

A revision of the West Palaearctic species of  
*Schroederella* Enderlein (Diptera: Heleomyzidae)

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**A revision of the West Palaearctic species of *Schroederella* Enderlein (Diptera: Heleomyzidae).** – Four new species of *Schroederella* Enderlein, 1920 are described: *S. bifida* sp. n. (Spain), *S. hispanica* sp. n. (Spain), *S. hungarica* sp. n. and *S. minuta* sp. n. (Hungary) with notes on the type-species *S. iners* (Meigen); a redescription of the genus is given with a key for the West Palaearctic species. With 27 original figures.

*Schroederella* Enderlein, 1920 is a genus of the Holarctic heleomyzids: one Nearctic species (*S. fuscipicea* Gill, 1962) and five East Palaearctic species (see below) have hitherto been known, as well as *S. iners* (Meigen, 1830), the type-species of the genus, which is widely distributed in the Holarctic (Gill 1962, Gorodkov 1984).

In the course of studies on the European species of Heleomyzidae authors found species of *Schroederella* new to science and so a co-authored paper was decided.

The type-specimens of the species described below are deposited in the collection of the Department of Zoology, Hungarian Natural History Museum, Budapest, in Mr Javier Blasco-Zumeta's collection in Pina de Ebro and in Dr Miguel Carles-Tolrá's collection in Barcelona.

***Schroederella* Enderlein, 1920**

Enderlein, 1920: 298.

Type-species: *Helomyza iners* Meigen, 1830: 37 (aut.).

*Schroederia* Enderlein, 1914: 314, a junior homonym of *Schroederia* Schmidt, 1911. Type-species: *Helomyza iners* Meigen, 1830: 37 (mon.).

Diagnosis: in general as described by Czerny (1924), keyed by Gorodkov (1970) and Papp (1981) and specifically: flagellomere rounded but not elongate; 2 pairs of *ors*, anterior pair re- and exclinate, comparatively long, longer than half length of posterior *ors*, *oc*, *vte*, *vti*, *poc* all long; arista longer than height of head; 1 pair of very long vibrissa, peristomal hairs comparatively short, no prosternals, 1 *h*, 2 *np*, 1 *prsut*, 1 + 3 *dc*, 1 *sa*, 2 *pa*, 1 *prsc ac*, 2 *sc* pairs of characteristic setae. 2 pairs of katepisternals (sternopleurals), no microchaetae on anepisternum; mid tibia apicoventrally with at least 2 setae; male hind femur ventrally with 2 complete rows of spiniform setae; costa of wing with long setae; male genitalia with well-developed edita and surstyli, editum bilobed in some species; female cerci with hairs and bristles only. Gorodkov (1962) while describing *S. robustella* named the cranial process of epandrium as "the process of 9th tergite", later (Gorodkov 1970) as surstylus.

**Schroederella bifida** sp. n.

(Figs 1-7)

Measurements in mm: body length 4.17 (holotype), 3.72-5.86 (paratypes), length of wing 4.29 (holotype), 3.38-6.35 (paratypes), width of wing 1.56 (holotype), 1.17-1.88 (paratypes).

Head grey but frons anteriorly as well as gena and face diffuse dirty yellow. Longitudinal axis of eye/genal width below eye: 0.564 mm/0.230 mm. Flagellomere dark grey with a reddish stripe basally on medial surface, pedicel and scape reddish yellow. Anterior *ors* much thinner and not much longer than half length of posterior one. Facial carina wide and comparatively high though flat sagittally. Peristomals medium long in 1 not well-ordered row. Palpi with 5 long subequal bristles, also female palpi medially with bristles longer than peristomals.

Thorax darker grey, dorsocentrals emerge on large diffuse brown spots.

Wings light brownish, costal vein ochreous, other veins light brown. Terminal section of *m* vein 1.256 mm (♂), 1.436 (♀), *ta-tp* 0.744mm (♂), 0.795 (♀). Calyptal cilia white.

Legs grey, mid and hind tibia (in cases also fore tibia), trochanters and tarsi dirty yellow. Male hind tibia with a posteroventral row of long spiniform bristles, some of them longer than tibial width at base.

