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# A REVISION OF POLYNESIAN AGROMYZIDAE (Diptera)[1]

By Mitsuhiro Sasakawa[2]

BERNICE P. BISHOP MUSEUM, HONOLULU, HAWAII

*Abstract*: Twenty-four species of Agromyzidae are recorded from the Polynesian Subregion. Seven are new to science: *Melanagromyza bryani* (Samoa), *M. fijiana* (Fiji), *M. momordiae* (Samoa), *M. spenceri* (Samoa), *M. sporoboli* (Samoa), *Phytoliriomyza tahitiensis* (Tahiti), and *Pseudonapomyza dilatata* (Samoa). The ♂ terminalia of *Ophiomyia marquesana* (Malloch), n. comb. are illustrated for the first time.

This paper is a revision of the Polynesian Agromyzidae, based on the specimens at Bishop Museum. The scope of this paper includes the Polynesian Subregion (Eastern Melanesia, Central Polynesia and Southeastern Polynesia subdivisions) in Gressitt's zoogeographic sense (1956, Systematic Zool. **5**: 11) and Micronesia is not treated here.

So far 13 species have been recorded from Polynesia by Bezzi (1928), Malloch (1935) and Spencer (1962). Seven new and four newly recorded species are described herein and their distribution is shown in the table. The type specimens of the new species are deposited in Bishop Museum.

In Polynesia agromyzid flies are weakly represented. Many species belong to the genus *Melanagromyza*, as in Micronesia and the Oriental Region. In Fiji and Samoa about one-half of the species are of wide Oriental distribution and also occur in Micronesia.

Abbreviations for bristles used in this paper are as follows: *acr*: acrostichal; 1.–4. *dc*: 1st–4th dorso-centrals; *h*: humeral; *ia*: intra-alar; *ipa* & *opa*: inner and outer post-alars; *nsm*: marginal on sternite 9; *oc*: ocellar; *oh*: orbital; 1.–4. *ori* & 1.–2. *ors*: 1st–4th lower and 1st–2nd upper fronto-orbitals; *pm*: peristomal; *prs*: presutural; *prsc*: prescutellar; *sa*: supra-alar; *sp*: sternopleural; *ts*: tactile sensillae on ♀ cercus; *vi*: vibrissa.

I wish to express my cordial thanks to Dr. J. L. Gressitt, who kindly provided me the opportunity to study the material, and to Mr. K. A. Spencer for valuable information on the Fijian agromyzids preserved in the British Museum. I am indebted to Dr. G. Steyskal

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2. Permanent address: Entomological Laboratory, Kyoto Prefectural University, Kyoto, Japan.

Distributional list of Polynesian Agromyzidae

| Species \ Subdivisions | E. Melanesia | | Central Polynesia | | | | | SE Polynesia | | | | | | Other localities |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | New Hebrides | Fiji | Tonga | Samoa | Tokelau | Ellice | Phoenix | Marquesas | Society | Tuamotu | Austral | Mangareva | Micronesia | |
| Agromyzinae | | | | | | | | | | | | | | |
| 1. Japanagromyza duchesneae | × | | | | | | | | | | | | | Japan |
| 2. J. trifida | × | | | | | | | | | | | | | |
| 3. Melanagromyza atomella | × | | | | | | | | | | | | × | Oriental, Australian, Japan |
| 4. M. albisquama | | × | × | × | | | | | | | | | × | Ethiopian, Oriental, Australian |
| 5. M. alysicarpi | | × | | | | | | | | | | | | |
| 6. M. bryani* | | | | × | | | | | | | | | | |
| 7. M. conspicua | × | | | | | | | | | | | | | Oriental, Papuan |
| 8. M. fijiana* | | × | | | | | | | | | | | | |
| 9. M. ipomoeavora | | | | × | | | | | | | | | × | |
| 10. M. metallica | × | | | | | | | | | | | | × | Ethiopian, Oriental, Australian |
| 11. M. momordicae* | | | | × | | | | | | | | | | |
| 12. M. phaseoli | × | × | | × | | | | | | | | | × | Ethiopian, Oriental, Australian |
| 13. M. sojae | | × | | × | | | | | | | | | × | 〃 〃 〃 |
| 14. M. spenceri* | | | | × | | | | | | | | | | |
| 15. M. sporoboli* | | | | × | | | | | | | | | | |
| 16. Ophiomyia cornuta | | × | | × | × | × | × | | × | × | × | | × | Oriental |
| 17. O. lantanae | | × | × | × | | | | | × | | | | × | Ethiopian, Oriental, Australian, Neotropical |
| 18. O. marquesana | | | | | | | | × | | | | | | |
| Phytomyzinae | | | | | | | | | | | | | | |
| 19. Phytobia piliseta | | | | × | | | | | | | | | × | Ethiopian, Oriental, Palearctic, Papuan |
| 20. P. humeralis | | × | | | | | | | | | | | × | Cosmopolitan |
| 21. Liriomyza brassicae | | × | | | | | | | | | × | × | × | Ethiopian, Oriental, Palearctic, Nearctic, Australian |
| 22. Phytoliriomyza tahitiensis* | | | | | | | | | × | | | | | |
| 23. Pseudonapomyza dilatata* | | | | × | | | | | | | | | | |
| 24. P. spicata | | × | | × | | | | | | | | | × | Oriental, Australian |

* Described as new.

for the loan of paratypes of *Melanagromyza marquesana* Malloch to complete my knowledge of the Polynesian fauna. My thanks also to Miss M. Neal for identifying the host plants.

