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Agromyzidae (Insecta: Diptera) of Kuril Islands

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Abstract The agromyzid fauna of the Kuril Islands was investigated. This paper reports 27 species in nine genera, of which 22 species are new to the islands, and two species, *Aulagromyza paramushirensis* and *Phytomyza kurilensis*, are new to science. The fauna may now be considered to consist of eight Holarctic, nine Palaearctic, and five Far Eastern species, and five other species that remain to be determined. *Phytoliriomyza dorsata* (Siebke, 1864) and *Liriomyza flaveola* (Fallén, 1823) are also recorded from Hokkaido, Japan, for the first time. A characteristic of the agromyzid fauna of Kuril Islands is discussed. A key to the species of the genera *Phytomyza* and *Chromatomyia* from the Kuril Islands is provided for the identification of males.

Key words: Agromyzidae, Kuril Islands, new records, new species.

The Agromyzidae are little investigated in the Kuril Islands. Only three species have been recorded: *Melanagromyza pubescens* Hendel and *Chromatomyia horticola* (Goureau) from Kunashir, and *Cerodontha* (*Poemyza*) *pygmella* Hendel from Shikotan (Sasakawa, 1961).

Recently I had an opportunity to examine a rather large collection of agromyzid flies collected by Dr. M. Ohara of Hokkaido University during research trips of the International Kuril Islands Project (IKIP). I also examined some specimens collected by members of the Natural History Museum and Institute, Chiba (CBM). These specimens are classified into 25 species in eight genera, of which 22 are new to the Kurils and two others are new to science.

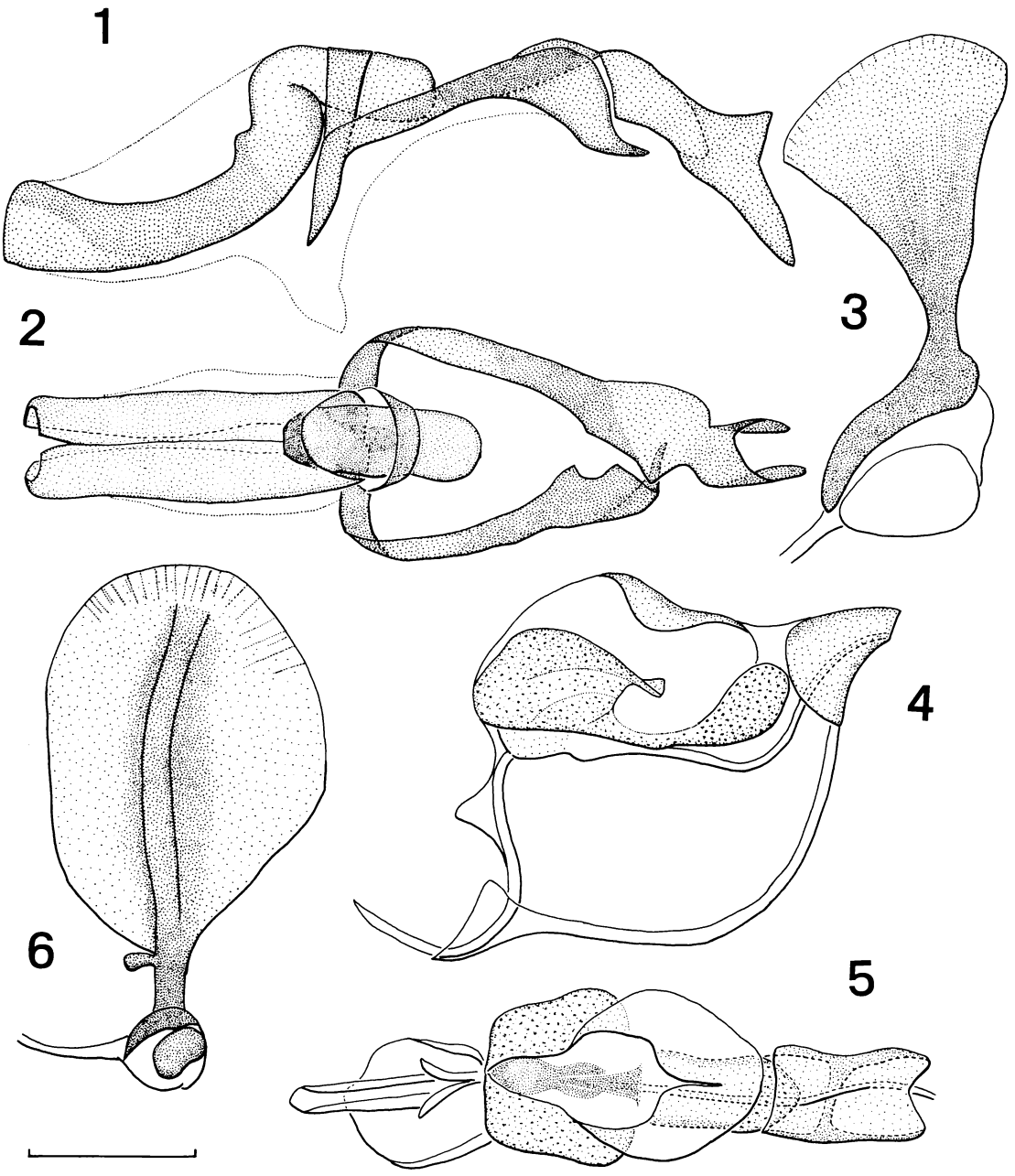
In total, 27 species in nine genera of the Agromyzidae are now known from the Kurils and are dealt with herein. Eight species are Holarctic, nine are Palaearctic, and five are Far Eastern in their distributions. The remaining five species are not determined (see Table 1). It may be noteworthy that only two out of the nine Palaearctic species (namely, *Melanagromyza pubescens* and *Liriomyza flaveola* from the southern Kurils) are common to Hokkaido, the next island south of the archipelago. In comparison, seven of the eight Holarctic species and one of the five Far Eastern species are also known from Hokkaido. This pattern of distribution may indicate the dominance of species with a northern origin in the agromyzid fauna of the archipelago.

All the material examined in this study was collected by Dr. Ohara unless otherwise stated. Specimens collected by members of IKIP are accompanied by collecting codes (e. g. AN-97-MO-028B), which indicate collecting date, place, and other available information. Data for codes marked with an asterisk in "Material examined" are presented in the Appendix. Material from the Kuril Islands examined in this study is deposited in the Laboratory of Systematic Entomology, Hokkaido University, Sapporo, and the Natural History Museum and Institute, Chiba (CBM, with a code of ZI). Holotypes of the two new species are deposited in the Institute of Biology and soil Science, Far Eastern Branch of Russian Academy of sciences, Vladivostok. Abbreviations used in the text for bristles are as follows: *vte* (*vti*): outer (inner) vertical; *ors* (*ori*): upper (lower) orbital; *acr*: acrostichal; *dc*: dorso-central; *prst*: pre-sutural; *sa*: supra-alar; *prsc*: pre-scutellar; *opa*: outer post-alar; *h*: humeral; *mespl*: mesopleural; *stpl*: sternopleural. In each figure, the scale bar indicates 0.1 mm.

Table 1. Distribution of Agromyzidae in Kuril Islands

	Kuril Islands																					Japan		
	Northern									Middle							Southern							
	SU	PA	AL	AN	MK	KH	SA	EK	CR	RK	MA	RA	RY	US	KE	SI	CH	BC	UR	IT	KU	SK	HK	HS	
1. *Agromyza nigrociliata*				○	○					○	○				○	○	○	○	○						
2. *A. spiraeoidearum*																○							○	○	Hol
3. *A. potentillae*										○													○	○	Hol
4. *Melanagromyza pubescens*																					○		○	○	Pal
5. *Cerodontha (B.) angulata*																			○	○			○	○	Hol
6. *C. (D.) bimaculata*														○										○	Pal
7. *C. (Po.) pygmella*		○										○			○				○			○			FE
8. *Phytoliriomyza dorsata*		○														○							○		Hol
9. *Phl. miki*		○																							Pal
10. *Phl.* sp. (*?bornhormensis*)				○												○									
11. *Liriomyza flaveola*																				○			○		Pal
12. *L.* sp. 1		○																							
13. *L.* sp. 2		○																							
14. *Aulagromyza paramushirensis* n. sp		○																							FE
15. *Napomyza* sp.		○																○							
16. *Chromatomyia horticola*																					○		○	○	Hol
17. *C. nigra*						○																	○	○	Hol
18. *C. furcata*		○		○						○			○	○		○		○	○	○					FE
19. *Phytomyza tanaceti*																			○						Pal
20. *P. wahlgreni*		○				○	○			○				○		○									Hol
21. *P. nigroorbitalis*																	○	○							Pal
22. *P. affinis*										○	○														Pal
23. *P. hirta*		○																							Pal
24. *P. kurilensis* n. sp.		○																							FE
25. *P.* sp. 1																			○						
26. *P.* sp. 2	○	○	○	○			○	○	○	○	○		○	○	○	○			○				○		FE
27. *P. ranunculi*		○																					○	○	Hol

Abbrebiations, SU: Shumshu, PA: Paramushir, AL: Alaid, AN: Antsiferova, MK: Makanrushi, KH: Kharimkotan, SH: Shiashkotan, EK: Ekarma, CR: Chirinkotan, RK: Raikoke, MA: Matua, RA: Rasshua, RY: Ryponkicha, Ushishir Arch., US: Yankicha, Ushishir Arch., KE: Ketoi, SI: Simushir, CH: Chirpoi, BC: Brat Chirpoev, UR: Urup, IT: Iturp, KU: Kunashir, SK: Shikotan, HK: Hokkaido, HS: Honshu.
Pal: Palaearctic distribution, Hol: Holarctic distribution, FE: Far eastern distribution.



Figs. 1–6. Male genitalia. 1–3, *Agromyza nigrociliata,* Brat Chirpoev (BC-97-MO-038A) [genitalia no. 430]. 4–6, *Melanagromyza pubescens,* Kamikawa, Hokkaido [gen. no. 410]. 1, 4, aedeagus, left lateral view; 2, 5, same, dorsal view; 3, 6, ejaculatory apodeme.

Taxonomy

Subfamily Agromyzinae

1. *Agromyza nigrociliata* Hendel, 1931
(Figs. 1–3)

Agromyza nigrociliata: Spencer, 1976: 129.

Material examined. **Kuril Islands.** Paramushir, 1♂, 13. VIII. 1997 (PA-97-MO-025A*), 1♀, inland from Krasheninnikova Bay, near Krasheninnikova River, 14. VIII. 1997 (PA-97-MO-026A); Antsiferova, 4♂♂ 5♀♀, 15. VIII. 1997 (AN-97-MO-028B*); Makanrushi, 1♀,

inland from Zakat Bay, 18. VIII. 1997 (MK-97-MO-037A); Raikoke, 24♂♂ 21♀♀, 13. VIII. 1996 (RK-96-MO-041); Matua, 1♂ 2♀♀, inland from Dvoynaya Bay, 15. VIII. 1996 (MA-96-MO-042B), 2♂♂ 2♀♀, 15. VIII. 1996 (MA-96-MO-046); Ketoi, 1♂ 2♀♀, 15. VIII. 1995 (KE-95-MO-023*); Simushir, 5♂♂ 3♀♀, 11. VIII. 1995 (SI-95-MO-011*); Chirpoi, 1♀, 23. VIII. 1995 (CH-95-MO-051*); Brat Chirpoev, 5♂♂ 6♀♀, 20. VIII. 1997 (BC-97-MO-038A*); Urup, 2♀♀, 28. VIII. 1995 (UR-95-MO-067*), 2♂♂ 1♀, 25. VIII. 1996 (UR-96-MO-048D).

Distribution. Europe, Kuril Islands (Paramushir, Antsiferova, Makanrushi, Raikoke, Matua, Ketoi, Simushir, Chirpoi, Brat Chirpoev, Urup). New to Kuril Islands.