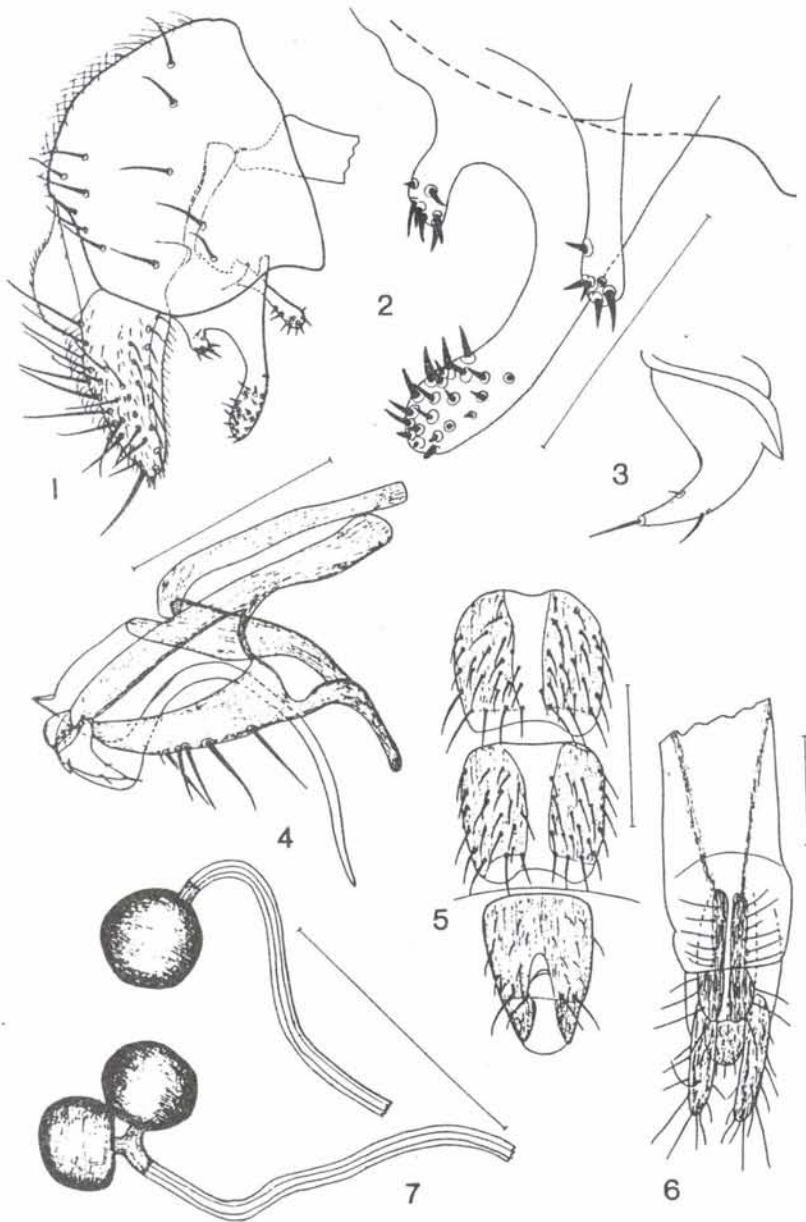
Abdomen light grey, male epandrium yellow or partly so.

Male genitalia: epandrium (Fig. 1) semi-spherical with short thick bristles only; cerci large with numerous bristles and a thicker bristle on its apex; editum bifid with wide basis (Figs 1-2), both processes with several short pointed setae apically on their medial (inner) side; surstylus (Figs 1-2) narrow with several short, thick and pointed setae on its medial surface apically; paramere (Fig. 3) proclinate with a basal process, apex almost acute with an apical and ventral bristle; gonopodial part of hypandrium (Fig. 4) with 5 long setae, aedeagus rather thin and short.

Female abdominal sternites weakly sclerotized: faint and soft along a sagittal stripe; sternites less broad, sternites 4 and 5 as long as wide; tergite and sternite 6 are involved in the telescoping sclerites, i.e. partly involuble (see on Fig. 5). Female cerci (Fig. 6) somewhat longer than in *hispanica* with short setae. Spermathecae (Fig. 7) globular without any modification.

Holotype male (in the coll. M. Carles-Tolrá): España (Spain), Monegros, prov. Zaragoza, Pina de Ebro, Retuerta de Pina, leg. Javier Blasco-Zumeta: No. 2389 9.11.1990, light.

Paratypes (in the coll. M. Carles-Tolrá, in alcohol, 1 ♂ 1 ♀ in coll. J. Blasco-Zumeta, 4 ♂ 4 ♀ in the HNHM, double-mounted): 10 ♂ 11 ♀ : *ibid.*, No. 4215 9.12.1991, plate; 1 ♀ : *ibid.*, No. 937 30.11.1989, plate; 1 ♀ : *ibid.*, No. 4161 10.11.1991, plate.



Figs 1-7. *Schroederella bifida* sp. n., paratypes, genitalia. 1: epandrium, cercus, editum and surstylus in lateral view; 2: editum and surstylus in widest extension in medial (sublateral) view; 3: paramere (gonite) laterally; 4: male inner genitalia (hypandrium, paramere, aedeagus, etc.), lateral view; 5: female sternites 4-6 in ventral view; 6: female postabdomen in ventral view; 7: spermathecae. Scales: 0.5 mm for Fig. 5, 0.2 mm for Figs 1, 4, 6-7, 0.1 mm for Figs 2-3

**Schroederella hispanica** sp. n.

(Figs 8-14)

Measurements in mm: body length 6.21 (holotype), 4.35-8.07 (paratypes), length of wing 5.66 (holotype), 4.07-7.31 (paratypes), width of wing 2.42 (holotype), 1.58-2.83 (paratypes).

Head grey, anterior part of frons widely yellowish as well as genae and face. Longitudinal axis of eye/genal width below eye: 0.564 mm/0.384 mm. Flagellomere dark grey with a diffuse reddish basal area on medial (inner) surface, scape and pedicel reddish yellow. Anterior *ors* thinner and not much longer than half length of posterior one. Peristomals in 2 less ordered rows. Palpi with 4 very long subequal ventral bristles and several other shorter bristles.

Thorax as in *bifida*, no parts yellowish or reddish.

Wings light brownish, veins light brown. Crossveins brownish fumous. Terminal section of *m* vein 1.792 mm (♂), 2.00 mm (♀),  $t_a-t_p$  1.375 mm (♂), 1.458 mm (♀).

Legs dirty yellow except for grey fore femur. Hind tibia with 2 to 4 dorsal setae in apical third. No strong black ventral bristles on hind basitarsus but with long straight hairs instead. Male hind femur with a row of long and very thick spiniform bristles, longer than tibial width at base.