## Key to Polynesian genera

1. Subcosta developed throughout its length, coalescing with $R_1$ bsfore reaching costa ... 2
   Subcosta becoming a fold distally and ending in costa basad of $R_1$ ..... 4
2. Prescutellar bristles present ..... **Japanagromyza**

Prescutellar bristle absent ..... 3
3. Carina narrow ..... **Melanagromyza**
Carina fusiformally prominent ..... **Ophiomyia**
4. Orbital hairs erect or reclinate ..... 5
Orbital hairs proclinate ..... **Phytoliriomyza**
5. Costa reaching $M_{1+2}$ ..... 6
Costa reaching $R_{4+5}$ ..... **Pseudonapomyza**
6. Scutellum black ..... **Phytobia**
Scutellum yellow ..... **Liriomyza**

## Genus **Japanagromyza** Sasakawa

### 1. **Japanagromyza duchesneae** (Sasakawa)

*Agromyza duchesneae* Sasak., 1954, Sci. Rep. Saikyo Univ. Agr. **6**: 106.

DISTRIBUTION: Japan, New Hebrides (new record).

NEW HEBRIDES: 1 ♂, N of Maat, 100 m, limestone plateau, Efate I. (NW), 20. VIII. 1957, J. L. Gressitt.

The general structures of this species are similar to *J. variihalterata* (Malloch), known from the Oriental Region, Japan and Micronesia. But the ♂ and ♀ terminalia, and the larval characters are quite different from each other (Pacific Ins. **3**: 332–36, 1961).

This is an interesting record of the species from New Hebrides, as it has been known as a leaf-miner on *Duchesnea indica* Fock. from Japan.

### 2. **Japanagromyza trifida** Spencer

*Japanagromyza trifida* Sp., 1962, Pacific Ins. **4**: 653 (New Hebrides: Efate I.).

DISTRIBUTION: New Hebrides.

This species distinctly differs from *J. duchesneae* in the entirely yellow knob of the halter, rather distinctly pubescent arista, narrower gena (1/13 eye height, not 1/7 as described by Spencer), elongated cercus, single tubular endophallus and spatulate ejaculatory apodeme of the ♂ terminalia.

## Genus **Melanagromyza** Hendel

### Key to Polynesian species of Melanagromyza

1 (2). Fringe on calypter white or yellowish ..... 2
Fringe on calypter brown or black ..... 7
2 (1). Mesonotum shiny black ..... 3
Mesonotum distinctly greenish or bluish ..... 4
3 (2). Knob of halter yellowish brown apically; abdomen reddish ..... **fijiana***
Halter entirely brownish black; abdomen greenish ..... **sojae**
4 (2). Mesonotum greenish ..... 5
Mesonotum bluish ..... 6
5 (4). Eye entirely bare; wing length 1.8–2.15 mm ..... **albisquama**
Eye in ♂ with a distinct patch of minute hairs; wing length 2.2–2.4 mm... **metallica**

6 (4). Head brown; gena 1/7 eye height; mid tibia with 2 bristles..... **sporoboli***
Head black; gena 1/13 eye height; mid tibia with 3 bristles..... **bryani***
7 (1). Ocellar triangle shiny black, long and narrow ..... **phaseoli**
Ocellar triangle less shiny, shorter..... 8
8 (7). Mid tibia without or with 1 bristle..... 9
Mid tibia with 2 bristles..... 12
9 (8). Antennal segment 3 minutely pilose..... 10
Antennal segment 3 conspicuously pilose ..... 11
10 (9). Mid tibia with a fine, short bristle ..... **atomella**
Mid tibia without bristle ..... **alysicarpi**
11 (9). Arista microscopically pubescent ..... **conspicua**
Arista with distinctly long pubescence..... **momordicae***
12 (8). Mesonotum shiny black ..... **spenceri***
Mesonotum shining bluish or greenish ..... **ipomoeavora**

### 3. **Melanagromyza atomella** (Malloch)

*Agromyza atomella* Mall., 1914, Ann. Hist.-Nat. Mus. Hung. **12**: 331.

DISTRIBUTION: India, Ceylon, Japan, Taiwan, Philippines, Indonesia, Micronesia (Mariana), New Guinea, New Hebrides (new record), Australia.

NEW HEBRIDES: 1 ♀, Luganville, Espiritu Santo I., 20. VII. 1958, B. Malkin; 1♀, Maat (Mat, Ambryn Vill.), 3 m, Efate I. (NW), 21. VIII. 1957, J. L. Gressitt.

This is a polyphagous epidermal miner. The minute size, and short, fine mid-tibial bristle separate *atomella* from the other Polynesian species of *Melanagromyza*. The distiphallus is short and the spermatheca has a truncate proximal end.

### 4. **Melanagromyza albisquama** (Malloch)

*Agromyza albisquama* Mall., 1927, Proc. Linn. Soc. N. S. Wales **52**: 425.
*Melanagromyza leguminum* Bezzi, 1928, Dipt. Fiji Is., 166 (Fiji: Lautoka, Taviuni).

SAMOA: 1 ♀, Apia, Upolu, W. Samoa, 14. VII. 1940, O. H. Swezey; 1 ♂, 4 ♀♀, Palauli, Savaii, W. Samoa, II. 1955, N. L. H. Krauss. FIJI: 1♀, Vanua Mbalavu, 23. IX. 1924, E. H. Bryan, Jr.; 2♂♂, nr Sigatoka, Natubakula, Viti Levu, 19. IV. 1941, Krauss; 1 ♂, Yawi, Kadavu, 28. IV. 1941, Krauss; 1 ♂, Drue, Kadavu, 29. IV. 1941, Krauss; 1 ♀, Kaivala, Kadavu, 29. IV. 1941, Krauss; 1 ♂, Suva, Viti Levu, II. 1951, Krauss. TONGA: 1♀, Nukualofa, Tongatabu I., II. 1956, Krauss.

This is a common, widespread species throughout the Pacific from Africa to Australia and is new to the fauna of Central Polynesia (Tonga, Samoa).

The greenish mesonotum and abdomen, whitish fringe on the calypter and the entirely bare eye are distinctive features of this species. The ♂ terminalia differs from that of other species in the following points: the surstylus is posteriorly incised just above apex and provided with a row of 12 stout spines and the incurved distal projection is covered with many setae; the paraphallus is less sclerotized; the endophallus is narrow, tubular but strongly broadened at end and accompanied with a pair of spinose dorsal processes.