2. *Agromyza spiraeoidearum* Hering, 1954

Agromyza spiraeoidearum: Spencer, 1976: 143; Sasakawa, 1993: 149.

Material examined. **Kuril Islands.** Simushir, 1♂, 10. VIII. 1995 (SI-95-MO-010*).

Japan. Hokkaido: Shizunai, 1♂ 1♀, from leaf-mining larvae on *Aruncus dioicus* var. *tenuifolius* (breeding no. 8922), 25. VI. 1989, emerged 11-13. IV. 1990 (A. Iwasaki); Kuriyama, 3♂♂ 1♀, from larvae on *A. dioicus* var. *tenuifolius* (br. no. 271), 7. VII. 1993, emerged 2-10. III. 1994 (A. Iwasaki).

Distribution. Holarctic. Kuril Islands (Simushir), Japan (Honshu (Sasakawa, 1993), Hokkaido). New to Kuril Islands and Hokkaido.

3. *Agromyza potentillae* (Kaltenbach, 1864)

Agromyza spiraeae: Sasakawa, 1958: 136.
Agromyza potentillae: Spencer, 1976: 134.

Material examined. **Kuril Islands.** Raikoke, 2♂♂ 4♀♀, 13. VIII. 1996 (RK-96-MO-041A).

Distribution. Holarctic. Kuril Islands (Raikoke), Japan (Hokkaido, Honshu, Shikoku (Sasakawa, 1958)). New to Kuril Islands.

4. *Melanagromyza pubescens* Hendel, 1923
(Figs. 4–6)

Melanagromyza pubescens: Sasakawa, 1961: 124, 1997: 144; Spencer, 1976: 52.

Material examined. No specimen from the Kurils has been available for this study.

Japan. Hokkaido: Otofuke, 1♂, 26. VI. 1988 (A. Iwasaki); Tokachi Riv., Obihiro, 1♂, 13. VI. 1987 (A. Iwasaki); Hamatonbetsu, 1♂, 20. VIII.1992 (M. Sato); Tonnai Riv., Rebun I., 1♂, 24. VII. 1994 (M. Sato); Shirokin Riv., Yubari, 2♂♂, 16. VII. 1989 (A. Iwasaki); Kamikawa, 1♂, 14. VII. 1993 (A. Iwasaki). Honshu: Shomaru, Saitama, 1♂, 4. VI. 1990 (A. Iwasaki). Shikoku: Matsuyama, Ehime, 1♂, 25. IX. 1999 (A. Iwasaki).

Europe. Czech Republic: Moravia mer. (all collected and determined by M. Černý): Sedlec border field, 1♂, 6. IX. 1997; Klentnice border field, 1♀, 7. VI. 1997; Perná Kotei, 1♂, 7. VI. 1987; Perná border forest, 1♀, 7. VI. 1997.

Distribution. Europe, Kuril Islands (Kunashir) (Sasakawa, 1961), Japan (Okinawa I., Ishigaki I., Amami-Oshima I. (Sasakawa, 1997), Hokkaido, Honshu, Shikoku). New to Hokkaido, Honshu and Shikoku.

Remarks. This species is common throughout Hokkaido. As an identification based on external characters is not reliable for this species, only the specimens confirmed by an examination of the male genitalia are enumerated above.

Subfamily Phytomyzinae

5. *Cerodontha* (*Butomomyza*) *angulata* (Loew, 1869)

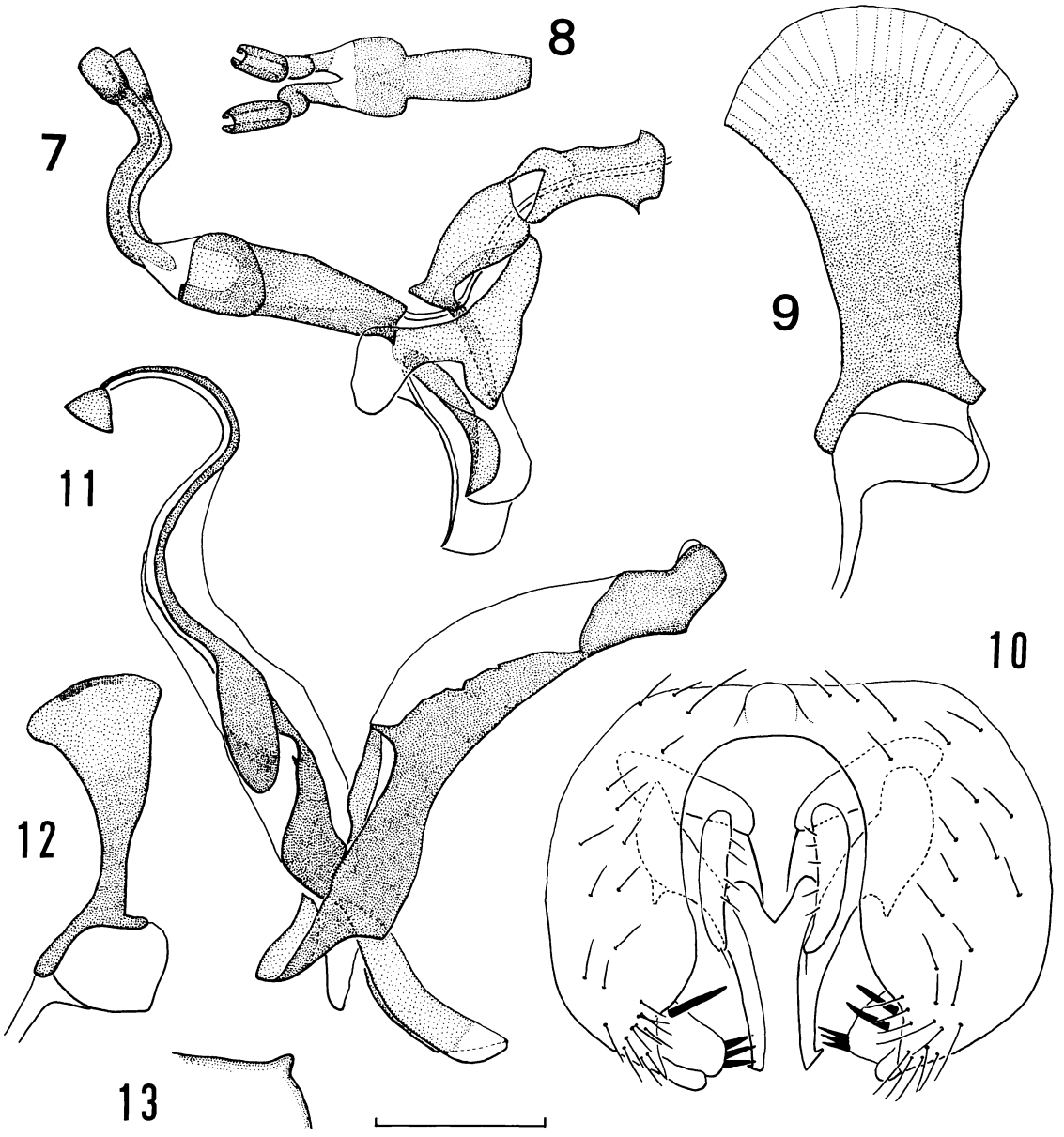
Phytobia (*Poemyza*) *semiposticata:* Sasakawa, 1955: 65.
Cerodontha (*Butomomyza*) *angulata:* Nowakowski, 1973: 152; Spencer, 1976: 204.

Material examined. **Kuril Islands.** Urup, 1♂, inland coastal margin of Novo-Kurilskaya Bay, 8. VIII. 1995 (UR-95-MO-008); Iturp, 9♂♂ 1♀, 30. VII. 1997 (B. K. Urbain; IT-97-BKU-019*).

Distribution. Holarctic. Kuril Islands (Urup, Iturp), Japan (Hokkaido, Honshu) (Sasakawa, 1955). New to Kuril Islands.

6. *Cerodontha* (*Dizygomyza*) *bimaculata* (Meigen, 1830)
(Figs. 7–10)

Cerodontha (*Dizygomyza*) *bimaculata*: Nowakowski, 1973: 190; Spencer, 1976: 213;



Figs. 7–13. Male genitalia. 7–10, *Cerodontha* (*Dizygomyza*) *bimaculata*, Yankicha I., Ushishir Arch. (US-97-MO-002) [gen. no. 489]. 11–13, *Cerodontha* (*Poemyza*) *pygmella*, Paramushir [gen. no. 500]. 7, 11, aedeagus left lateral view; 8, meso- and distiphallus, dorsal view; 9, 12, ejaculatory apodeme; 10, epandrium, posterior view; 13, anal projection, left lateral view.

Sasakawa and Matsumura, 1998: 11.

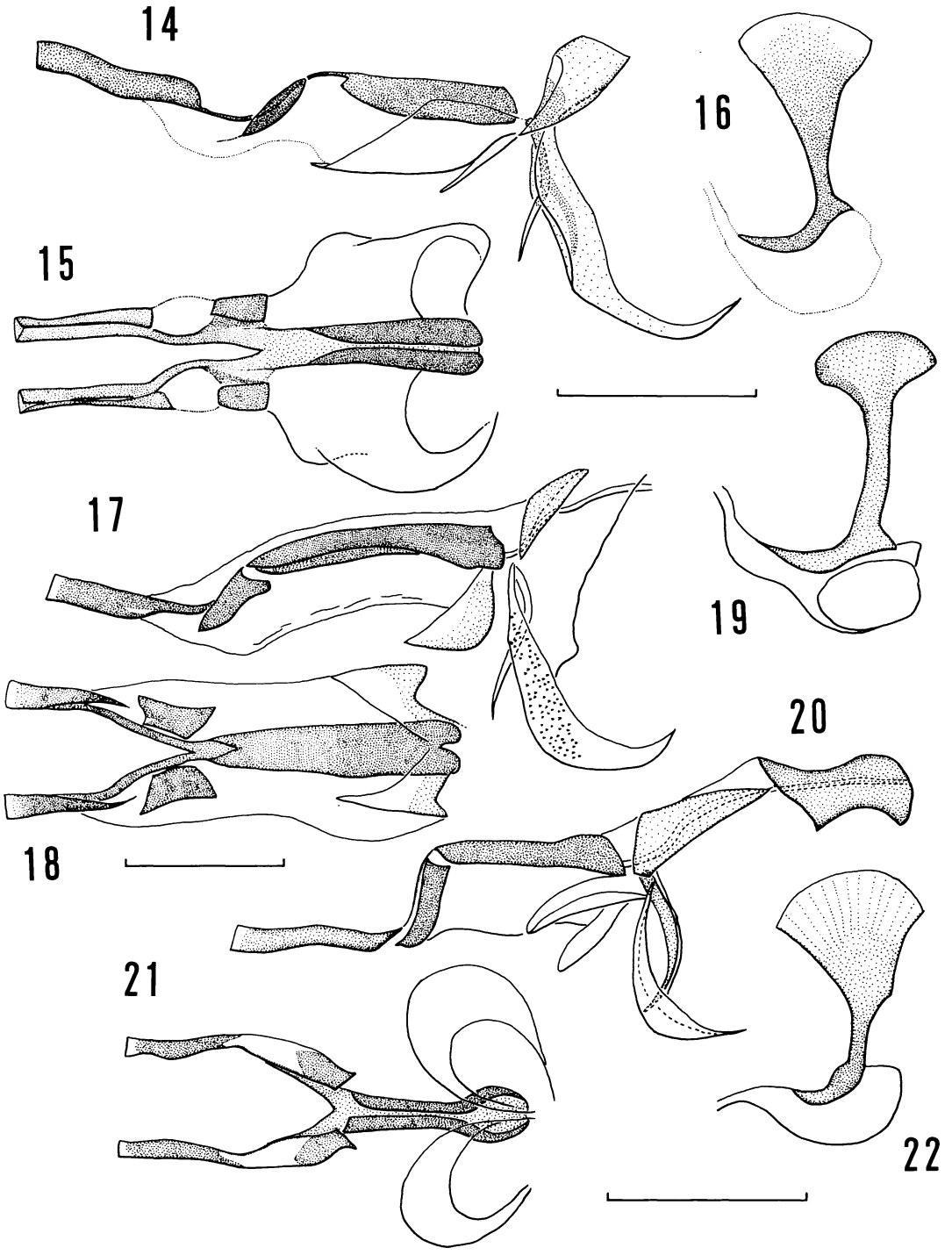
Material examined. **Kuril Islands.** Yankicha I., Ushishir Arch., 1♂, 1. VIII. 1997 (US-97-MO-002*).