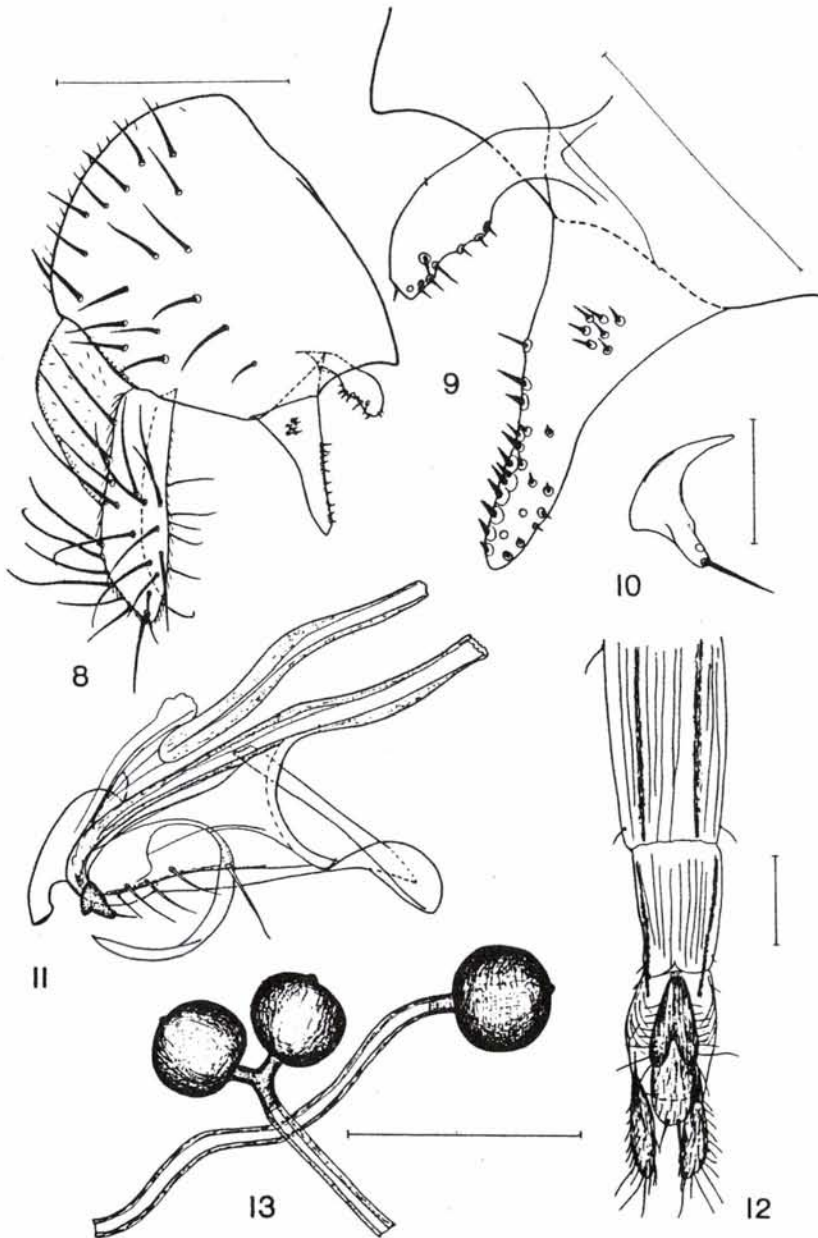
Abdomen grey with thick light grey microtomentum, male postabdomen dirty yellow or greyish yellow.

Male genitalia: epandrium (Fig. 8) comparatively large with numerous short thick bristles; cerci (Fig. 8) very large with numerous long bristles; editum rather small, digitiform (Figs 8-9), its cranial edge with a row of short pointed spinulae on medial (inner) side; surstylus (Figs 8-9) short blunt with some short, rather thin but pointed setae on its caudal edge; paramere (Fig. 10) thin and proclinate, apex even thinner with a long apical bristle; gonopodial part of hypandrium (Fig. 11) with 5 long setae, epiphallus with blunt apex; aedeagus rather thin and comparative very short.

Female abdominal sternites weakly sclerotized along a sagittal stripe; sternites 4 and 5 much wider than long (Fig. 14); female 7th abdominal segment not sclerotized (Fig. 12); cerci short with very short hairs. Spermathecae (Fig. 13) spherical, each with a minute apical protuberance.

Holotype male (in the coll. M. Carles-Tolrá): España (Spain), Monegros, prov. Zaragoza, Pina de Ebro, Retuerta de Pina, leg. Javier Blasco-Zumeta: No. 4215, 9.12.1991, plate.

Paratypes (in the coll. M. Carles-Tolrá, in alcohol, 4 ♂ 5 ♀ paratypes in the HNHM, double mounted): 11 ♂ 9 ♀ : data same as for holotype; 6 ♂ 16 ♀ : *ibid.* (No. 993 18.12.1989, plate, No. 1150 18.2.1990, plate, No. 1264 17.3.1990, plate, No. 2561 7.1.1991, Moericke trap, No. 2592 7.1.1991, Malaise, No. 2606 12.1.1991, plate, No. 2626 26.1.1991, plate, No. 2667, 9.2.1991, plate, No. 2762 9.3.1991, plate, No. 2834 25.3.1991, No. 4205 20.11.1991, Moericke, No. 4220 20.11.1991, liver, No. 4247 9.12.1991, Moericke, No. 4277 25.12.1991, plate).