### 5. **Melanagromyza alysicarpi** Bezzi

*Melanagromyza alysicarpi* B., 1928, Dipt. Fiji Is., 165 (Fiji: Lautoka).

DISTRIBUTION: Fiji.

I have seen no type specimens of this species but examined 1 ♂ from Darwin, on *Alysicarpi vaginalis*, 1961, through the courtesy of Mr. Spencer. It may be characterized briefly as follows: Black, ocellar triangle and dorsal part of parafrontalia subshiny, thorax gray-dusted and weakly shining, abdomen shining posteriorly; wing with calypter brownish white, margin and fringe brown. Front wider than eye (25 : 18); parafrontalia not projecting above eye in profile, bearing 2 *ors* and 2 *ori*, 1. *ors* directed up- and outwards, 2. *ors* and 1. *ori* up- and slightly outwards, 2. *ori* inwards; *oh* 3 in number; gena 1/7 eye height; arista short, 2× as long as whole length of antenna, swollen on basal 1/5, microscopically pubescent. Mesonotum with 0+2 *dc*, 6 irregular rows of *acr*, *ia* about 1/2 length of 1. *dc*, *ipa* 1/4 length of *opa*. Wing with costal sections 2–4 in proportion of 74 : 25 : 20; r-m far beyond middle of discal cell (27 : 12); ultimate section of $M_{3+4}$ only slightly shorter than penultimate. Mid tibia without bristle.

**6. Melanagromyza bryani** Sasakawa, n. sp. Fig. 1.

*Female*: Head brownish black; front matt, parafrontalia except orbit and ocellar triangle strongly shiny; lunule brown, grayish pruinose; gena brown; antenna brown, segment 3 blackish distally; palpus dark brown. Thorax with mesonotum black, shining bluish; pleura brown-tinged; mesopleural suture and base of wing brown. Wing hyaline; veins pale brown; calypter yellowish white, with margin and fringe yellow to ocherous; halter brown. Legs brownish black. Abdomen strongly shining, anteriorly reddish and posteriorly bluish.

*Head*: Front wider than long, 1.5× as wide as eye; parafrontalia about 1/6 width of front, parallel-sided. Ocellar triangle large, ventrally extending to almost level of 1. *ori*, bearing 4 setulae plus *oc*. Lunule distinctly higher than semicircular, 1/2 as high as length of front, somewhat constricted at middle. First *ors* directed up- and outwards, 2. *ors* upwards; 1. *ori* up- and inwards, 2. *ori* inwards; *oh* reclinate, in 2 rows between 2. *ors* and 2. *ori*. In profile parafrontalia slightly projecting above eye; eye almost bare, height and width ratio as 40 : 29; gena about 1/13 eye height; *vi* differentiated from 6 *pm*. *Antennae* slightly separated by carina; segment 3 subspherical, as long as broad, with minute pile; arista nearly 3× as long as whole length of antenna, swollen on basal 1/6, minutely pubescent. *Thorax*: Mesonotum with 0+2 *dc*, anterior *dc* behind level of *sa*; 10–12 irregular rows of *acr*, 8 rows of them ending at level of posterior *dc*; *ipa* 1/7 length of *opa*; humerus with 8 setulae plus *h*; mesopleura with 3–6 dorsally directed setulae; sternopleura with 3 short setae before *sp*. *Wing*: Costa reaching $M_{1+2}$, with sections 2–4 in

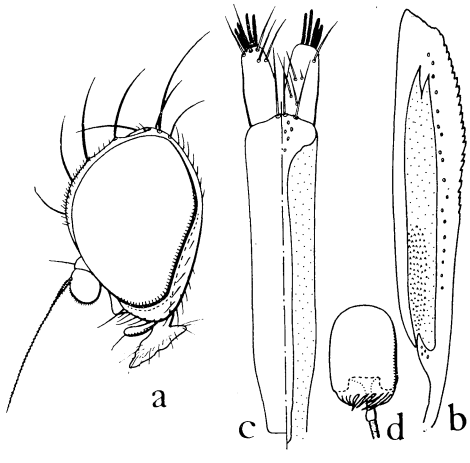


Fig. 1. *Melanagromyza bryani* Sasakawa, n. sp. a, head in profile; b, egg guide; c, tergite 9, sternite 9 and cerci; d, spermatheca.

proportion of 78 : 22 : 18; r-m far beyond middle of discal cell; m-m subequal to penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ about 3.7× as long as penultimate; ultimate section of $M_{3+4}$ about 3/5 length of penultimate. *Legs*: Mid tibia with 3 bristles, dorsal one about 1/2 length of ventral 2. *Abdomen*: Tergites with long *mar*; tergite 6 slightly longer than 5; sternite 6 as long as tergite 6, 2× as wide as long. *Terminalia*: Ovipositor sheath slightly longer than tergite 6; apodeme long, extending to posterior margin of tergite 4, strongly sclerotized at apex, pouched on anterior 1/2. Egg guide 3/4 length of apodeme of sheath, 364 μ long, with 21–23 blunt teeth of serration. Segment 9 weakly sclerotized, 298 μ long; sternite narrow, with 4 *nsm* and 10 sensillae; cercus long, with 4 *ts*. Spermathecae suboval, 72×54 to 80×56 μ; neck 32 μ long, duct 320 μ long, 8 μ in diameter; ventral receptacle of normal shape, 96 μ long. *Length*: Body 2.8 mm, wing 2.5. Male unknown.

DISTRIBUTION: Samoa.

Holotype ♀ (BISHOP 3361), Pago Pago, 166 m, Tutuila, Samoa, 9. IV. 1935, E. H. Bryan, Jr.

The shining bluish mesonotum and abdomen, dense rows of the orbital hairs and acrostichals, 3 mid-tibial bristles and the bluntly serrated egg-guides are distinctive features of this species. The species somewhat resembles *M. cleomae* Spencer in general appearance, but is distinguishable by the shining ocellar triangle, darker fringe on the calypter and paler halter, etc. It is my pleasure to dedicate this species to Mr. E. H. Bryan, Jr. who collected this interesting fly.