Distribution. Europe (widespread), Japan (Honshu) (Sasakawa and Matsumura, 1998), Kuril Islands (Yankicha I., Ushishir Arch.). New to Kuril Islands.

7. *Cerodontha* (*Poemyza*) *pygmella* (Hendel, 1931)

(Figs. 11–13)

Phytobia (*Poemyza*) *pygmella*: Sasakawa, 1961:



Figs. 14–22. Male genitalia. 14–16, *Phytoliriomyza dorsata,* Paramushir (PA-97-MO-025A) [gen. no. 429]. 17–19, *Phytoliriomyza miki,* Paramushir (PA-97-MO-025A) [gen. no. 494]. 20–22, *Phytoliriomyza* sp., Makanrushi (MK-97-MO-035A) [gen. no. 486]. 14, 17, 20, aedeagus, left lateral view; 15, 18, 21, meso- and distiphallus, ventral view; 16, 19, 22, ejaculatory apodeme.

124.

Cerodontha (*Poemyza*) *pygmaea*: Spencer, 1969: 133.

Material examined. **Kuril Islands.** Paramushir, 1♂, Shelekhovo to Shimoyur River, alt. 0–100 m, 17. VII. 1997 (A. Saito), CBM-ZI 83213; Rasshua, 1♀, west of Beloye Lake, 12. VIII. 1995 (Y. M. Marusik; RAS-95-YMM-049 A); Ketoi, 1♂ 1♀, inland coastal margin in the environs of Stochnyi River, 19. VIII. 1995 (KE-95-MO-038), 1♀, 15. VIII. 1995 (KE-95-MO-023*); Urup, 1♀, 28. VIII. 1995 (UR-95-MO-067*).

Distribution. Kamchatka (type locality), Kuril Islands (Shikotan (Sasakawa, 1961), Paramushir, Rasshua, Ketoi, Urup). New to Paramushir, Rasshua, Ketoi and Urup.

Remarks. The aedeagus, ejaculatory apodeme and anal projection of this species agree well with those of the European *C.* (*P.*) *lapplandica* (Rydén, 1956) illustrated by Nowakowski (1973) as *C.* (*P.*) *tatrica* Nowakowski, 1967. These two forms might be conspecific (see Spencer, 1976: 200).

8. *Phytoliriomyza dorsata* (Siebke, 1864)
(Figs. 14–16, 23–25)

Phytoliriomyza dorsata: Spencer, 1976: 294.

Material examined. **Kuril Islands.** Paramushir, 1♀, 5. VIII. 1997 (PA-97-MO-007A*), 7♂♂ 12♀♀, 13. VIII. 1997 (PA-97-MO-025A*); Simushir, 2♀♀, 10. VIII. 1995 (SI-95-MO-010*).

Japan. Hokkaido: Noboribetsu, 1♂, 18. VI. 1989 (A. Iwasaki); Kunneppu, 1♂, 13. VI. 1995 (A. Iwasaki); Inada, Obihiro, 11♂♂ 11♀♀, 10–29. VI. 1999 (M. Jinma).

Distribution. Holarctic. Kuril Islands (Paramushir, Simushir). New to Japan (Hokkaido) and Kuril Islands.

9. *Phytoliriomyza miki* (Strobl, 1898)
(Figs. 17–19, 26–28)

Phytoliriomyza miki: Spencer, 1976: 299.

Material examined. **Kuril Islands.** Paramushir, 2♂♂ 1♀, 13. VIII. 1997 (PA-97-MO-025A*).

Distribution. Europe (Sweden, Finland, Austria) (Spencer, 1976), Kuril Islands (Paramushir). New to Kuril Islands.

10. *Phytoliriomyza* sp.
(Figs. 20–22, 29–31)

Material examined. **Kuril Islands.** Makanrushi, 2♂♂, inland from Zakat Bay, 18. VIII. 1997 (MK-97-MO-035A); Simushir, 1♀, 10. VIII. 1995 (SI-95-MO-010*).

Description. Male. Inside of epandrium with a single stout bristle and a series of 8 black bristles arranged in a comb-shape; a single stout bristle present underside of surstylus.

Distribution. Kuril Islands (Makanrushi, Simushir).

Remarks. In general structure as well as in general appearance, this species is very similar to *Phytoliriomyza bornholmensis* Spencer (1976) from Denmark. These two forms might be conspecific. Judging from the original description of the latter based on a single male specimen, only a few differences are found between the two forms: in the Kuril form, the third antennal segment is yellow and paler (brownish in *P. bornholmensis*); the distiphallus has tubules parallel to each other (convergent in *P. bornholmensis*). Comparisons based on further material of both forms are necessary for a more decisive conclusion on their distinctness.

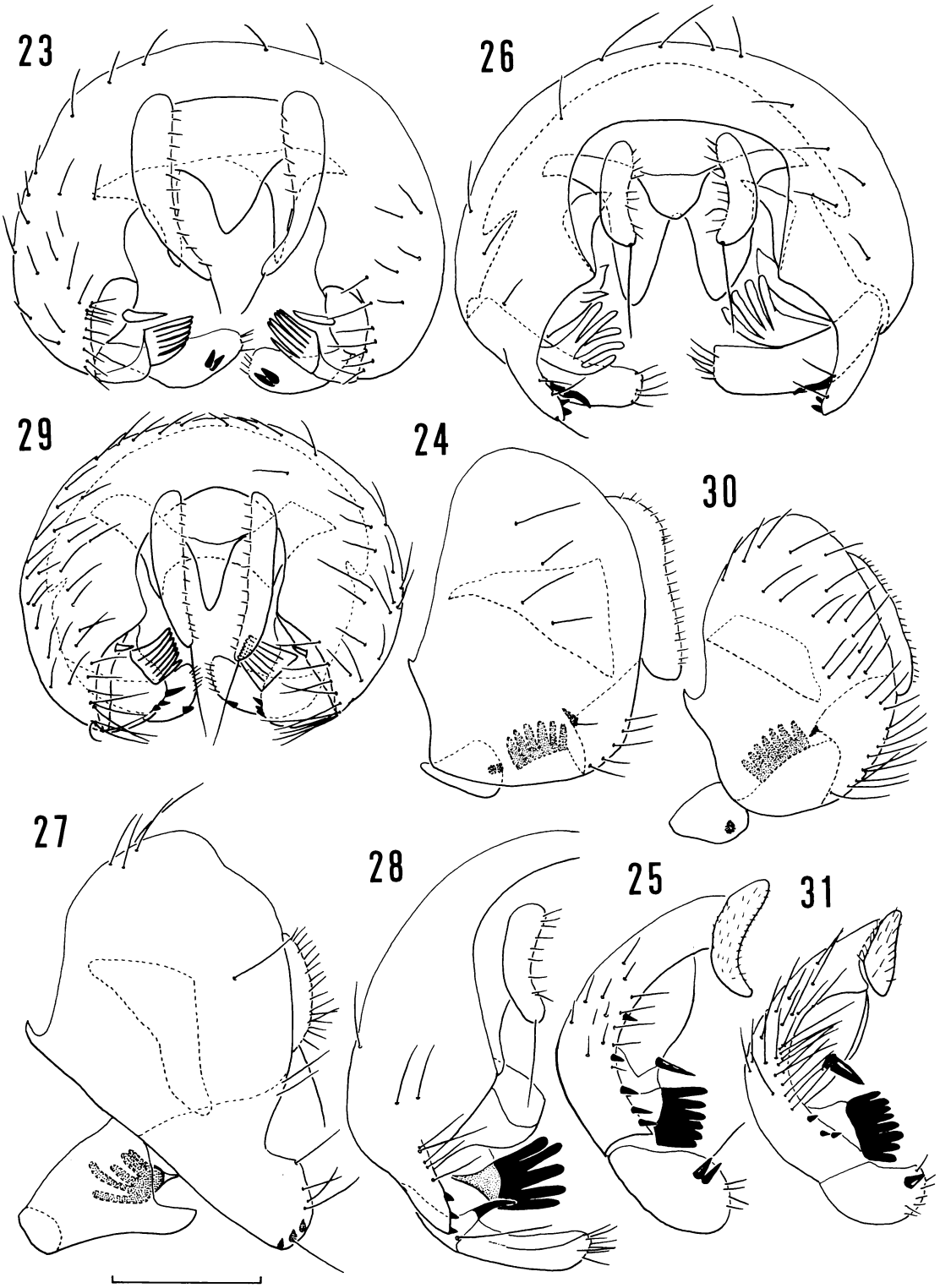
11. *Liriomyza flaveola* (Fallén, 1823)
(Figs. 32–37)

Liriomyza flaveola: Spencer, 1976: 246.

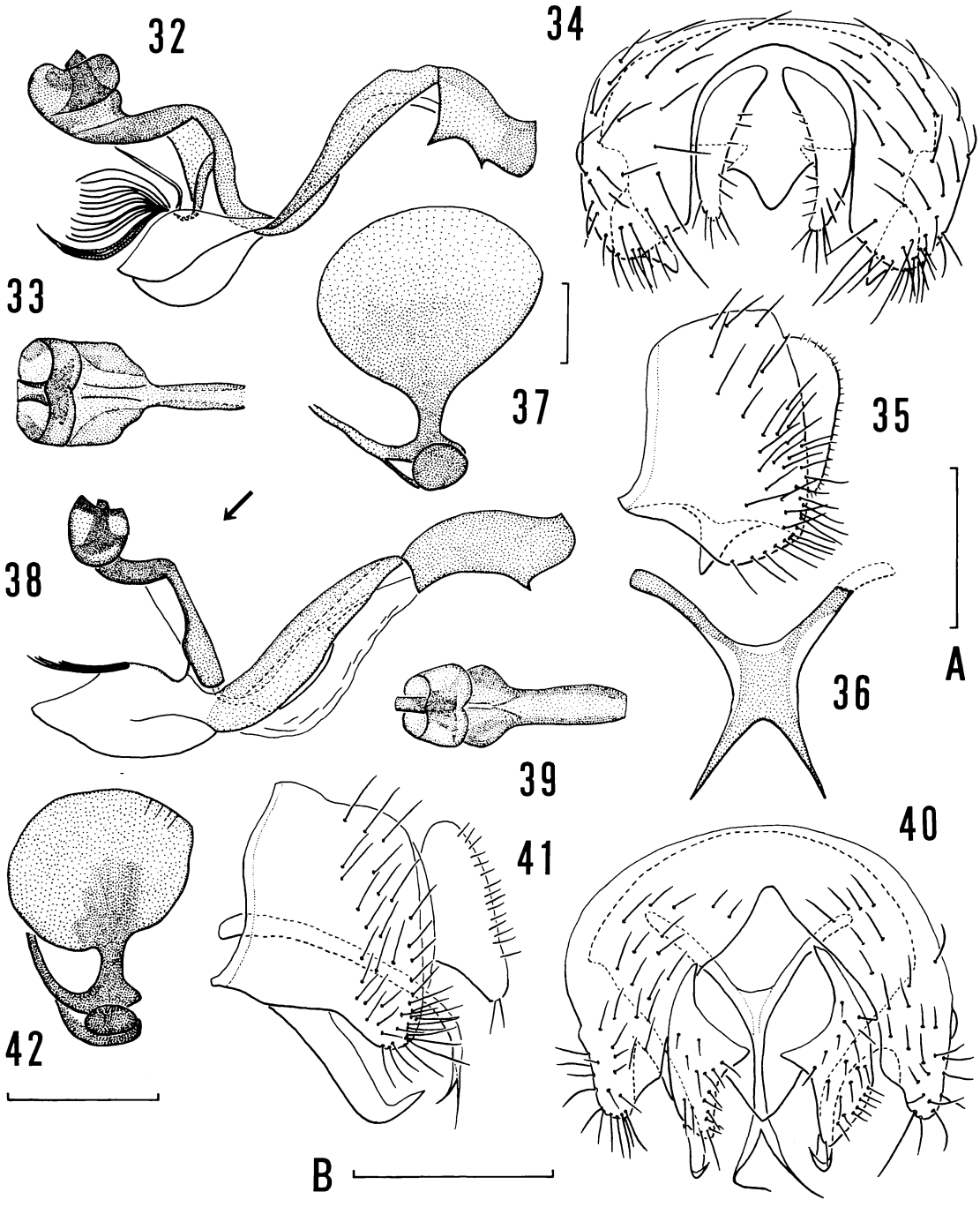
Material examined. **Kuril Islands.** Iturp, 1♂, 30. VII. 1997 (B. K. Urbain; IT-97-BKU-019*).