Figs 8-13. *Schroederella hispanica* sp. n., paratypes, genitalia. 8: eandrium, cercus, editum and surstylus in lateral view; 9: editum and surstylus in widest extension in medial (sublateral) view; 10: paramere (gonite) laterally; 11: male inner genitalia (hypandrium, paramere, aedeagus, etc.), lateral view; 12: female postabdomen in dorsal view; 13: spermathecae. Scales: 0.2 mm for Figs 8, 11-14, 0.1 mm for Figs 9-10

**Schroederella hungarica** sp. n.

(Figs 15-18)

Measurements in mm (holotype): body length 4.04, length of wing 4.48, width of wing 1.67.

Head dark grey but frons dirty yellowish red anteriorly and also gena with some yellowish hue. Longitudinal axis of eye/genal width below eye: 0.513 mm/0.231 mm. Facial carina distinct and wide. Flagellomere black, medial surface of pedicel with a diffuse fumose reddish spot, arista thickened basally, much longer than height of head. Palpi with 1 very strong, laterally directed apical bristle. Anterior *ors* as long as posterior *ors*. Peristomals weak, in a single well-ordered row.

Thorax dark grey, dorsocentrals emerge from darker diffuse spots.

Wings brownish grey, veins dark brown. Terminal section of *m* vein 1.333 mm,  $t_a$ - $t_p$  1.077 mm.

Legs: Hind tibia with only 1 dorsal seta in apical third. Posteroventral row of hind femur consists of thick but not too long bristles.

Abdominal tergites dark grey, marginal bristles shorter than tergites.

Male genitalia: epandrium rather small; cerci not large compared to editum (Fig. 18); both editum and surstylus digitiform (Figs 15, 18), and both without thick setae, all their spinulae are thin and minute, mostly on their inner (medial) side; paramere (Figs 16, 17) on a wide base, apical process moderately long with a long apical bristle; epiphallus (Fig. 16) thick but with a pointed apex.

Female unknown.

Holotype male (HNHM): Hungary, K[iskunság] N[ational] P[ark]: Ágasegyháza, talajcsapda [pitfall trap] – 1978.III.16., leg. Hámoriné.

**Schroederella iners** (Meigen, 1830)

(Figs 19-21)

*Helomyza iners* Meigen, 1830: 57.

*Scoliocentra latimanus* Schroeder, 1913: 174, 335.

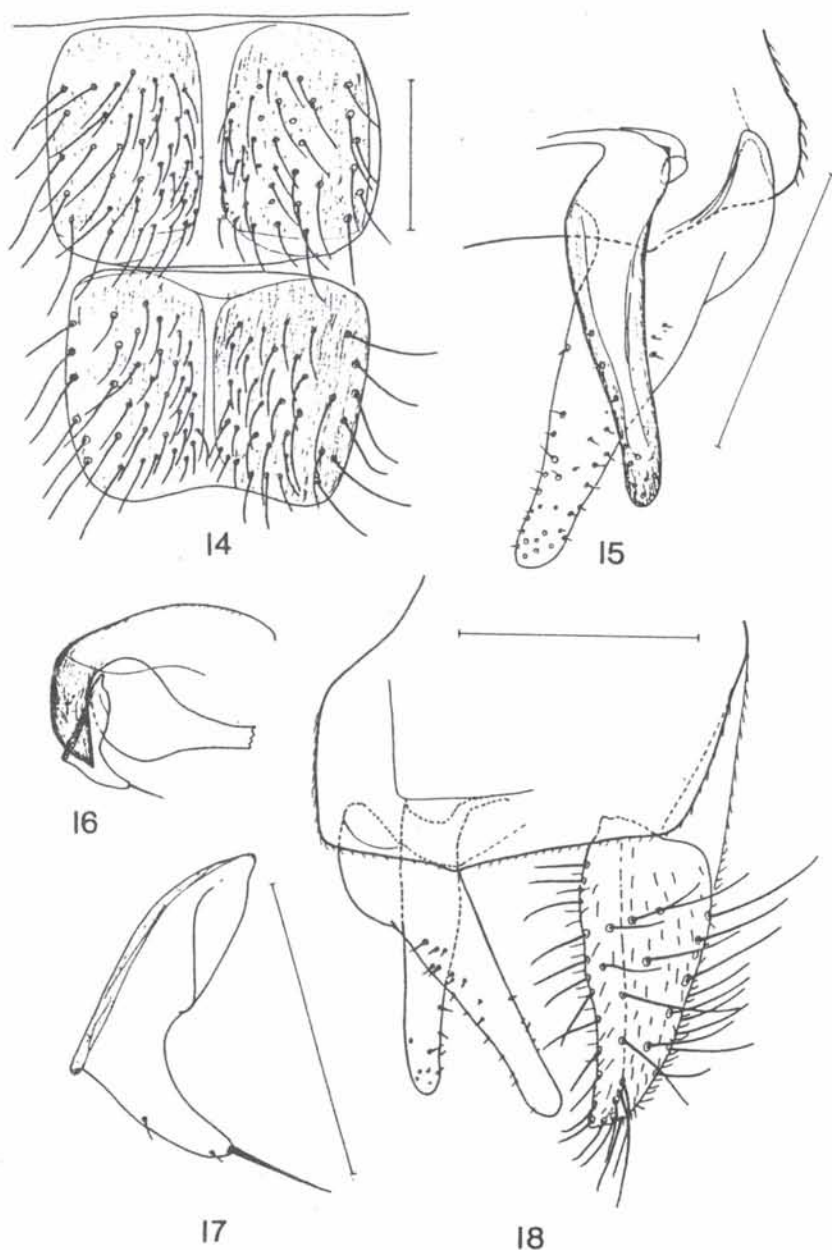
*Schroederella brevisetis* Czerny, 1932: 29.