**7. Melanagromyza conspicua** Spencer

*Melanagromyza conspicua* Sp., 1961, Trans. R. Ent. Soc. Lond. **113**: 71; 1962, Pacific Ins. **4**: 655 (New Hebrides: Aneityum).

DISTRIBUTION: Singapore, Ceylon, Taiwan, New Guinea, New Britain, New Hebrides, Australia.

A medium-sized black species, with brownish black fringe on the calypter, projecting parafrontalia, long pile on antennal segment 3 and 1 mid-tibial bristle. The most conspicuous feature is the ♂ terminalia with the numerously spinose, large lobe of the distiphallus.

**8. Melanagromyza fijiana** Sasakawa, n. sp. Fig. 2a.

*Female*: Head black; frontalia matt, dorsal 1/2 of parafrontalia strongly shining; ocellar triangle subshiny; lunule brown; face and gena brown-tinged; antenna and palpus blackish brown. Thorax and abdomen shiny black, mesonotum slightly dusted with gray, mesopleural suture brown; abdomen with conspicuous reddish tinge; ovipositor sheath glossy black. Wing hyaline, slightly brown-tinged; veins brown; calypter whitish brown, with fringe whitish or very slightly tinged with testaceous; halter brownish black but knob yellowish brown apically. Legs black.

*Head*: Front slightly wider than long, 1.2× as wide as eye; parafrontalia 1/6 width of front, almost parallel-sided. Ocellar triangle large, ventrally extending almost to level of 1. *ori*, bearing a setula just behind *oc*. Lunule large, higher than semicircular, 1/2 as high as length of front. Parafrontalia not projecting above eye in profile, bearing 4

strong *or*; 1. *ors* directed up- and outwards, 2. *ors* and 1. *ori* up- and inwards, 2. *ori* inwards; *oh* reclinate except 3–4 proclinate hairs ventrad of 2. *ori*, in a dense row, several hairs mingled between 2. *ors* and 2. *ori*. Eye 1.4× as high as wide, with sparsely minute hairs. Gena narrow, 1/11 eye height. *Antennae* very narrowly separated by carina; segment 3 subspherical, as long as broad, with minute pile; arista 2× as long as whole length of antenna, swollen on basal 1/6, microscopically pubescent. *Thorax*: Mesonotum with 0+2 *dc*, 1. *dc* just behind level of *sa*; 11–12 rows of *acr*, 6 rows of them ending behind level of 2. *dc*; *ipa* 1/5 length of *opa*; humerus with 6 setulae plus *h*; mesopleura with 4–6 dorsally directed setulae. *Wing*: Costa reaching $M_{1+2}$, with sections 2–4 in proportion of 77 : 22 : 17; r-m beyond middle of discal cell, m-m as long as penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ 3× as long as penultimate; ultimate section of $M_{3+4}$ almost 3/4 length of penultimate (28 : 42). *Legs*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergites moderately setigerous; tergite 6 about 1.6× as long as 5; sternite 6 as long as tergite 6. *Terminalia*: Ovipositor sheath as long as tergite 6; apodeme strongly sclerotized, longer than sheath, pouched on anterior 3/4. Egg guide 400 $\mu$ long, with 30–32 teeth of serration. Segment 9 well sclerotized, spinulose on lateral membrane, tergite 344 $\mu$ long, sternite with 2 pairs of *nsm* and 9 sensillae; cercus 72 $\mu$ long, with 4 *ts*. Spermathecae oval to orbicular, partite proximally, 80×56 to 84×72 $\mu$; neck pale brown, 32–36 $\mu$ long; duct 420 $\mu$ long, 4.5 $\mu$ in diameter. Ventral receptacle of normal form, 96 $\mu$ long. *Length*: Body 3.0 mm, wing 2.65. Male unknown.

DISTRIBUTION: Fiji.

Holotype ♀ (BISHOP 3362), Kambara, Lau, 25. VIII. 1924, E. H. Bryan, Jr.; paratype ♀, Vanua Mbalavu, Lau, 24. VIII. 1924, Bryan.

This species may be easily separated from *M. sojae* (Zehntner) by the larger size, reddish abdomen, paler knob of the halter, narrower gena and the longer egg guides and segment 9.

**9. Melanagromyza ipomoeavora** Spencer Fig. 2.

*Melanagromyza ipomoeavora* Sp., 1963, Ins. Micronesia **14** (5).

DISTRIBUTION: Micronesia and Samoa (new record).

SAMOA: 2♂♂, Apia, Upolu, 14. VII. 1940, O. H. Swezey, swept on *Ipomoea pes-caprae*.

The specimens agree exactly with the holotype described from Truk Is., but the size is somewhat smaller, 1.8–2.14 mm in wing length. The mesonotum and abdomen are shining bluish or greenish. The ♂ terminalia from Upolu is illustrated in fig. 2 (b, e). Sternite 5 is somewhat trapezoidal in form and 1.3× as long as tergite 6. The epandrium is about 3/5 as long as the length of tergite 6; the surstylus is as broad as the epandrium and slightly produced posteriorly, bearing 17 long spines and 2–4 short setae; the cercus is 3/4 as high as epandrium and has 8 stout setae posteroventrally. The hypandrium is subequal to sternite 5 in length and the sidepieces are rather broad; the praegonite is small and provided with 7 sensillae. The basiphallus is rather long; the endophallus is spinose on dorsoapical part. The ejaculatory apodeme is 152 $\mu$ long and 76 $\mu$ in the greatest width.

**10. Melanagromyza metallica** (Thomson)

*Agromyza metallica* Th., 1869, Eugenies Resa. Dipt., 609.

*Melanagromyza metallica*: Spencer, 1962, Pacific Ins. **4**: 656 (New Hebrides: Vanna Lava, Malekula, Efate).

This species is widely distributed from Africa to the Pacific. The mesonotum and abdomen are shiny greenish, with varying traces of coppery coloration and the eye in the ♂ has a patch of hairs dorsoanteriorly.