Japan. Hokkaido: Mt. Izari, Sapporo, 2♂♂ 1♀♀, 8. VIII. 1990 (A. Iwasaki); Lake Shikotsu, 2♀♀, 26. IX. 1986 (A. Iwasaki); Jozankei, Sapporo, 2♀♀, 16. VII. 1988 (A. Iwasaki).

Description. Male. Kuril form. Head with *vte* on black ground, *vti* on boundary between black and yellow grounds; black area of occiput reaching eye margin beyond base of *vte*, extending anteriorly to level of upper *ors* (parafrontalia narrowly black along eye margin); mesonotum black, subshining; *acr* in 4 rows; mesopleuron black ventrally, from on lower 2/3 of anterior margin to on lower 1/3 of posterior margin; sternopleuron black on



Figs. 23–31. Epandrium. 23–25, *Phytoliriomyza dorsata* [gen. no. 429]. 26–28. *Phytoliriomyza miki* [gen. no. 494]. 29–31, *Phytoliriomyza* sp. [gen. no. 486]. 23, 26, 29, posterior view; 24, 27, 30, left lateral view; 25, 28, 31, left half, ventral view.



Figs. 32–42. Male genitalia. 32–37, *Liriomyza flaveola*, Iturp (IT-97-BKU-019) [gen. no. 522]. 38–42, *Liriomyza* sp. 1, Paramushir [gen. no. 452]. 32, 38, aedeagus, left lateral view; 33, 39, meso- and distiphallus, dorsal view (direction of fig. 39 shown by arrow in fig. 38); 34, 40, epandrium, posterior view; 35, 41, same, left lateral view; 36, baciliform sclerites; 37, 42, ejaculatory apodeme. Scale bar: A, 32–36; B, 38–41.

lower 3/4, *stpl* on yellow ground; femora black, with apices yellow.

Surstylus weakly pigmented, small and simple in shape, and bearing neither spines nor setulae. Baciliform sclerites fused, strongly extending posteroventrally at middle (Figs. 34–36).

Distribution. Europe, Kuril Islands (Iturp), Japan (Hokkaido). New to Kuril Islands and Japan.

Remarks. The form from Hokkaido is darker: mesopleuron black ventrally from on lower two-thirds of anterior margin to on lower half of posterior margin.

12. *Liriomyza* sp. 1
(Figs. 38–42)

Material examined. **Kuril Islands.** Paramushir, 1♂, 4 km north of Severo-Kuril'sk, alt. 100 m, 24. VII. 1997 (A. Saito), CBM-ZI 83214.

Description. Male. Head with *vte* on black ground, *vti* on boundary between black and yellow grounds; mesonotum mat black, *acr* in 4 rows; mesopleuron black from on lower 2/3 of anterior margin to on lower 3/4 of posterior margin; sternopleuron largely black, with yellow dorsal margin; *mspl* and *stpl* on edge of black ground; femora brownish black, fore femur narrowly yellow apically, mid femur faintly paler apically. Wing with last section of m3+4 7/3 length of penultimate section.

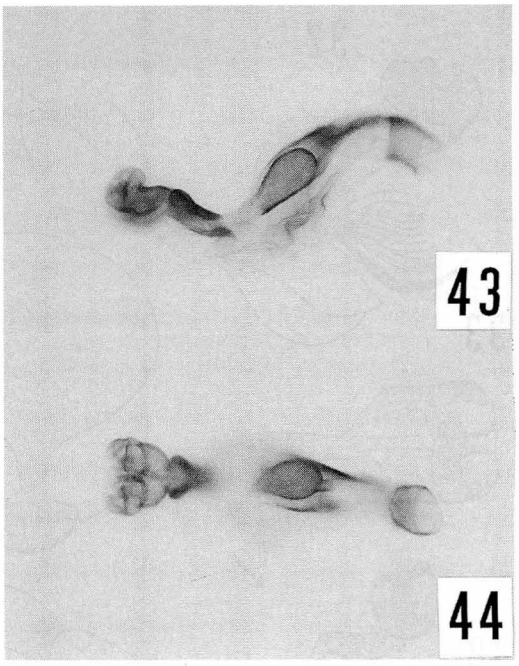
Surstylus much extending posteroventrally. Baciliform sclerites Y-shaped, extending posteroventrally (Figs. 40–41).

Wing length 1.8 mm.

Remarks. The male genitalia (Figs. 38–39) indicate that the present species belongs to the *flaveola* group (Poaceae feeders). In general appearance, this species most resembles *L. richteri* Hering, 1927 (=*L. pedestris* Hendel, 1931), a member of the group. It is, however, quite different from *L. richteri* in the shape of the distiphallus.

13. *Liriomyza* sp. 2
(Figs 43, 44)

Material examined. **Kuril Islands.** Paramushir, 1♂, 4 km north of Severo-Kuril'sk, alt. 100 m, 24. VII. 1997 (A. Saito), CBM-ZI 83215.



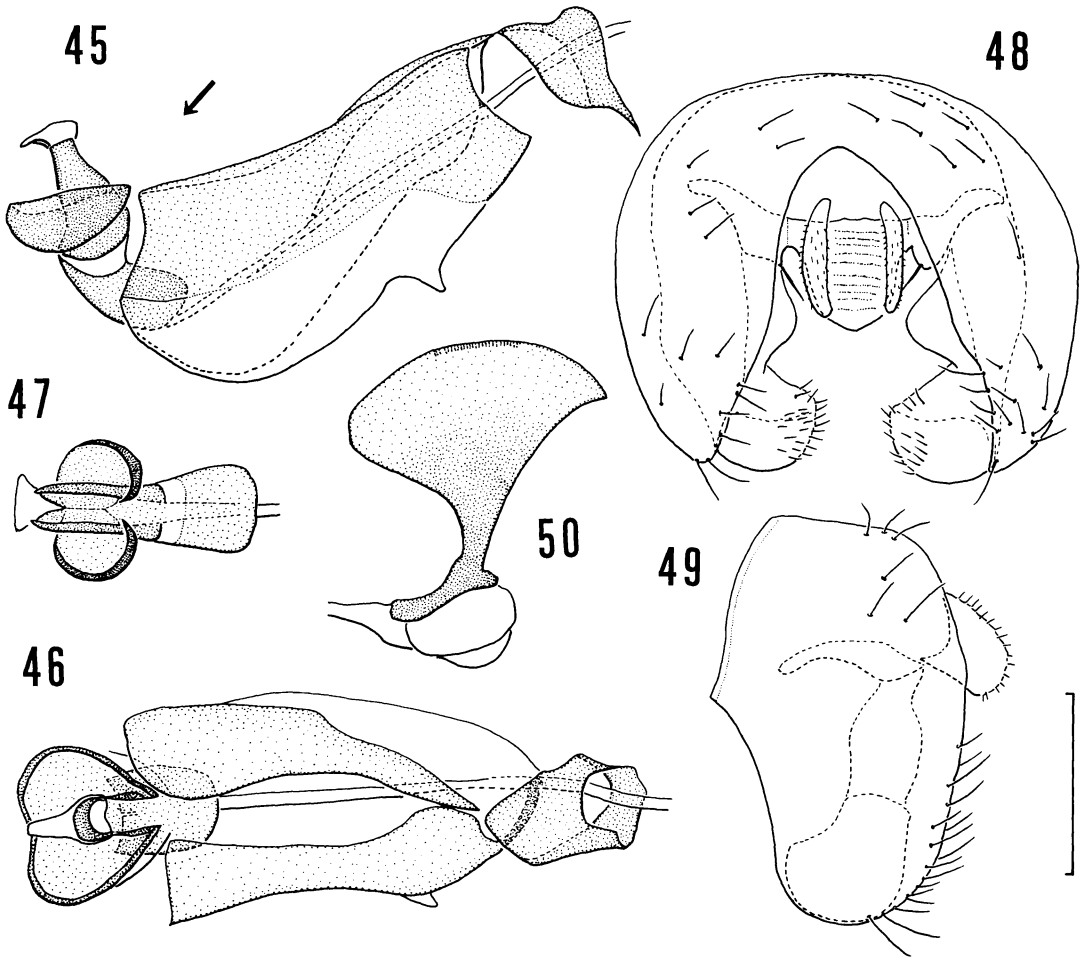
Figs. 43–44. *Liriomyza* sp. 2, Paramushir [gen. no. 512]. 43, aedeagus, left lateral view; 44, same, dorsal view.

Description. Male. Third antennal segment long pubescent; *vti* on yellow ground, *vte* on edge of yellow ground; black area of occiput reaching eye margin beyond base of *vte*; mesonotum black, subshining; *acr* in 4 rows.

Remarks. In general appearance, the species resembles *L. centaureae* Hering, 1927, from which, it differs in lacking "unpigmented flap" (Spencer, 1976) on the distiphallus (Fig. 44). In the shape of the male genitalia (Figs. 43, 44), this species is rather similar to several leaf-miners on Asteraceae, *L. hieracii* (Kaltenbach), *L. hieracivora* Spencer, *L. aposelidis* Beiger, *L. andryala* Hering, and *L. asteris* Hering (see Spencer, 1990), from them, it differs in bearing long pubescence on the third antennal segment.

14. *Aulagromyza paramushirensis* n. sp.
(Figs. 45–50)

Material examined. **Kuril Islands.** Paramushir, ♂ (holotype), 4 km north of Severo-Kuril'sk, 24. VII. 1997 (A. Saito), deposited in the Institute of Biology and Soil Science, Far Eastern Branch of Russian Academy of Sci-



Figs. 45–50. *Aulagromyza paramushirensis* n. sp., Paramushir [gen. no. 498]. 45, aedeagus, left lateral view; 46, same, dorsal view; 47, meso- and distiphallus, posterodorsal view (direction shown by arrow in fig. 45); 48, epandrium, posterior view; 49, same, left lateral view; 50, ejaculatory apodeme.

ences, Vladivostok.

Description. Male. Head dark white on frons, lunule, inner margin of parafrontalia, lower half of postgena; blackish brown on occiput, postgena, gena and clypeus; ocellar triangle black; black area of occiput reaching eye margin beyond base of *vte*; antenna and palpus brownish black; *vte* situated on brown ground; *vti* on edge of black ground.

Thorax brownish black, densely gray-dusted; notopleuron, posterior corner of humerus and mesopleural suture dark white; *prst* and *h* on edge of black ground.

Legs dark brown; only fore femur faintly paler apically.

Wing hyaline; halter white; squama white, margin and fringe dark brown.