(probably **not**) *Schroederella Sven-Hedini* Hendel, 1934: 13.

Measurements in mm: body length 5.17-9.65, length of wing 5.15-9.31, width of wing 1.88-2.92.

Head red or reddish yellow, only vertical area grey dusted. Longitudinal axis of eye/genal width below eye: 0.744 mm/ 0.41 mm on a Hungarian specimen (ratio 1.81), 0.95 mm / 0.67 mm on a Mongolian specimen (ratio: 1.42). Flagellomere mostly red in the European specimens, only apical and dorsal parts diffuse reddish grey, almost entirely dark grey in the Mongolian specimens; scape and pedicel red; arista thickened basally, distinctly longer than height of head. Peristomals in at least 2 not well-ordered rows.

Thorax: Entire thorax (in the European specimens) or at least humeri and notopleura red or dirty reddish yellow. Mesonotum light grey dusted.



Figs 14-18. 14: *Schroederella hispanica* sp. n., paratype female, sternites 4-5. 15-18: *Schroederella hungarica* sp. n., holotype male, genitalia. 15: editum and surstylus in widest extension in medial (sublateral) view; 16: basiphallus, epiphallus and paramere laterally; 17: paramere (gonite) laterally; 18: cercus, editum and surstylus in lateral view. Scales: 0.5 mm for Fig. 14, 0.2 mm for Figs 15-16, 18, 0.1 mm for Fig. 17

Wings light brownish, veins ochreous. Terminal section of *m* vein /  $t_a-t_p$  (mm): 1.938/1.979 (European male), 2.292/1.938 (European female), 1.958/1.917 (Mongolian male), 1.958/1.625 (Mongolian female), i.e. the two sections are subequal.

Legs all yellow or reddish yellow. Fore femur grey dusted on Mongolian specimens. Hind femur dorsally with 3 to 4 long and thick dorsal bristles in apical third. Hind basitarsus ventrobasally with 1 or 2 stiff long black bristles. Male hind femur posteroventrally and anteroventrally each a row of thick black spiniform setae over almost the whole length of femur.

Abdominal sclerites light grey dusted, margins of preabdominal tergites and all postabdominal sclerites of both sexes yellow to reddish.

Male genitalia: largely as given by Gorodkov (1962, 1970); editum of the European specimens (Fig. 19) reclinate, apex narrow, with a definite basal process, which bears short thornlets; editum of the Mongolian specimens (Fig. 22) broad and rounded apically, less reclinate with more and thicker thornlets in its inner surface than on that of the European specimens, its basal process indistinct only 6 thornlets at that place; surstylus of the European specimens (Fig. 19) narrow and shorter with less numerous short thick setae on inner (medial) surface; surstylus of the Mongolian specimens (Fig. 22) longer and broader with much more numerous and somewhat longer setae on inner surface; epiphallus long but not pointed (Fig. 20); paramere of the Mongolian specimens thinner than that of the European's (Fig. 23 cf. Fig. 20).

Female tergites 7 and 8 well sclerotized (Fig. 21), epiproct with 1 pair of bristles only (Fig. 21), cerci short with short hairs.

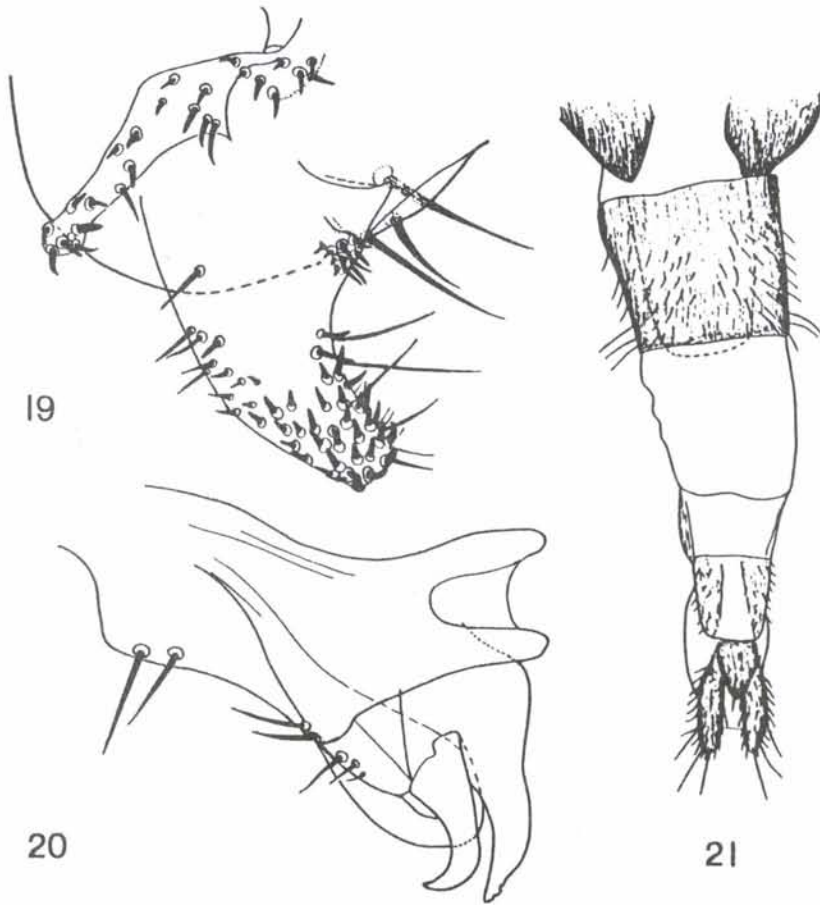
Gorodkov (1962) regarded *S. brevisetis* Czerny, 1932 to be synonymous with *iners* and reported it repeatedly under the name *iners* from Mongolia (Gorodkov, 1969, 1972, 1974). Now definitive differences were found in the genitalia of the European and the Mongolian specimens (Figs 19-20 vs 22-23, see in key). Woznica (pers. comm.) studied the holotype of *brevisetis* and found its blackish flagellomere as a reliable distinctive character. And so *Schroederella brevisetis* Czerny, 1932 is re-established as a subspecies of *S. iners* from its synonymy. Further studies may prove its full specific status. *Schroederella svenhedini* Hendel, 1934 is probably identical with *I. brevisetis*, or it is a distinct taxon (cf. Gorodkov 1984: 25).

