_2 : $mt_2 = 1.85-1.91$. Wing measurements: length 2.10-2.38 mm, width 0.87-1.03 mm, C-index = 1.76-1.97, $t_a - t_p$: $t_p = 3.08-3.13$. Abdomen and preabdomen in particular, shorter setulose than in male but also 6th tergum with a long bristle in posterior corners.

Postabdomen (Figs 33, 34). 6th tergum simple oblong, with a long bristle in posterior corners. 7th tergum short, transverse, with membraneous posterior margin, with short setae arising on dark pigmented margin and with a long bristle on each side. 8th tergum divided into lateral sclerites, each bearing about 5 thicker bristles on posterior margin and a very slender projection reaching far on ventral side of postabdomen. 9th tergum fused with cerci and carrying 2 minute dorsal setulae. 6th sternum transversely oblong, densely setulose. 7th sternum slightly projecting posteromedially (as in *L. equispina*) and more densely haired only on posterior, darker pigmented margin. 8th sternum plate-shaped, long, of usual structure with projecting posterior corners, in form and pigmentation most resembling that of *L. parafinalis*. 9th sternum pale pigmented, divided into 2 densely haired sclerites and anteriorly of complex structure. Internal "spectacles-shaped" sclerite present but too poorly defined to be described. Spermathecae (Fig. 37) with some tubercles on body and



Figs 33-37. Leptocera (s. str.) dyscola sp. n. (paratypes): 33 = female postabdomen dorsally; 34 = dtto ventrally; 35 = left mid tibia dorsally; 36 = apex of mid tibia and basitarsus posteriorly; 37 = spermathecae. — A b b r e v a t i o n s: S = sternum, T = tergum. S c a l e s: Figs 33, 34 = 0.1 mm, Figs. 35, 36 = 0.2 mm, Fig. 37 = 0.05 mm



Figs 38-40. Wings of Leptocera (s. str.) species: 38 = L. vomerata sp. n. (σ , holotype); 39 = L. equispina L. Papp (σ , holotype); 40 = L. parafinalis L. Papp (σ , paratype). — S c a l e = 0.5 mm

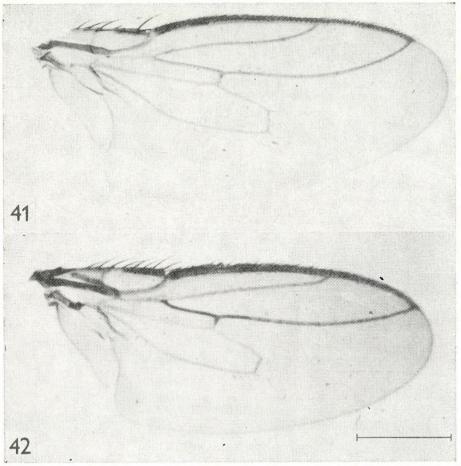
robust, relatively short sclerotized part of ducts. Cerci fused with 9th tergum and bearing a longer and thin hair besides 4 minute setulae.

Distriburion — Known only from type specimens from the USSR, Far East (Amur area).

Discussion — This species, although apparently a member of the *L. finalis*-subgroup differs markedly from other species of this subgroup, particularly by much longer hairs on the arista, pale greyish wings and highly characteristic male genitalia (male 5th sternum with large, finely spinulose posteromedial membraneous area and a long bristle in each posterior corner; periandrium long setose, slender pseudocerci, telomere with dense long bristles on ventral margin of the fore part, distiphallus ventrally spinulose etc.).

Leptocera (Leptocera) caenosa (RONDANI, 1880)

M a t e r i a l e x a m i n e d — Mongolia: 1 ♂, Central aimak, 11 km S von Pass Zosijn davaa, 90 km S von Ulan-Baator, 1650 m, 16 VII 1967 (Nr. 924), Exp. Dr. Z. KASZAB, 1967 (HNHM). USSR: 1 ♂, Amurskaya obl., g. Zeya, 4 VIII 1981, A. SHATALKIN leg. (MGU). Democratic People's Repub-



Figs 41-42. Wings of Leptocera (s. str.) species: 41 = L. spinitarsata L. PAPP (σ , holotype); 42 = L. dyscola sp. n. (σ , paratype). — S c a l e = 0.5 mm

lic of Korea: 1 &, Prov. Ryang-gang, Hyeasan, Hyesan Hotel garden, 23 VIII 1971, caught in

Malaise-trap, S. Horvatovich & J. Papp leg. (HNHM).

For redescription, figures of male genitalia and female terminalia, distribution and biology see Roháček 1982a. This synanthropic species is cosmopolitan and it has already been recorded from the East Palaearctic (Mongolia, L. Papp 1973). New to the Far East (USSR) and Democratic People's Republic of Korea.

APPENDIX

Leptocera (Leptocera) nigra Olivier, 1813 (= L. curvinervis Stenhammar, 1854) — USSR: 2 &, Tadzhik SSR, Vantsch, 30 VIII 1969, J. Vilbaste (collection of the Tartu University); 1 &: Amurskaya obl., g. Zeya, 29 VII 1981 A. Shatalkin leg. (MGU). Democratic People's Republic of Korea: 1 &, Prov. Ryang-gang, Chann-Pay plateau, Sam-zi-yan, 1700 m, 27 VIII 1971, S. Horvatovich & J. Papp leg. (No. 205); 1 &: ibid., No. 206; 1 &: Prov. South Pyongan, Desang san, 12 km NE from Pyong-yan, 7 VIII 1971 (No. 145); 1 &: Prov. Ryang-gang, Hyesan, Hyesan Hotel garden, 23 VIII 1971, S. Horvatovich & J. Papp leg. (No. 193) (HNHM).

This species has previously been considered almost cosmopolitan but ROHÁČEK (1982a, 1983) found that more species are hidden in the records, particularly from tropical areas. There is only one record from the East Palaeractic (Japan, Richards 1964) apart from those from Formosa (Duda 1925), which were found to belong to Leptocera salatigae (DE MEIJERE 1914) by ROHÁČEK (1983).

The above findings confirm the occurrence of true L. nigra in the East Palaearctic.

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