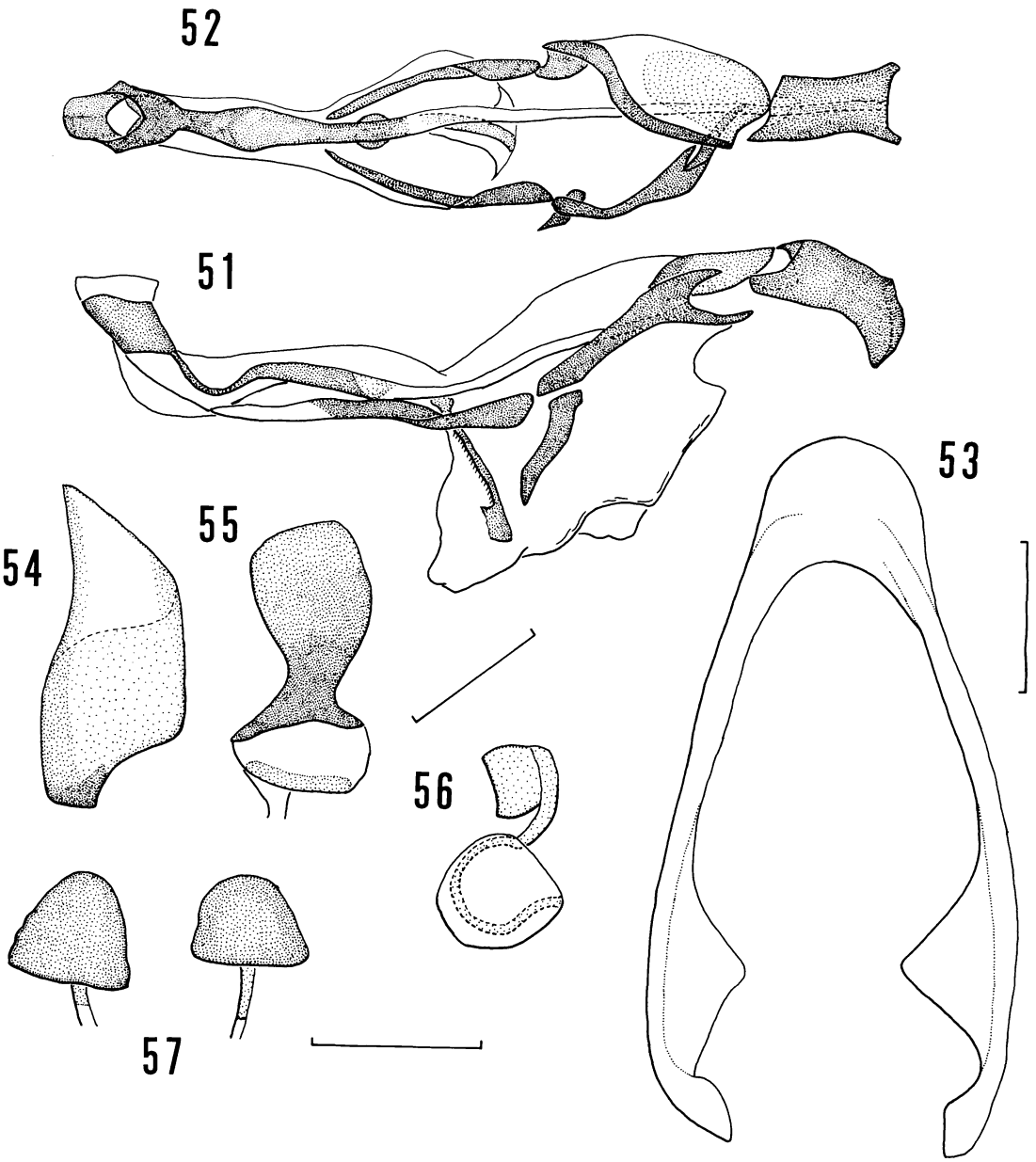
Abdomen dark brown.

Head with parafrontalia slightly projecting above eye in profile; 3rd antennal segment ovoid, minutely pubescent with fringe just before arista as long as basal width of arista; palpus small; parafrontalia with 2 *ors* and 2 *ori*; lower *ors* situated near midpoint of *vti* and antennal base; *ors* directed upward; *ori* inward, upper one somewhat upward; only 2 orbital setulae on each side, reclinate; frons 2.07 times width of eye; gena including cheek 0.28 times of height eye.

Mesonotum with 4+2 (right) or 4+1 (left) *dc*; 1st, posteriormost *dc* strongest, followed by 2nd; 3rd and 4th *dc* and presutural *dc* very

short, only slightly longer than *acr*; *acr* in 4 rows before suture, 3 rows behind suture, diminishing posteriorly and ending just behind level of 2nd *dc*; *prsc* present as pair of setulae little longer than *acr* just behind level of 1st *dc*; intra-alar area with 5 setulae behind suture; humerus with 5 setulae on left side (right humerus not examined); wing with cross vein m-m; 2nd costal section 3.4 times length of 4th; last section of M3+4 5.7 length of penultimate section; wing with apex midway between terminations of R4+5 and M1+2, nearer to M1+2 than to R4+5.

Surstylus invisible when viewed from side,



Figs. 51–57. *Napomyza* sp., Brat Chirpoev (BC-97-MO-038A), 51–55, male genitalia [gen. no. 507], 56–57, female genitalia [gen. no. 558]. 51, aedeagus, left lateral view; 52, same, dorsal view; 53, hypandrium, dorsal view; 54, left postgonite, lateral view; 55, ejaculatory apodeme; 56, receptaculum seminis; 57, spermathecae.

separated from epandrium by suture; arms of basiphallus broad; mesophallus well pigmented; distiphallus represented by broad tube with posterodorsal longitudinal opening and semi-bowl shaped sclerite; ejaculatory apodeme well expanded.

Wing length 1.96 mm (male holotype).

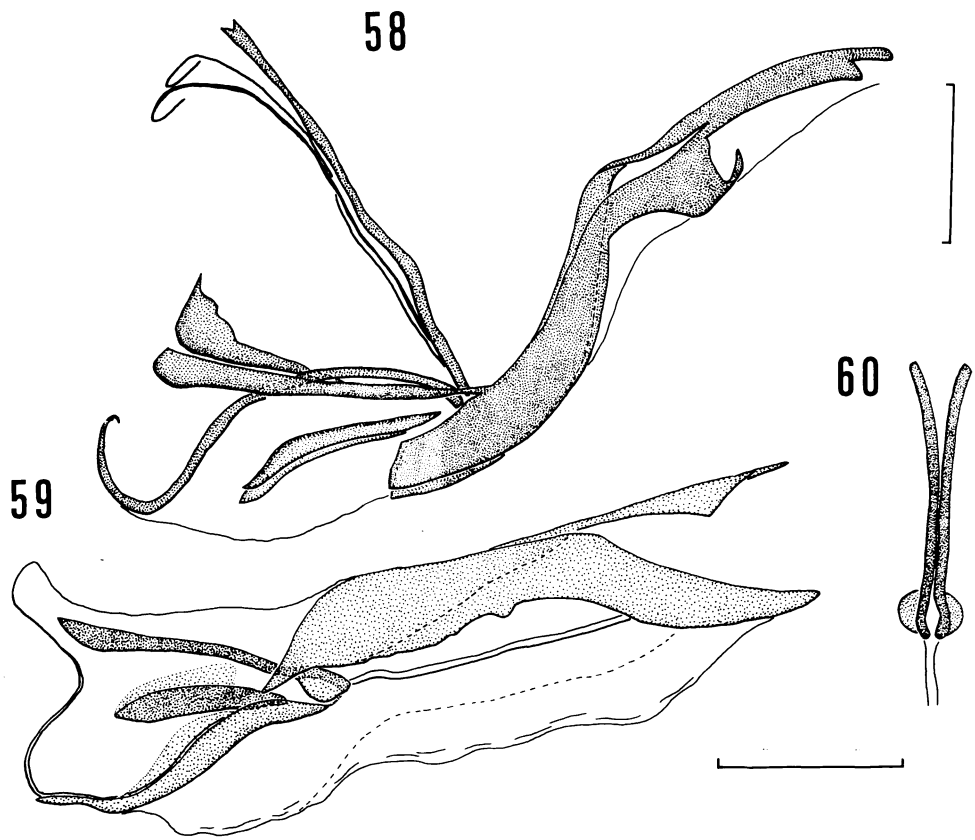
Distribution. Kuril Islands (Paramushir).

Remarks. This new species resembles the Palaearctic *A. hendeliana* (Hering, 1926), from which it differs in the shape of distiphallus and also in the size (wing length 2.25 mm in *A. hendeliana*, after Hendel, 1932). Among the Nearctic species, this species resembles *A. plagiata* (Melander, 1913) in external characters other than the male genitalia (information on the male genitalia of *A. plagiata* is unavailable). This Kuril species is, however, distinct from *A. plagiata* in having the smaller size and the different wing venation (cf. Spencer, 1969). The male genitalia of the present new species suggest a close relationship with the leaf-miners on Caprifoliaceae (see Spencer, 1990).

15. *Napomyza* sp. (*lateralis*-group) (Figs. 51–57)

Material examined. **Kuril Islands.** Paramushir, 1♂, 5. VIII. 1997 (PA-97-MO-007A*), 1♂, 13. VIII. 1997 (PA-97-MO-025A*); Brat Chirpoev, 1♂ 1♀, 20. VIII. 1997 (BC-97-MO-038A*).

Description. Male. Orbital setulae sparse, in 1 or 2 rows; 3rd antennal segment ovoid, not so elongated as in *N. lateralis*, with short but distinct pubescens; paramesophallus straight in lateral view; distiphallus only weakly sunken at base; hypophallus slender; posteroventral margin of postgonite strongly concave (Fig. 54).



Figs. 58–60. Male genitalia. 58, *Chromatomyia nigra*, Kharimkotan (KH-96-MO-027) [gen. no. 398]. 59–60. *Chromatomyia furcata*, Antsiferova (AN-97-MO-028B) [gen. no. 491]. 58, 59, aedeagus, left lateral view; 60, distiphallus, dorsal view.

Female. Spermathecae and receptaculum seminis as in figs. 56–57.

Distribution. Kuril Islands (Paramushir, Brat Chirpoev).

Remarks. This species is most similar to *N. neglecta* Zlobin, 1994, described on the basis of material collected from Amur province (type locality) and Mongolia. It is, however, different from *N. neglecta* in having the head of the receptaculum seminis with a weakly rounded hind wall (fig. 56).

16. *Chromatomyia horticola* (Goureau, 1851)

Phytomyza atricornis: Sasakawa, 1961: 124.

Material examined. No specimen from the Kurils is available in this study.

Distribution. Cosmopolitan. In Kuril Islands, known from Kunashir (Sasakawa, 1961).

17. *Chromatomyia nigra* (Meigen, 1830) (Fig. 58)

Chromatomyia nigra: Griffiths, 1980: 49.

Material examined. **Kuril Islands.** Kharimkotan, 1♂, Severgine Bay, inland 200 m from beach, 8. VIII. 1996 (KH-96-MO-027).

Distribution. Holarctic. Kuril Islands (Kharimkotan). New to Kuril Islands.

Remarks. In the coloration of the head, this specimen agrees with the Kamchatka form (=*C. nigra obscuriceps* in the sense of Griffiths, 1980), i.e. the gena and center of frons are dark brown to almost black. In the male genitalia, on the other hand, "the more ventral pair of supporting sclerite of dorsal lobe" (after Griffiths, 1980) (a pair of slender, distally coiled sclerites directing anterodorsally) are longer, exceeding "the more dorsal pair" (apically forked sclerites situated just dorsal of the former ones; right one not shown in Fig. 58). On this point, the Kuril form agrees with the widespread European form (=*C. nigra s. str.*). Further material is necessary for decisive conclusion on the assignment of the Kuril form.

18. *Chromatomyia furcata* Griffiths, 1980 (Figs. 59–60)

Chromatomyia furcata Griffiths, 1980: 27.