Material studied (all HNHM): **Hungary**: 1 ♀ : Velencei-tó, Gárdony – 1952.X.28., leg. Kakassné; 1 ♀ : Hortobágy N. P., Egyek – Ohati erdő, 1975.X.22. – leg. Hámoriné – Marótiné; 1 ♀ : Kiskunság N. P., Kiskőrös, Szücsi-erdő – száraz nyáras, talajcsapda [soil trap], 1978.X.5. – leg. Tóth L.; 2 ♀ : Kiskunság N. P., Ágasegyháza, talajcsapda, 1978.III.16., leg. Hámoriné [same as for the holotype of *S. hungarica*]; 1 ♀ : Kiskunság N. P., Bugac, marhalegelő [cattle-run], 1978.X.25., leg. Papp L. **Italy**: 1 ♂ : Italia sup., Kertész – Mt. Cenis, [19]05.VIII.18. – “Sch. iners” det. Czerny. **Germany**: 4 ♂, 2 ♀ : Berlin, Pichelsberg, 22.10.15/2.11.15/29.10.05/11.10.15. – Don.Dtsch.Ent.Inst.; 3 ♂, 2 ♀ : Frankfurt Od., M.P. Riedel, 21.X.28/11., 20.X.37/X.38/23.X.37. – “Schroederella iners Mg.” det. M.P. Riedel, 1936. **Romania**: 1 ♂ : N.-Szeben [Sibiu], Transsylvan. Thalhammer – “Blepharoptera iners Mg.” coll. Thalhammer - *Schroederella iners* (Meigen) Gorodkov det. 70. **Russia**: 1 ♂ : “F J Land, 10.X.89” – “Sch. iners Mg.” Det. Czerny.

Specimens of *Schroederella iners brevisetis* Czerny, 1932:

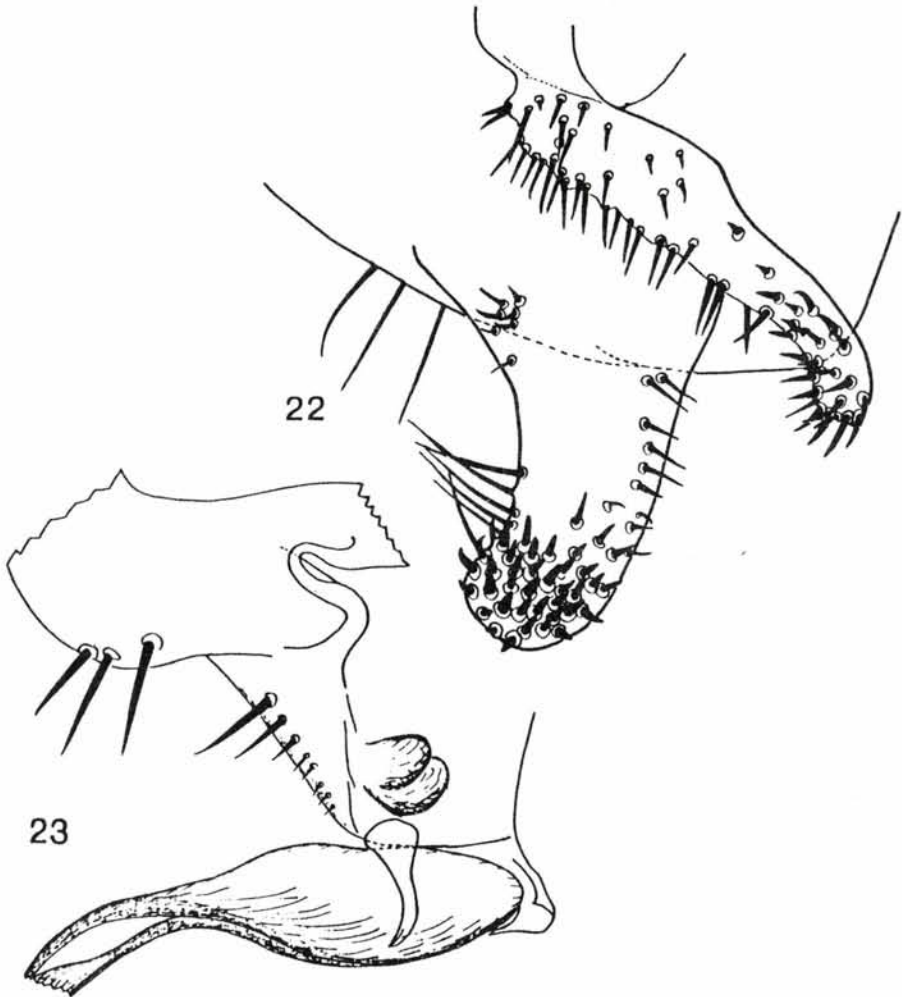
Mongolia (all HNHM): 4 ♂ : Baruun Urt ÉNy [NW] 120 km – 1972. VIII. 5-18 [soil traps], leg. Mészáros; 1 ♂ : Central aimak, Ulan-Baator, Nucht im Bogdo ul, 1500 m,