**11. Melanagromyza momordicae** Sasakawa, n. sp. Fig. 3.

*Male*: Head black; frontalia matt, parafrontalia and ocellar triangle subshining; lunule, gena, antenna and palpus dark brown, arista paler. Thorax shiny, blackish brown, dusted with gray; pleura paler; abdomen strongly shining, brownish black. Wing hyaline; veins pale brown; calypter brownish gray, with margin and fringe dark brown; halter and legs dark brown.

*Head*: Front as long as wide, slightly wider than eye (15 : 12); parafrontalia relatively broad, about 1/5 width of front, parallel-sided. Ocellar triangle large, extending ventrally to level of 1. *ori*, without setula. Lunule lower than semicircular, about 1/4 as high as length of front. Parafrontalia with 4 short *or*; 1. *ors* directed up- and outwards, 2. *ors* and 1. *ori* upwards, 2 *ori* inwards; *oh* in a very sparse row. In profile parafrontalia not projecting above eye; eye height and width ratio as 23 : 16, moderately hairy on anterodorsal 1/2; gena about 1/9 eye height; *vi* long; peristome strongly curved at middle, bearing 8 short *pm*. *Antennae* approximated at base; segment 3 small, rounded at apex, with long pile; arista about 3× as long as whole length of antenna, swollen on basal 1/6, distinctly pubescent. *Thorax*: Mesonotum with 0+2 *dc*, 1. *dc* before level of *sa*; 8 rows of *acr*, 4 rows of them ending at level of 2. *dc*; *ia* subequal to *ipa*, 1/3 length of 1. *dc*, accompany-

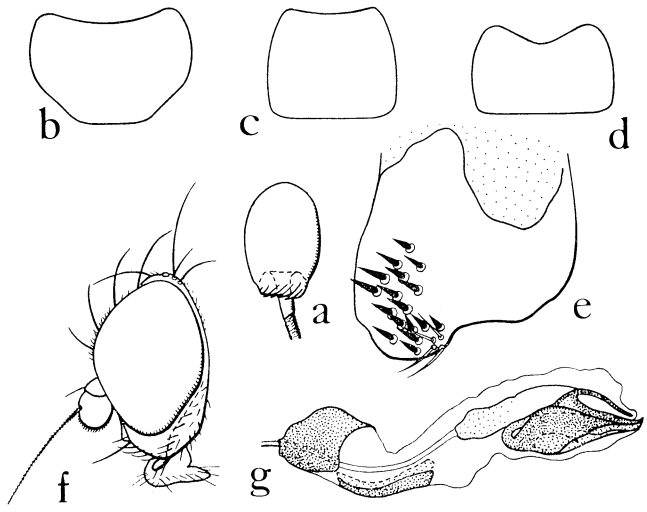


Fig. 2. a, spermatheca of *Melanagromyza fijiana* Sasakawa, n. sp.; b & e, sternite 5 and surstylus of *M. ipomoeavora* Spenc.; c, sternite 5 of *M. sojae* Zehnt.; d, f & g, sternite 5, head in profile and phallus of *M. sporoboli* Sasakawa, n. sp.

ing with about 4 rows of setulae; *ipa* 1/5 length of *opa*; humerus with 3 setulae plus *h*; mesopleura with 3 dorsally directed setulae; sternopleura with a seta and several setulae before *sp*; *as* about 2/3 length of *bs*. *Wing*: Costa reaching $M_{1+2}$, with sections 2–4 in proportion of 46 : 12.5 : 12; r-m beyond middle of discal cell; m-m subequal to penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ 4× as long as penultimate; ultimate section of $M_{3+4}$ 2/3 length of penultimate. *Legs*: Mid tibia with a strong bristle. *Abdomen*: Tergites with *mar* not differentiated; tergite 6 slightly shorter than 5; sternite 5 quadrate, about 2× as wide as long, very shallowly incised at caudal margin. *Terminalia*: Epandrium approximately 1/3 length of tergite 6, with dorsoapical part distinctly protruded; surstylus lobate, bearing 20–21 short spines and 1 seta; cercus 1/2 as high as epandrium. Hypandrium weakly sclerotized, about 2/3 length of phallapodeme, with short and narrow apodeme; praegonite with a short spine and 2 sensillae. Phallic hood spinose on lateral parts. Basi- and distiphallus weakly sclerotized, as long as hypandrium, endophallus with a pair of small, spinulose lateral processes. Ejaculatory apodeme also weakly sclerotized, 148 μ long, 64 μ in greatest width. *Length*: Body 1.65 mm, wing 1.56. Female unknown.

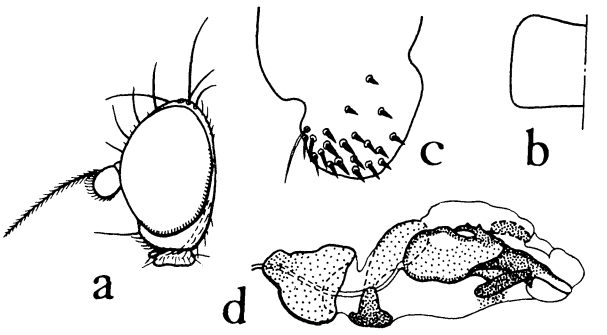


Fig. 3. *Melanagromyza momordicae* Sasakawa, n. sp. a, head in profile; b, 1/2 of sternite 5; c, surstylus; d, phallus.

DISTRIBUTION: Samoa.

Holotype ♂ (BISHOP 3363), Taputimu, Tutuila, Samoa, 14. XII. 1954, C. P. Hoyt, *ex* mines in leaf of spiny melon vine (*Momordica* sp. det. by M. Neal).

This species closely resembles *M. conspicua* Spencer, but is easily recognizable by the larger ocellar triangle, sparser row of orbital hairs, narrower gena, distinctly pubescent arista and characteristic ♂ terminalia. This is somewhat allied to *M. papuensis* Spencer in its distinctly pubescent arista, but can be easily distinguished by its smaller size and the absence of a fore-tibial bristle.