Material examined. **Kuril Islands.** Paramushir, 1♀, 5. VIII. 1997 (PA-97-MO-007*), 1♀, 13. VIII. 1997 (PA-97-MO-025A*); Antsiferova, 8♂♂ 6♀♀, 15. VIII. 1997 (AN-97-MO-028B*); Raikoke, 1♂ 1♀, 13. VIII. 1996 (RK-96-MO-041A); Ushishir Arch., 7♂♂, Ryponkicha I., 2. VIII. 1997 (RY-97-MO-003), 14♂♂ 8♀♀, Yankicha I., 1. VIII. 1997 (US-97-MO-002*); Simushir, 1♂ 1♀, 11. VIII. 1995 (SI-95-MO-011*); Brat Chirpoev, 1♂ 2♀♀, 20. VIII. 1997 (BC-97-MO-038A*); Urup, 1♂, 28. VIII. 1995 (UR-95-MO-067*); Iturp, 7♂♂ 5♀♀, 30. VII. 1997 (B. K. Urbain; IT-97-BKU-019*).

Distribution. Kamchatka (Bolsheretsk; type locality), ?Sweden (Griffiths, 1980), Kuril Islands (Paramushir, Antsiferova, Raikoke, Ushishir Arch. (Ryponkicha I., Yankicha I.), Simushir, Brat Chirpoev, Urup, Iturp). New to Kuril Islands.

19. *Phytomyza tanaceti* Hendel, 1923 (Figs. 61–63)

Phytomyza tanaceti: Spencer, 1976: 511.

Material examined. **Kuril Islands.** Urup, 1♂, 23. VIII. 1995 (UR-95-MO-067).

Europe. Germany: Schleswig-Holstein, Ihlkate, West of Kiel, 2♂♂, 30. V. 1971 (M. v. Tschirnhaus).

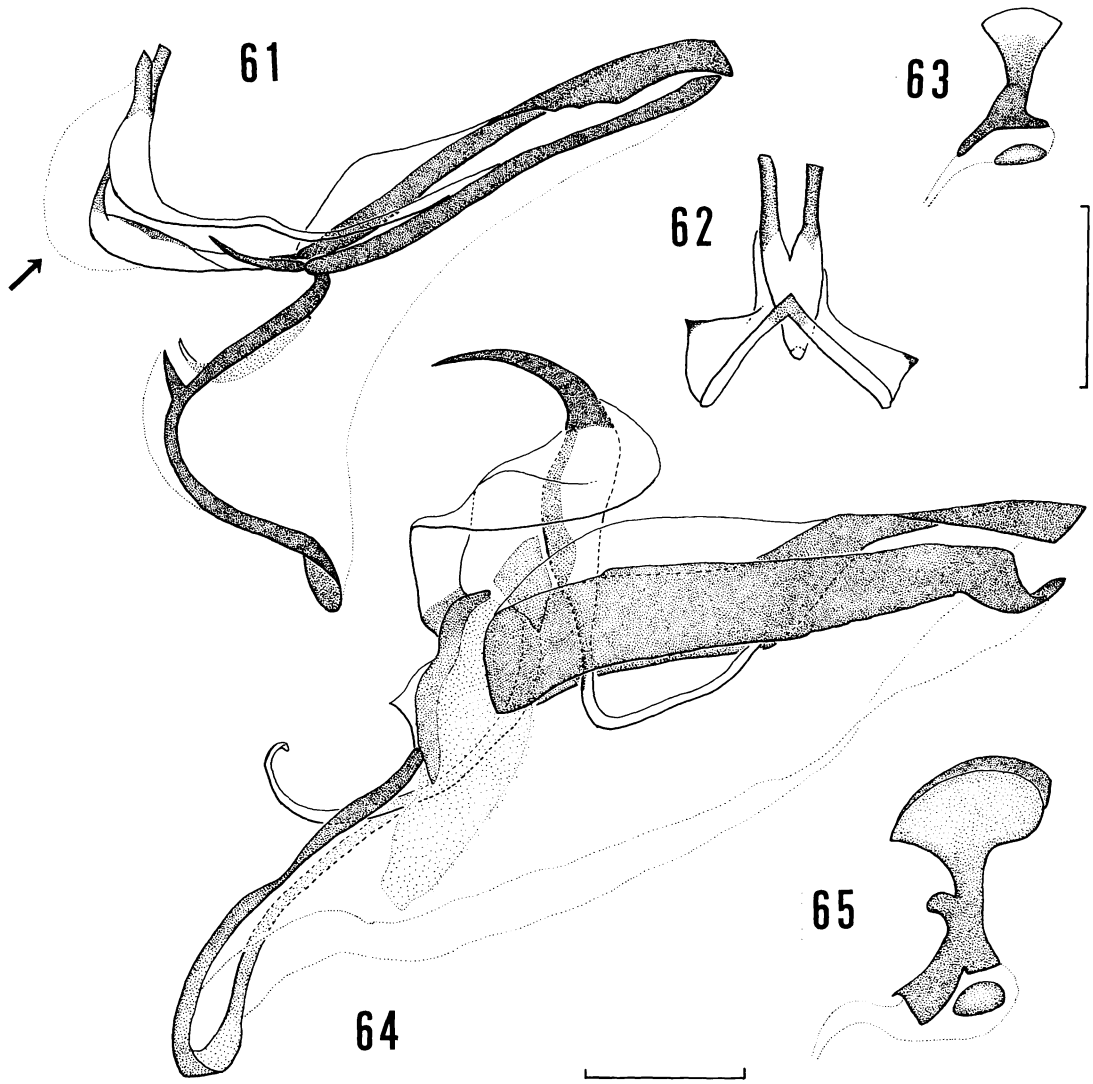
Distribution. Europe (widespread), Kuril Islands (Urup). New to Kuril Islands.

Remarks. The aedeagus of *P. tanaceti* is similar to that of *P. ptarmicae* Hering, 1937. *P. tanaceti* is, however, distinguished from the allied species by the following points: the second antennal segment is brownish black; the hypophalli bend at the middle (at the distal 2/3 in *P. ptarmicae*); the paramesophallus is shorter than the length of the hypophallus above its anterior projection (Fig. 61). This species is known as a leaf miner of *Achillea* and *Tanacetum* (Asteraceae) in Europe (Spencer, 1976).

20. *Phytomyza wahlgreni* Rydén, 1944 (Figs. 64–65)

Phytomyza wahlgreni: Spencer, 1976: 527; Spencer and Steyskal, 1986: 195, 322; Sasakawa, 1986: 170.

Phytomyza taraxacocecis: Griffiths, 1964: 410, 432.



Figs. 61–65. Male genitalia. 61–63, *Phytomyza tanaceti*, Urup (UR-95-MO-067) [gen. no. 363]. 64–65. *Phytomyza wahlgreni*, Yankicha I., Ushishir Arch. (US-95-MO-040) [gen. no. 364]. 61, 64, aedeagus, left lateral view; 62, meso- and distiphallus, anteroventral view (direction shown by arrow in fig. 61); 63, 65, ejaculatory apodeme.

Material examined. **Kuril Islands.** Paramushir, 1♀, 5. VIII. 1997 (PA-97-MO-007A*); Kharimkotan, 4♂♂ 3♀♀, Severgine Bay, inland 200 m from beach, 8. VIII. 1996 (KH-96-MO-027); Shiashkotan, 4♂♂ 1♀, inland from Zakatnaya Bay, 11. VIII. 1996 (SA-96-MO-033B); Raikoke, 8♂♂ 4♀♀, inland from small unnamed bay on east side of island, 13. VIII. 1996 (RK-96-MO-041A); Ushishir Arch., Yankicha I., inland environs of Kraternaya Bay, 5♂♂ 3♀♀, 14. VIII. 1995 (US-95-MO-015), 1♂, 20. VIII. 1995 (US-95-MO-040); Simushir, 1♂, 10. VIII. 1995 (SI-95-MO-010*), 1♂, inland coastal margin of Malaya Bay, 18. VIII. 1995 (SI-95-MO-033B).

Europe. Czech Republic: Bohemia, České Meziříčí, Zbytoka, 1♂ 1♀, 5. VI. 1996 (B. Mocek); Vráz u Písku, 1♂, 1. VI. 1996 (M. Barták). Lithuania: Čižiunai, Trakai distr., 1♀, 2. VII. 1987 (S. Pakalniškis); Merkinė, Varėna distr., 1♂, 15. VI. 1986 (S. Pakalniškis).

Distribution. Holarctic. Widespread throughout Europe, North America (Spencer and Steyskal, 1986), China (Xinjiang) (Sasa-

kawa, 1986), Kuril Islands (Paramushir, Kharimkotan, Shiashkotan, Raikoke, Ushishir Arch. (Yankicha I.), Simushir). New to Kuril Islands.

Remarks. This species is widely distributed throughout northern to middle Kurils. It is a member of the *P. robustella* group and causes a gall-like swelling on the mid rib of leaves of *Taraxacum* spp. (Hering, 1949). *Taraxacum shikotanense,* a dominant species of the seashore and the lowlands of many islands (H. Takahashi, pers. comm.), may be one of the host plants in the Kuril Islands.

21. *Phytomyza nigroorbitalis* Rydén, 1956
(Figs. 66–68)

Phytomyza nigroorbitalis: Spencer, 1976: 458; Sasakawa, 1986: 169.

Material examined. **Kuril Islands.** Chirpoi, 1♂, 23. VIII. 1995 (CH-95-MO-051*); Brat Chirpoev, 1♂, 20. VIII. 1997 (BC-97-MO-038A).

Europe. Sweden: Torne Lappmark, Near Abisko, south of Lake Tornetask, 2♂♂, 13–17. VII. 1991 (M. v. Tschirnhaus).

Distribution. Europe (Sweden), China (Hebei) (Sasakawa, 1986), Kuril Islands (Chirpoi, Brat Chirpoev). New to Kuril Islands.

Remarks. The male genitalia of this species are distinct in having a well-pigmented flap above the mesophallus. A pair of unpigmented lobes (?hypophallus) are present below the distal ends of the arms of the basiphallus. In addition, the right arm of the basiphallus has an unpigmented lateroventral lobe (Fig. 66). In the type locality (Sweden), adult flies were caught on a presumed host, *Pedicularis lapponica* (cf. Spencer, 1976). Some species of *Pedicularis* were recognized at the collecting sites (H. Takahashi, pers. comm.): *Pedicularis chamissonis* (Chirpoi and Brat Chirpoev), *P. schistostegia* and *P. labradorica* (Chirpoi). These may be host plants of the Kuril agromyzid species.

22. *Phytomyza affinis* Fallén, 1823
(Figs. 69–70)

Phytomyza affinis: Spencer, 1976: 369.

Material examined. **Kuril Islands.** Raikoke, 2♂♂ 1♀, inland 200 m from small, unnamed bay on east side of Island, 13. VIII. 1996 (RK-96-MO-041); Matua, 1♀, 15. VIII. 1996 (MA-96-MO-042B), 1♂, 15. VIII. 1996 (MA-96-MO-046).

Description. Male. Arms of basiphallus broadly connected with each other basally; unpigmented loop (?hypophallus) arising from distal end of each arm of basiphallus; mesophallus weakly pigmented, with unpigmented dorsal lobe; paramesophallus well pigmented, distally bifurcate with upper lobe short, lower long and extending near sclerite of distiphallus; distiphallus represented by piece of pigmented sclerite.

Distribution. Europe (widespread), Kuril Islands (Raikoke, Matua). New to Kuril Islands.

Remarks. This species is known as seed feeder of *Euphrasia* (Scrophlariaceae) in Europe (Spencer, 1976). The following two species of *Euphrasia* were recognized in the collecting sites (H. Takahashi, pers. comm.) and presumed to be host plants: *Euphrasia mollis* (in all the localities of the fly species) and *Euphrasia* sp. (MA-96-MO-042B & 046).