Figs 19-21. *Schroederella i. iners* (Meigen), male genitalia. 19: editum and surstylus in widest extension in medial (sublateral) view; 20: hypandrium, basiphallus, epiphallus and paramere laterally; 21: female postabdomen dorsally. Scales: 0.2 mm for Figs 19-20, 0.5 mm for Fig. 21

Exp. Dr. Z. Kaszab, 1965 – Nr. 489, 29.VIII.1965 - *Schroederella iners* (Meigen), Gorodkov det. 1967 (gen. prep.); 1 ♂, 1 ♀ : ibid., Chentej aimak, 7 km NO von Somon Möron, 1200 m – Nr. 323, 28.VII-21.VIII.1965; 1 ♀ : Nr. 461, same as for Nr. 323 but 21.VIII.; 1 ♀ : ibid., Chentej aimak, zw. Somon Zenchermandal u. Somon Zargaltchaan, 1400 m – Nr. 312, 27.VII.1965.



Figs 22-23. *Schroederella iners brevisetis* (Czerny), male genitalia. 22: editum and surstylus in widest extension in medial (sublateral) view; 23: hypandrium, basiphallus, epiphallus and paramere laterally, epiphallus slightly twisted. Scales: 0.2 mm

***Schroederella minuta* sp. n.**  
(Figs 24-27)

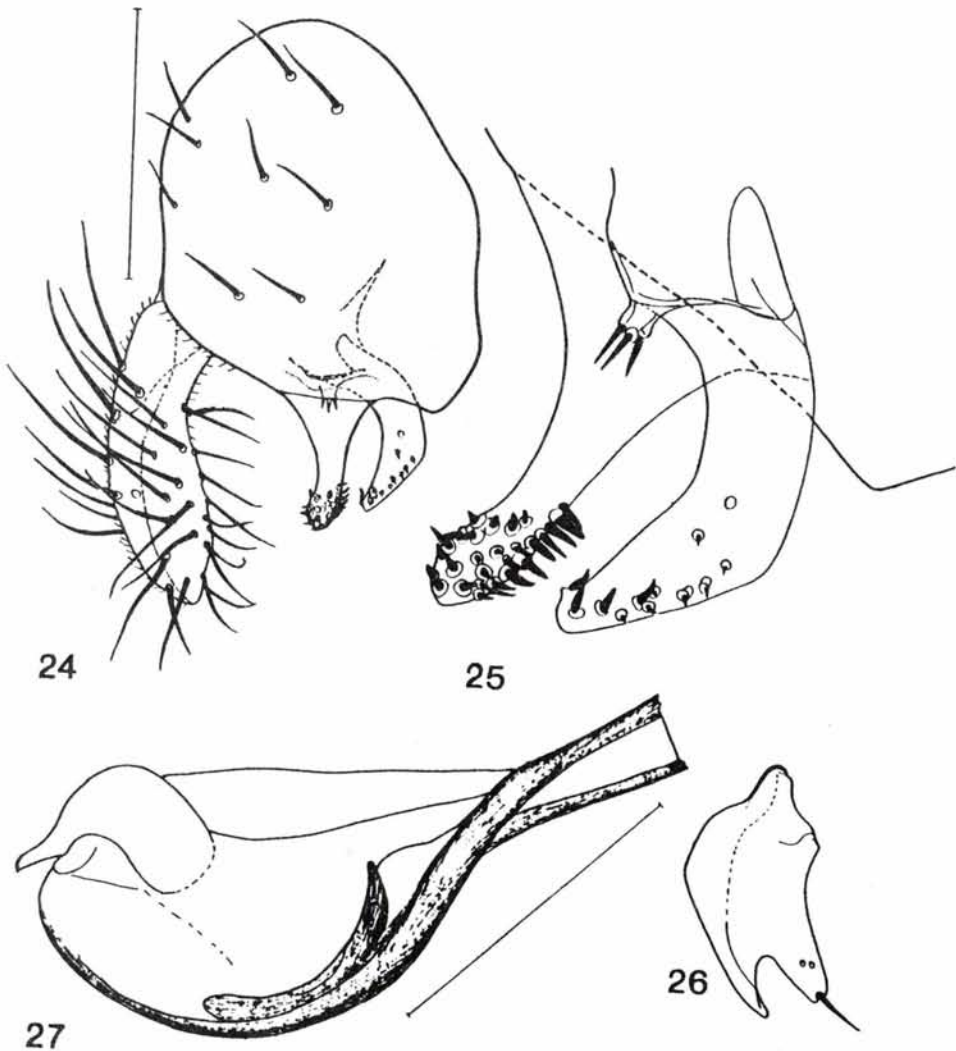
Measurements in mm (holotype): body length 3.35, length of wing 3.44, width of wing 1.18.