**12. Melanagromyza phaseoli** (Tryon)

*Oscinis phaseoli* Tr., 1895, Trans. Nat. Hist. Soc. Qd. **1**: 4.
*Agromyza destructor* Malloch, 1916, Proc. Ent. Soc. Wash. **18**: 93.
*Melanagromyza phaseoli* Coquillett: Bezzi, 1928, Dipt. Fiji Is., 165 (Fiji: Lautoka, Cuvu, Natova).
*Agromyza* (*Melanagromyza*) *phaseoli* Coquillett: Malloch, 1935, Ins. of Samoa **6** (9): 340 (Samoa: Apia, Upolu).

NEW HEBRIDES: 1♀, Namatasopa, 300 m, Espiritu Santo I. (SW), 29. VIII. 1957, J. L. Gressitt.

This is a bean pest and widespread throughout the Pacific, Ethiopian and Australian

Regions. The essential characteristics of this species are the shiny black mesonotum and abdomen, and shining black and narrowly elongated ocellar triangle.

**13. Melanagromyza sojae** (Zehntner)

*Agromyza sojae* Zehnt., 1900, Indische Natuur. **11**: 113.

DISTRIBUTION: Egypt, S. Africa, Ceylon, Java, Flores, Taiwan, Micronesia, New Hebrides (new record), Fiji, Samoa (new record), Australia.

NEW HEBRIDES: 1♀, N of Maat, 100 m, limestone plateau, Efate I. (NW), 20. VIII. 1957, J. L. Gressitt. SAMOA: 1♀, Apia, Upolu, W. Samoa, 3. II. 1924, J. S. Armstrong (det. by J. R. Malloch as *Agromyza phaseoli* Coq.); 1♂, Apia, Upolu, 27. V. 1924, E. H. Bryan, Jr.; 2♂♂, Fagaitua, Tutuila, E. Samoa, 9. IV. 1935, Bryan; 1♂, 2♀♀, Breaker Pt., Tutuila, 19. VIII. 1940, O. H. Swezey, on *Vigna*. FIJI: 1♂, 2♀♀, Matuka, 5–6. VII. 1924, Bryan; 1♀, Ongea, 26. VII. 1924, Bryan; 1♂, Namuka, Lau, 13. VIII. 1924, Bryan; 2♂♂, 8♀♀, Oneata, 19. VIII. 1924, Bryan; 1♀, Komo, 21. VIII. 1924, Bryan; 1♂, Tuvutha, Lau, 10. IX. 1924, Bryan; 1♂, Thithia, Lau, 15. IX. 1924, Bryan; 2♂♂, 3♀♀, Avea, Lau, 22. IX. 1924, Bryan; 1♂, Vanua Mbalavu, 23. IX. 1924, Bryan; 1♂, Kimbombo, 28. IX. 1924, Bryan; 1♀, Drue, Kadavu, 29. IV. 1941, N. L. H. Krauss; 1♂, Wai Salima, Kadavu, 30. IV. 1941, Krauss; 1♂, Suva, Viti Levu, II. 1951, Krauss.

This appears to be more widespread than other Polynesian species. One ♀ from Samoa which Malloch determined as *phaseoli* is referable to this species. These two species are the internal stem-feeders in Leguminosae, but are immediately distinguishable by the coloration of the fringe on the calypter. This species has the conspicuously rounded genae. The mesonotum is shiny black, without a trace of metallic tinge, but the abdomen is greenish. Wing length: 1.98–2.28 mm. Sternite 5 is almost quadrate (1.25–1.28× as wide as long), without a distinct caudal incision, and about 1.5× as long as tergite 6 (fig. 2c). The surstylus is usually provided with 13 (8–14) long spines and 5–6 setae and the cercus with 6–7 stout setae on the anteroventral part, differing from *ipomoeavora* Spencer and *sporoboli* Sasakawa, n. sp.

**14. Melanagromyza spenceri** Sasakawa, n. sp.

*Melanagromyza* sp., Spencer, 1962, Pacific Ins. **4**: 658.

*Female*: Head matt, black; dorsal part of parafrontalia very weakly shining; lunule and gena brown; antenna brownish black, arista brown. Thorax and abdomen shiny black, gray-dusted; pleura brown-tinged. Wing faintly fuscus; veins brown; calypter brownish white, with margin and fringe brown; halter dark brown. Legs black.

*Head*: Front wider than long, 1.3× as wide as eye; parafrontalia about 1/6 width of front, almost parallel-sided. Ocellar triangle narrowing ventrad and reaching to level of 1. *ori*; *oc* distinctly shorter than 2. *ors*. Lunule 1/2 as high as front length. In profile parafrontalia and parafacialia distinctly projecting above eye; 2 *ors* directed upwards, 2 weaker *ori* up- and inwards; *oh* rather long, in a dense row; eye height and width ratio as 48 : 38; gena 1/6 eye height; *vi* longer than 7–8 *pm*. *Antennae* approximated each other; segment 3 as long as wide, with minute pile; arista 3× as long as whole length of antenna, swollen on basal 1/5, microscopically pubescent. *Thorax*: Mesonotum with 0+2 *dc*, 1. *dc*

behind level of *sa*; 7–8 rows of *acr*, 4–5 rows of them ending at level of 2. *dc*; *ipa* 1/3 length of *opa*; mesopleura with 5 dorsally directed setulae; sternopleura with 2 setae before *sp.* *Wing*: Costa with sections 2–4 in proportion of 95 : 22 : 17; r-m beyond middle of discal cell (30 : 18); m-m equal in length to penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ about 4.3× as long as penultimate; ultimate section of $M_{3+4}$ nearly 4/5 length of penultimate. *Leg*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergite 6 slightly longer than 5. *Length*: Body 2.89 mm, wing 2.48. Male unknown.

DISTRIBUTION: Samoa.

Holotype ♀ (BISHOP 3428), Leone-Aluau Trail, Tutuila, Samoa, II. 1930, D. T. Fullaway.

This species may be separated from *M. ipomoeavora* Spenc. by the entirely shining black mesonotum, the conspicuously projecting parafrontalia and parafacialia, and the broader gena.