23. *Phytomyza hirta* Rydén, 1957
(Figs. 71–74)

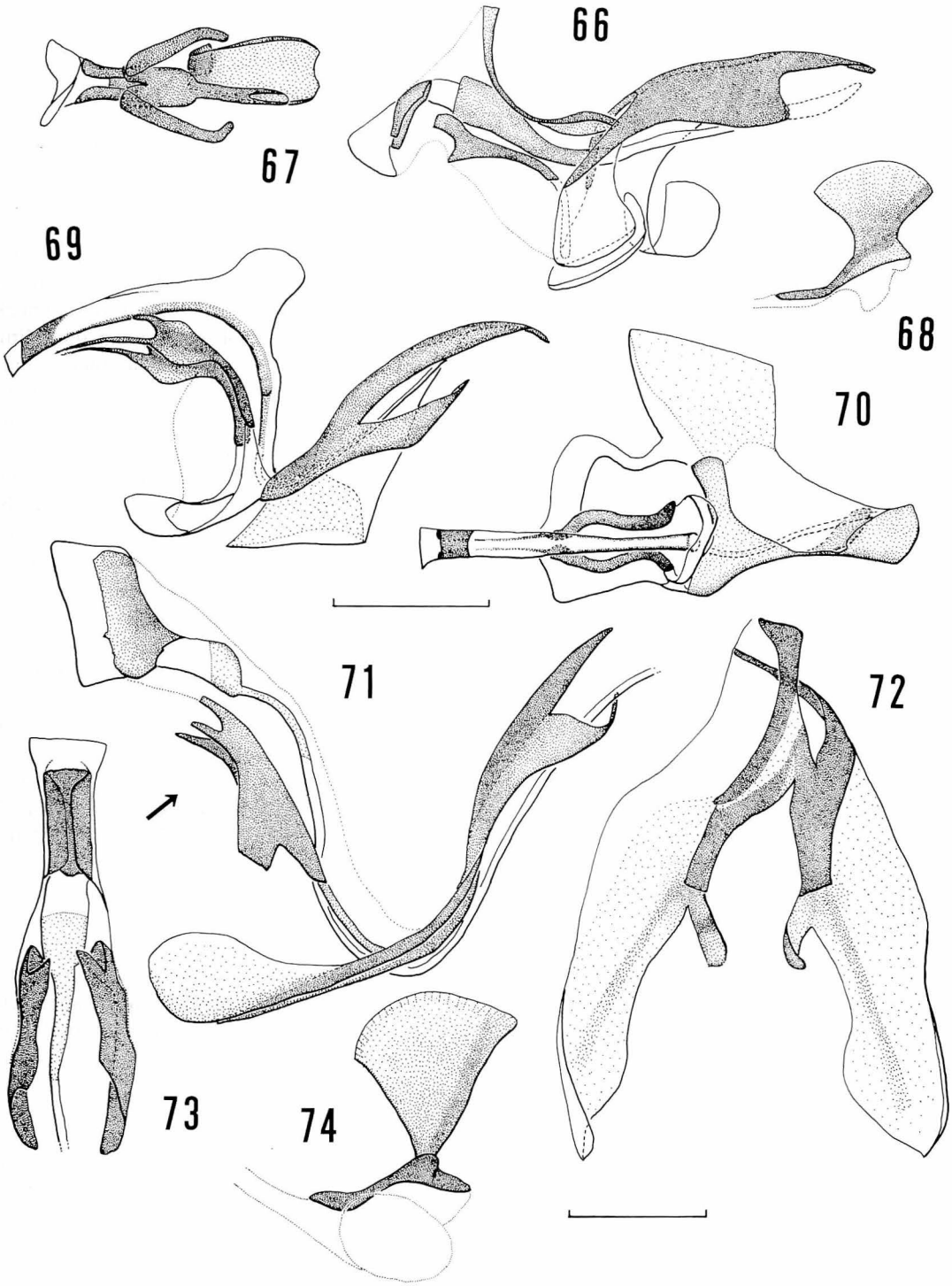
Phytomyza hirta: Spencer, 1976: 430.

Material examined. **Kuril Islands.** Paramushir, 1♂, inland 200 m from shore, 1. VIII. 1996 (PA-96-MO-002B).

Description. Male. Surstylus not separated from epandrium, setose inside; cercus small; aedeagus (figs. 71–73) similar to that of *P. dasyops* Hendel: arms of basiphallus fused basally, with broad lateroventral lobes (?hypophalli); mesophallus connected with distiphallus, broadly unpigmented and only weakly pigmented basally; distiphallus represented by piece of well pigmented sclerite, which is anteriorly opened; paramesophallus large, distally bifurcate and well pigmented; pair of weakly pigmented bands (V-shaped process) bridging apices of arms of basiphallus and bases of paramesophalli.

Distribution. Europe (Norway), Kuril Islands (Paramushir). New to Kuril Islands.

Remarks. The Kuril material agrees well with the redescription of *Phytomyza hirta* Rydén, 1957, given by Spencer (1976) in the



Figs. 66–74. Male genitalia. 66–68, *Phytomyza nigroorbitalis,* Chirpoi (CH-95-MO-051) [gen. no. 365]. 69–70, *Phytomyza affinis,* Raikoke (RK-96-MO-041) [gen. no. 399]. 71–74, *Phytomyza hirta,* Paramushir (PA-96-MO-002B) [gen. no. 395]. 66, 69, 71, aedeagus, left lateral view; 67, meso- and distiphallus, ventral view; 68, 74, ejaculatory apodeme; 70, aedeagus, dorsal view; 72, basiphallus, anterodorsal view; 73, meso- and distiphallus, anteroventral view (direction shown by arrow in fig. 71).

combination of the following characters: eye short, pubescent; *acr* in four rows; parafrontalia darkened above upper *ori*; third antennal segment brown; palpus yellow; fore coxa yellow. *P. hirta* was originally described from a single female specimen collected in Norway, and no additional records have been made.

Judging from the similarity of the male genitalia, this species is closely related to *Phytomyza dasyops* Hendel, 1920, as suggested by Spencer (1976). It is also probable that this species, and *P. dasyops*, may be related to Scrophulariaceae feeders such as *P. tenella, P. affinis*, and others in having the following points: hypophallus absent, or broadly connected with basiphallus as weakly pigmented or unpigmented lobe; paramesophallus present, well pigmented and distally bifurcate; distiphallus not divided into tubules, represented by a well-pigmented sclerite opening either anteriorly or ventrally.

Four species of Scrophulariaceae were recognized at the collecting site (H. Takahashi, pers. comm.): *Euphrasia mollis, Pedicularis chamissonis, Veronica americana*, and *V. stelleri*. These may be host plants of the flies.

24. *Phytomyza kurilensis* n.sp.
(Figs. 75–78)

Material examined. **Kuril Islands.** Paramushir, ♂ (holotype), 4 km north of Severo-Kuril'sk, alt. 100 m, 24. VII. 1997 (A. Saito); 2♂ (paratypes), same data as the holotype.

The holotype is deposited in the Institute of Biology and Soil Science, Far Eastern Branch of Russian Academy of Sciences, Vladivostok. The paratypes are deposited in the collection of CBM (CBM-ZI 83216) and of Laboratory of Systematic Entomology, Hokkaido University, Sapporo.

Description. Male. Head mainly yellow, and blackish on postgena except on lower margin, occiput and ocellar triangle; occiput with black area reaching eye margin beyond base of *vte*; 1st antennal segment yellow, 2nd brownish yellow and 3rd black; palpus brownish yellow; *vte* situated on black ground; *vti* on yellow ground.

Thorax brownish black, densely gray-dusted. Side of thorax black with mesopleural suture and base of wing yellowish.

Legs black; fore coxa yellow on ventral half of anterior surface; all femora narrowly yellow on apical area as long as the femur-width. Wing hyaline; halter pale yellow; squama and its fringe white.

Abdomen brownish black; 2nd to 5th tergites narrowly yellow along caudal margins; epandrium dark brown, cercus brownish yellow.

Head in profile with parafrontalia not projecting above eye, distinctly projecting in front of eye at level of antennal base; cheek broad, nearly 1/3 height of gena including cheek; eye bare; 3rd antennal segment somewhat quadrate, slightly longer than wide, minutely pubescent; parafrontalia with 2 *ors* and 2 or 3 *ori*; *ors* and 1st *ori* equal in length; lower *ori* short; *ors* directing upward, *ori* inward; orbital setulae in row; frons 2.33–2.52 (mean: 2.4, n=3) times as wide as eye; gena including cheek 0.56–0.60 (n=2) times as high as eye.

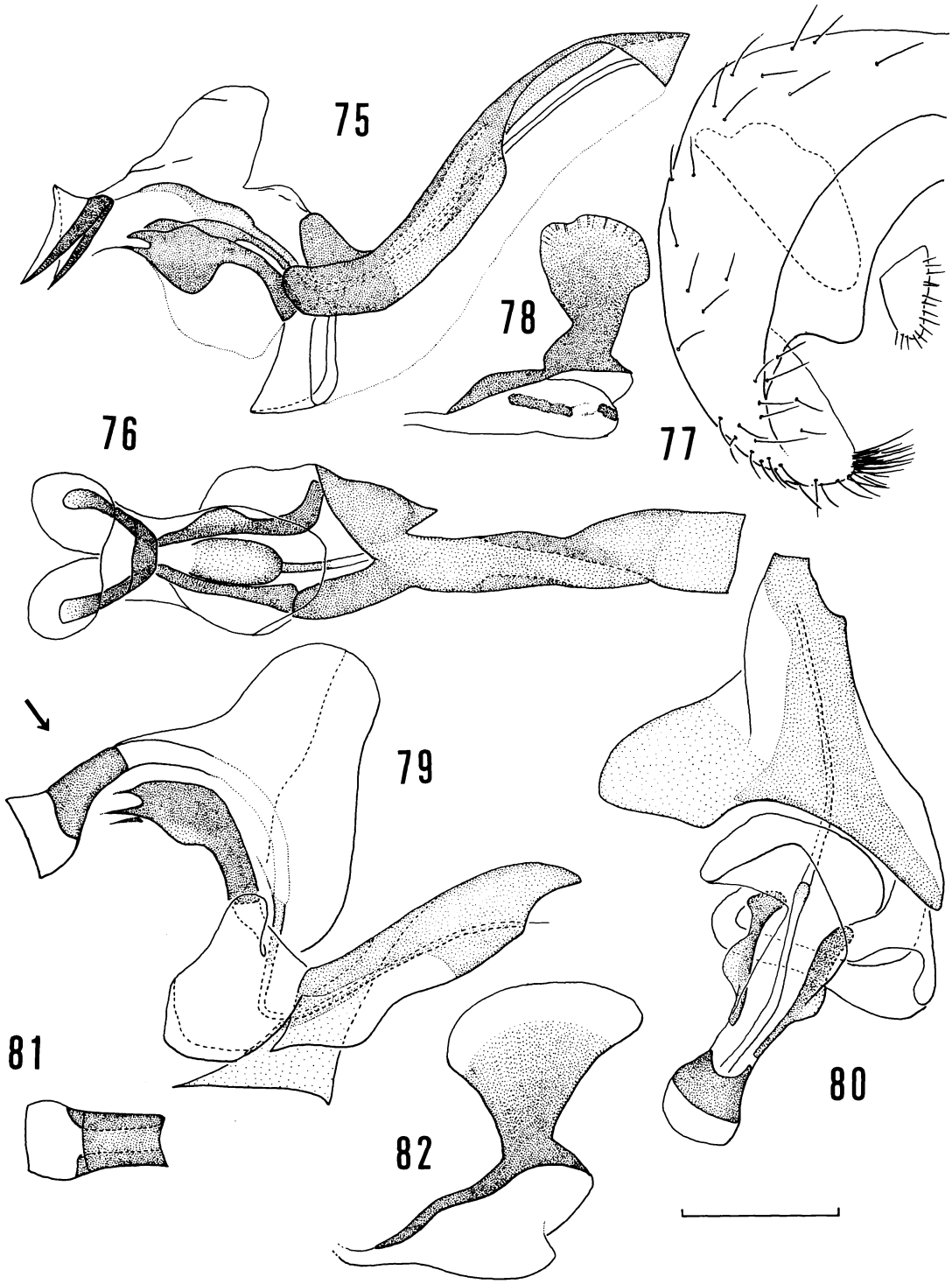
Mesonotum with 3+1 *dc*; 4th *dc* situated before level of *prs*; 3rd *dc* just behind transverse suture; 2nd *dc* at level of *sa*; 1st *dc* at level of *opa*; *acr* in 2 rows before and behind suture, ending just behind level of 2nd *dc*; intra-alar area with 1–2 setulae behind suture; humerus with 4 setulae; wing without cross vein m-m; costa ending at end of R4+5; 2nd costal section 1.80–2.16 (mean: 2.00, n=3) times as long as 4th.