Head dark grey, frons with a semicircular yellow area above lunule, gena with yellowish microtomentum. Longitudinal axis of eye/genal width below eye: 0.474 mm/0.154 mm. Facial carina narrow and indistinct. Antennae black. Palpi with a moderately long apical bristle, a long (longer) bristle at apical 1/3 and other 2 bristles in basal

half; all palpal bristles ventrally (laterally) directed. Anterior *ors* definitely shorter than posterior one. Peristomals weak, in a single row.

Thorax dark grey but its thicker grey microtomentum makes it lighter than that of *hungarica*.

Wings light brownish, veins light brown. Terminal section of *m* vein 1.180 mm, *t<sub>a</sub>*-*t<sub>p</sub>* 0.756 mm.



Figs 24-27. *Schroederella minuta* sp. n., holotype male, genitalia. 24: epandrium, cercus, editum and surstylus in lateral view; 25: editum and surstylus in widest extension in medial (sublateral) view; 26: paramere (gonite) in lateral view; 27: epiphallus and basiphallus laterally. Scales: 0.2 mm for Fig. 24, 0.1 mm for Figs 25-27

Legs: Hind femur with only 1 dorsal bristle in distal quarter. Posteroventral row of hind femur with medium long and thick bristles.

Abdominal tergites dark grey, marginal bristles much shorter than tergites.

Male genitalia: epandrium (Fig. 24) semi-spherical with sparse short thick bristles only; cerci (Fig. 24) very large compared to editum with numerous bristles (no thicker bristle apically); editum narrow, somewhat broadened subapically with numerous short pointed setae on apical third of its medial (inner) side; surstylus (Figs 24-25) wide lamelliform and reclinate with a definite basal process, this posterior *surstylar* process bears 3 medium-long, thick and pointed setae apically, apical half of surstylus with sparse short spinulae; paramere (Fig. 26) proclinate with an additional ventral process, apex not acute with a moderately long apical bristle; basiphallus bulbous, epiphallus (Fig. 27) small.

Female unknown.

Holotype male (HNHM): Hungary, Oszlár, Tisza-part[riverside] – sásos, nádas [sedgy, reeds]- 1960.X.23., leg. Tóth S.

Key to the identification of the West Palaearctic species of  
*Schroederella* Enderlein, 1920

- 1 (2) Male editum (Figs 1-2) bifid. Hind basitarsus ventrobasally with 1 or 2 stiff long black bristles. Hind femur with 1 dorsal bristle at distal quarter. A rather small species, body length 3.72-5.86 mm (Spain) **bifida** sp. n.
- 2 (1) Male editum simple or with a small basal process only. Hind basitarsus ventrobasally usually with long stiff pale hairs only (but bristles in *iners*).
- 3 (4) Entire thorax or at least humeri and notopleura red or dirty reddish yellow. Hind femur with 3 to 4 dorsal bristles at distal quarter. Female sternites twice as wide as long, 7th tergite well sclerotized (Fig. 21).
  - a. Medial surface of flagellomere reddish yellow on its bigger half. Longitudinal axis of eye/genal width below eye ratio is more than 1.5 (up to 1.9). Male editum (Fig. 19) reclinate, apex narrow, with a definite basal process, which bears several short thornlets; surstylus (Fig. 19) narrow and shorter than in *i. brevisetis*, with less numerous short thick setae on inner (medial) surface; paramere (Fig. 20) less narrow (widespread, W Palaearctic) **iners iners** (Meigen)
  - b. Medial surface of flagellomere all blackish or reddish only at its base. Eyes smaller, genae broader, longitudinal axis of eye/genal width below eye ratio less than 1.5. Male editum (Fig. 22) broad and rounded apically, less reclinate with more and thicker thornlets in its inner surface than on that of *i. iners*, its basal process indistinct, only 6 thornlets instead; surstylus (Fig. 22) longer and broader with much more numerous and somewhat longer setae on inner surface; paramere (Fig. 23) rather thin (Mongolia) **[iners brevisetis (Czerny)]**

- 4 (3) All parts of thorax grey to dark grey. Hind femur with 1 to 4 dorsal bristles at distal quarter. Female sternites not much wider than long, female 7th tergite not sclerotized (Fig. 12) (female of *minuta* and *hungarica* unknown).
- 5 (6) Male surstylus (Fig. 25) with a basal process, paramere with an additional ventral process (Fig. 26). A small species, body length 3.35 mm only. Hind femur with only 1 dorsal bristle in distal quarter (Hungary) ***minuta* sp. n.**
- 6 (5) Male surstylus (Figs 9, 15) without a basal process, no ventral process on paramere (Figs 10, 17). Bigger species, body length 4 mm or more. Hind tibia with 2 to 4 dorsal setae in apical third.
- 7 (8) Editum much shorter than cercus (Figs 8-9), its cranial edge with a row of short pointed spinulae on inner side; surstylus (Figs 8-9) short blunt with some short, rather thin but pointed setae on its caudal edge (Spain) ***hispanica* sp. n.**
- 8 (7) Editum as long as cercus, both editum and surstylus digitiform (Figs 15, 18), and both without thick setae (Hungary) ***hungarica* sp. n.**

Other known (East) Palaearctic species of *Schroederella*:

- nigra* (Czerny, 1931): Turkmenia, vic. Ashkhabad  
*nipponica* Okadome, 1969: Japan (Honshu)  
*pectinulata* (Czerny, 1931): Amur region (Russia or China)  
*robusta* Gorodkov, 1962: Tajikistan  
*segnis* Czerny, 1930: NE China (Manchuria)  
 (Gorodkov mentioned undescribed species from the East Palaearctic repeatedly).

ACKNOWLEDGEMENT

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