**15. Melanagromyza sporoboli** Sasakawa, n. sp. Fig. 2 d, f, g.

*Male*: Head with front and ocellar triangle brown, the former matt, latter and parafrontalia shiny; frontalia darkened ventrally; occiput black; lunule slightly grayish pruinose; gena brown; antenna and palpus dark brown. Thorax with mesonotum and scutellum strongly shiny bluish-black, very slightly gray-dusted; pleura brown-tinged; mesopleural suture and base of wing brown. Wing hyaline; veins brown but distinctly yellowish basally; calypter and fringe white; halter brownish black. Legs brownish black. Abdomen strongly coppery shining, anteriorly somewhat reddish.

*Head*: Front narrower than long, slightly wider than eye (17 : 13); parafrontalia 1/6 width of front, slightly narrowing ventrally. Ocellar triangle large, ventrally extending almost level of 1. *ori*, bearing 4 setulae plus *oc*. Lunule slightly higher than semicircular, nearly 1/4 as high as length of front. Parafrontalia not projecting above eye in profile, bearing 4 *or*; *ors* directed upwards, *ori* up- and inwards; *oh* minute, reclinate, in 2 rows ventrad from 2. *ors*. Eye about 1.5× as high as wide, almost bare. Gena 1/7 eye height; *vi* distinctly longer than 4 *pm*. *Antennae* approximated at base; segment 3 subspherical, with minute pile; arista about 2.5× as long as whole length of antenna, swollen on basal 1/6.5, almost bare. *Thorax*: Mesonotum with 0+2 *dc*, anterior *dc* almost on level of *sa*; 8 rows of *acr*, 6 rows of them extending posteriorly; *ia* slightly shorter than anterior *dc*; *ipa* a little longer than *acr*; humerus with 4 setulae plus *h*; mesopleura with 4 dorsally directed setulae; sternopleura with 2 setae before *sp.* *Wing*: Costa reaching $M_{1+2}$, with sections 2–4 in proportion of 57 : 14 : 11; r-m beyond middle of discal cell (17 : 12); m-m as long as penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ 4× as long as penultimate; ultimate section of $M_{3+4}$ about 2/3 length of penultimate. *Legs*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergite 6 as long as 5; sternite 5 slightly longer than tergite 6, incised on caudal 1/4. *Terminalia*: Epandrium 1/3 as long as tergite 6, slightly broadened ventrally; surstylus with 15–16 heavy spines and 4 setae; cercus with 11 stout setae posteroventrally. Hypandrium 2/3 length of phallapodeme, sidepieces broadly united with each other at base. Praegonite small, with 9 sensillae; postgonite strongly sclerotized. Distiphallus weakly sclerotized, endophallus spinose at dorsal apex. Ejaculatory apodeme 152 μ long and 76 μ in greatest width. *Length*: Body 2.24 mm, wing 1.98.

*Female*: Similar to ♂, but front, ocellar triangle and gena darker; abdomen more

reddish through all tergites; gena 1/8 eye height; tergite 6 longer than 5; body 2.28 mm, wing 2.16 mm in length.

DISTRIBUTION: Samoa and Fiji.

Holotype ♂ (BISHOP 3364), Aua, Tutuila I., Samoa, 29. VIII. 1940, O. H. Swezey, seashore, swept on *Sporobolus*. Allotype ♀ Naroi Moala I., Fiji, 25. VIII. 1938, E. C. Zimmerman, seashore, on *Sporobolus*.

This species is closely related to *M. ipomoeavora* Spencer in the color of the mesonotum and abdomen, but may easily be separated by its white fringe on the calypter and broader gena. The distiphallus of *sporoboli* is similar in form to those of *ipomoeavora* and *sojae*, but the structures of surstylus, cercus and sternite 5 are different from each other.

## Genus **Ophiomyia** Braschnikov

### KEY TO POLYNESIAN SPECIES OF OPHIOMYIA

1. ♂ with vibrissal fasciculus ..... 2
   ♂ without vibrissal fasciculus ..... **marquesana**
2. Fringe on calypter whitish ..... **cornuta**
   Fringe on calypter black ..... **lantanae**

### 16. **Ophiomyia cornuta** de Meijere

*Ophiomyia cornuta* de Meij., 1910, Tijdschr. Ent. **53**: 161.—Spencer, 1962, Pacific Ins. **4**: 658 (Ellice, Tahiti Is.).
*Ophiomyia leucolepis* Bezzi, 1928, Dipt. Fiji Is., 164 (Fiji: Cagalai).
*Ophiomyia scaevolae* Frick, 1953, Proc. Hawaii Ent. Soc. **15**: 209 (Phoenix: Canton I.).

TUAMOTU: 40♂♂, 10♀♀, Tekotika, Hao I., 19. V. 1934, E. C. Zimmerman; 3♂♂, 1♀, S. Marutea I., NW Islet, 22. V. 1934, Zimmerman. AUSTRAL: 1♀, Rautaro Islet, 19. VIII. 1934, 2 m, Zimmerman. SAMOA: 3♂♂, 3♀♀, Swains I., 20.VIII. 1940, E. C. Zimmerman, swept on *Scaevola frutescens*; 2♂♂, 1♀, Fanga, Savaii, W. Samoa, II. 1955, N. L. H. Krauss; 1♀, Tunulu, Tutuila I., E. Samoa, 7. VIII. 1940, O. H. Swezey & Zimmerman, on *Scaevola frutescens*; 1♂, Ofu, Manua Is., E. Samoa, 16. VI. 1954, C. P. Hoyt, on rocks in sea. PHOENIX: 1♀, Phoenix I., 10. III. 1924, E. H. Bryan, Jr. TOKELAU: 5♂♂, 3♀♀, Fakaofo, 5. IV. 1924, Bryan. DANGER: 1♂, 2♀♀, Notu Katava, 1. III. 1924, Bryan.

Widespread throughout the Pacific, Indonesia and the Indian Ocean. All the specimens examined except for the Phoenix specimens are new to these faunas. The larvae mine the leaves of *Scaevola frutescens* (Mill.) and *S. koenigii* Vahl.