Surstylus not separated from epandrium, setose inside; cercus small (Fig. 77); basiphallus with arms scarcely separated except on distal end; hypophallus absent or represented by unpigmented ventral loop; mesophallus pigmented dorsally, with an unpigmented dorsal lobe; distiphallus, as in species connected with plants of Scrophlariaceae, represented by piece of well pigmented sclerite, which is diverging lateroventrally and forming V-shape; paramesophallus large, distally bifurcate and well pigmented (Figs. 75, 76).

Wing length 2.21–2.50 mm (mean: 2.34 mm, n=3) (2.50 mm in the holotype).

Distribution. Kuril Islands (Paramushir).

Remarks. This new species is superficially similar to *P. tenella* Meigen, 1830 and *Phytomyza* sp. 1. This species is, however, distinct from them in being yellow on the first antennal segment and the base of the *vti*, and



Figs. 75–82. Male genitalia. 75–78, *Phytomyza kurilensis* n. sp., Paramushir (holotype) [gen. no. 451]. 79–82, *Phytomyza* sp. 1, Urup (UR-95-MO-004) [gen. no. 370]. 75, 79, aedeagus, left lateral view; 76, 80, same, dorsal view; 77, epandrium, posterior view (left half); 78, 82, ejaculatory apodeme; 81, distiphallus, anterodorsal view (direction shown by arrow in fig. 79).

being darker on the abdominal tergites. The male genitalia are also distinctly different.

25. *Phytomyza* sp. 1
(Figs. 79–82)

Material examined. **Kuril Islands.** Urup, 1♂ 3♀♀, inland coastal hills in Otkrytyi Bay, 5. VIII. 1995 (UR-95-MO-004).

Description. Male. Genitalia as in Figs. 79–82. Arms of basiphallus broadly connected with each other; unpigmented loop (?hypophallus) arising from distal ends of arms of basiphallus; mesophallus unpigmented and weakly differentiated, with unpigmented dorsal lobe; paramesophallus large, distally bifurcate and strongly pigmented; distiphallus represented by piece of well pigmented sclerite.

Wing length: 2.52 mm in male (n=1), 2.52–2.88 mm (mean: 2.68 mm, n=3) in female.

Remarks. In most external features, this species is similar to *P. tenella* Meigen, with a difference only in the larger distiphallus of the male genitalia. Further comparison based on more material is necessary to decide their distinctness. As with *P. tenella*, this species may feed on plants of Scrophulariaceae.

26. *Phytomyza* sp. 2

Remarks. This species belongs to the *albiceps* group. It will be described together with some other related species in another paper.

Distribution. Kuril Islands (Shumshu, Paramushir, Alaid, Antsiferova, Shiashkotan, Ekarma, Chirinkotan, Raikoke, Matua, Ushishir Arch. (Ryponkicha I., Yankicha I.), Ketoi, Simushir). Japan (Hokkaido).

27. *Phytomyza ranunculi* (Schrank, 1803)

Phytomyza ranunculi: Hendel, 1935: 463; Kato, 1950: 1676; Spencer, 1976: 480.

Material examined. **Kuril Islands.** Paramushir, 1♀, Shelekhovo-Shimoyur River, alt. 0–100 m, 7. VII. 1997 (A. Saito), CBM-ZI 83217.

Distribution. Holarctic, known also from Kamchatka (Hendel, 1935), Japan (Hokkaido and Honshu) (Kato, 1950), Kuril Islands (Paramushir). New to Kuril Islands.

Key to the Species of *Phytomyza* and *Chromatomyia* Known from Kuril Islands

Males

1. Notopleuron and humerus largely yellowish white 2
— Notopleuron and humerus largely black 4
2. Mesonotum with black vittae, and not entirely black ..... *Phytomyza ranunculi* (Schrank)
— Mesonotum entirely black 3
3. Second costal section 2.5–3 times longer than 4th ..... *P. tanaceti* Hendel
— Second costal section more than 3 times longer than 4th ..... *P.* sp. 2
4. Acr absent ..... *Chromatomyia horticola* (Goureau)
— Acr in 4 rows 5
— Acr in 2 rows 6
5. Palpus yellowish brown; 3rd antennal segment brown ..... *P. hirta* Rydén
— Palpus and 3rd antennal segment black ..... *P. wahlgreni* Rydén
6. Head black to dark brown; fore coxa entirely black 7
Head partly yellow; fore coxa partly paler 8
7. Eye densely pubescent; aedeagus as in Fig. 58 ..... *C. nigra* (Meigen)
— Eye bare; aedeagus as in Fig. 59 ..... *C. furcata* Griffiths
8. Parafrontalia entirely yellow. 9
— Parafrontalia black above lower ors ..... *P. nigroorbitalis* Rydén
9. Distal end of paramesophallus bifurcate, with ventral lobe very long, much exceeding dorsal one ..... *P. affinis* Fallén
— Distal end of paramesophallus with dorsal and ventral lobes nearly equal in length 10
10. Aedeagus as in Fig. 79: distiphallus broadened distally in lateral view ..... P. sp. 1
— Aedeagus as in Fig. 75: distiphallus not broadened distally in lateral view ..... *P. kurilensis* n. sp.

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References

Griffiths, G. C. D. 1964. The Agromyzid fauna of Iceland and the Faroes, with appendices on the *Phytomyza milii* and *robustella* Groups (Diptera, Agromyzidae). Ent. Meddr. 32: 393–450.

Griffiths, G. C. D. 1980. Studies on boreal Agromyzidae (Diptera). XIV. *Chromatomyia miners* on Monocotyledones. Ent. Scand. Suppl. 13: 1–61.

Hendel, F. 1931–36. 59. Agromyzidae. *In* Lindner, E. (ed.), Die Fliegen palaearkt. Reg. 6(2). 570 pp. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.

Hering, E. M. 1949. Neue palaearktische Agromyziden. Notul. Ent. 29: 18–32.

Kato, S. 1950. *Phytomyza ranunculi* (Schrank). *In* Ishii, T. *et al.* (eds.), Iconographia Insectrum Japonicorum 2nd edition, p. 1676. Hokuryukan, Tokyo. (in Japanese)

Nowakowski, J. T. 1973. Monographie der eruopäischen Arten der Gattung *Cerodontha* Rond. (Diptera, Agromyzidae). Ann. Zool., Warsz. 31: 1–327.

Sasakawa, M. 1955. New Agromyzidae from Japan X. Species of the genus *Phytobia*. Sci. Rep. Saikyo Univ., Agric. 7: 62–72.

Sasakawa, M. 1958. The female terminalia of the Agromyzidae, with description of a new genus (I). Sci. Rep. Saikyo Univ., Agric. 10: 133–150.

Sasakawa, M. 1961. Three Agromyzids from the Kurile Islands (Diptera). Insecta Matsum. 24: 124.

Sasakawa, M. 1986. Chinese Agromyzidae (Diptera) in Institute of Zoology, Academia Sinica. Entomotaxonomia 8: 163–172.

Sasakawa, M. 1993. Notes on the Japanese Agromyzidae (Diptera), 1. Jpn. J. Ent. 61: 149–155.

Sasakawa, M. 1997. Lauxaniidae and Agromyzidae (Diptera) of the Ryukyus. Esakia 37: 141–148.

Sasakawa, M. and T. Matsumura. 1998. Agromyzidae (Diptera) in Insect Museum, National Institute of Agro-Environmental Sciences, with the description of seven new species. Bull. Natn. Inst. Agro-Environ. Sci. 13: 1–17.

Spencer, K. A. 1969. The Agromyzidae of Canada and Alaska. Mem. Ent. Soc. Can. 64: 1–331.

Spencer, K. A. 1976. The Agromyzidae (Diptera) of Fennoscandia and Denmark. Fauna Ent. Scand. 5(1): 1–304, 5(2): 305–606.

Spencer, K. A. 1990. Host specialization in the world Agromyzidae (Diptera). Series Ent. 45. xii +444 pp. Kluwer Academic Publishers, Dordrecht.

Spencer, K. A. and G. C. Steyskal. 1986. Manual of Agromyzidae (Diptera) of the United States. U. S. Department of Agriculture, Agriculture Handbook No. 638. 478 pp. U. S. Government Printing Office, Washington, D. C.

Zlobin, V. V. 1994. Review of mining flies of the genus *Napomyza* Westwood (Diptera: Agromyzidae). IV. Palaearctic species of *lateralis*-group. Dipterological Res. 5: 39–78.

千島列島のハモグリバエ（昆虫綱：双翅目）

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千島列島から採集されたハモグリバエを調査した結果，既に報告のある 3 種を含めると 9 属 27 種が確認された．この内，22 種は千島列島新記録であり，*Aulagromyza paramushirensis* および *Phytomyza kurilensis* は新種として記載された．これにより，千島列島のハモグリバエ相は，現状では完北区に分布する 8 種，旧北区に分布する 9 種，極東に分布する 5 種から構成される．残る 5 種については本報では種までの同定に至らなかった．*Phytoliriomyza dorsata* (Siebke, 1864) および *Liriomyza flaveola* (Fallén, 1823) は，

千島列島の南に隣接する北海道からも初めて記録された．千島列島のハモグリバエ相の特徴として，完北区に広く分布する8種の内7種について隣接する北海道にも分布が確認されているのに対し，既知の分布が旧北区に限られる9種については，南千島から認められた *Melanagromyza pubescens* Hendel, 1923 および *Liriomyza flaveola* の2種のみが北海道から認められているという点があげられる．この分布パターンは，千島列島のハモグリバエ相に関して北方からの要素が優先していることを示唆している．千島列島産の *Chromatomyia* 属および *Phytomyza* 属のあわせて12種に対して，外部形態と雄交尾器に基づく検索表を提示した．

Appendix

Details of the collecting sites.

AN-97-MO-028B: Antsiferova, inland from near Vydar Rock.

BC-97-MO-038A: Brat Chirpoev, inland from near Cape Garovnikova and Lev Rock.

CH-95-MO-051: Chirpoi, inland coastal margin of Peschanaya Bay.

IT-97-BKU-019: Iturp, eastern side of Chirip Peninsula, inland coastal margin of Konservnaya Bay, Malaise Trap (left overnight), (B. K. Urbain).

KE-95-MO-023: Ketoi, inland coastal margin just east of Cape Storozheva.

PA-97-MO-007: Paramushir, inland from Severo-Kuril'sk by road, along eastern slope of Ebeko Volcano.

PA-97-MO-025A: Paramushir, inland from Shelekhova Bay.

SI-95-MO-010: Simushir, inland coastal margin of Milna Cove in Kitoboynaya Bay.

SI-95-MO-011: Simushir, inland coastal margin of Milna Cove in Kitoboynaya Bay.

UR-95-MO-067: Urup, inland coastal margin of Barkhatny Bay.

US-97-MO-002: Ushishir Arch., Yankicha Island, inland environs of Kraternaya Bay, slope of Mt. Kraternaya.