### 17. **Ophiomyia lantanae** (Froggatt)

*Agromyza lantanae* Frog., 1919, Agr. Gaz. N. S. Wales **30**: 665.
*Ophiomyia lantanae*: Bezzi, 1928, *op. cit.*, 164 (Fiji: Buca); Spencer, 1962, *op. cit.* **4**: 659 (Tahiti).

SAMOA: 1♂, Apia, Upolu, 2. VI. 1940, E. C. Zimmerman. FIJI: 1♂, Nausori, Viti Levu, II. 1951, N. L. H. Krauss; 1♀, Rewa, Viti Levu, 4. II. 1952, J. L. Gressitt; 1♂, 1♀, Raki Raki, Viti Levu, I. 1955, Krauss; 6♀♀, Lami, Viti Levu, I. & III. 1955, Krauss; 1♀, Naqali, Viti Levu, XI. 1957, Krauss. TONGA: 2♂♂, Neiafu, Vavau I., II. 1956, Krauss. TAHITI: 1♀, NW Ridge, 800–1200 m, Mt. Aorai, 11. VII. 1961, Gressitt, on non-native vegetation.

This species is a well-known lantana seed-fly and occurs widely in the Pacific.

Two ♂♂ and 1♀ from Tahiti in the U. S. National Museum, determined as *Melanagromyza marquesana* Malloch, bearing his handwritten label as 'paratypes', are referable to this species.

**18. Ophiomyia marquesana** (Malloch), n. comb. Fig. 4.

*Melanagromyza marquesana* Malloch, 1935, Bull. Bishop Mus. **114**: 19.

I have examined the holotype which emerged from the pupa in the leaf of *Sclerotheca* (?). Malloch hesitated to place this species in the genus *Ophiomyia*, because of the absence of the vibrissal fasciculus and the facial carina being narrow. However, these characters are found in *O. aeneonitens* (Strobl) and *atralis* (Spencer). The forwardly projecting gena, narrowly elongated surstylus and weakly sclerotized phallic hood clearly place this species in that genus. I now redescribe it from a type specimen.

*Male*: Black species; anterior angle of ocellar triangle strongly shining brown, parafrontalia weakly shining; lunule and parafacialia dark brown; antennal segment 1 and gena brown; mesonotum shining but densely dusted with gray; wing hyaline, calypter yellowish gray, with margin pale brown and fringe ochreous to whitish yellow.

*Head*: Front wider than eye (28 : 22); parafrontalia 1/5 width of front; ocellar triangle rather large, well beyond mid level between 1. and 2. *ors*; lunule 1/5 as high as length of front; dorsal 1/2 of parafrontalia linearly projecting above eye in profile; 2 *ors*, 2 *ori* (not 4 as figured by Malloch, detectable from basal pits); *oh* rather long, reclinate except inwardly directed hairs ventrad of 2. *ori*, in a dense row; eye height and width ratio as 45 : 35; gena 1/4 eye height; carina narrow but prominent and slightly broadening ventrad from base of antennae, at broadest point about 2/5 as wide as diameter of antennal segment 1; antennal segment 3 small, with relatively long pile; arista short, almost bare. *Mesonotum* with 2 *dc*; 8 irregular rows of *acr*, ending just before level of 2. *dc*, posterior pair nearly 2× as long as others. *Wing* with r-m distinctly beyond middle of discal cell (35 : 15). *Abdomen*: Tergite 6 slightly longer than 5; sternite 5 about 1.5× as long as tergite 5, posteriorly almost membranous in form of inverted triangle, not incised. *Terminalia*: Epandrium about 1/3 as long as tergite 6; cercus slightly higher than 1/3 height of epandrium, densely setigerous at ventral apex; surstylus narrowing apically, bearing 25–27 minute spines and 2–3 short setae. Hypandrium about 1/2 length of phallapodeme, with short apodeme; praegonite with 4 sensillae; postgonite dorsally covered with numerous spinulae. Basiphallus subequal to phallic hood in length; endophallus tubular but surrounded by extremely large

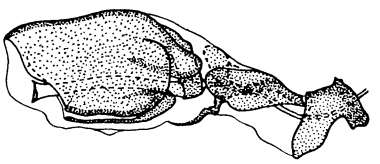

Fig. 4. Phallus of *Ophiomyia marquesana* Malloch.

sac which is densely covered with minute spinulae. Ejaculatory apodeme strongly sclerotized, 220 $\mu$ long, 180 $\mu$ in greatest width, with short process basally; duct brown. *Length*: Body 2.4 mm. Female unknown.

This species differs from *O. atralis*, in its larger size, darker calypter and the structure of ♂ terminalia. In *atralis*, the epandrium is provided with 3 heavy spines on the posteroventral corner, the cerci are normally setigerous, the surstylus is provided with 17 minute spines, the postgonite is smooth dorsally, the basiphallus is shorter than the phallapodeme, the endophallus is spinulose internally; the ejaculatory apodeme is 160 $\mu$ long and 80 $\mu$ in greatest width, the ejaculatory duct is transparent.

The ♂ terminalia of *marquesana* is very similar to that of *cornuta* de Meij., but is quite different in having the dense spines on the surstylus (12–14 spines in *cornuta*), shorter para- and hypophallus (in *cornuta* those are equal in length to the endophallus) and the smooth ventral process (while in *cornuta* it is distinctly projected distally and covered with long spines, and also the sac of endophallus is covered with longer spinulae).

## Genus **Phytobia** Lioy

### 19. **Phytobia** (**Icteromyza**) **piliseta** (Becker)

*Agromyza piliseta* Beck., 1903, Mitt. Zool. Mus. Berl. **2**: 190.

DISTRIBUTION: S. Europe, Africa, Taiwan, Micronesia (Yap), NE New Guinea, Samoa (new record).

SAMOA: 1♂, 2♀♀, Tapueleele, Upolu, II. 1955, N. L. H. Krauss.

The distinguishing features of this species are the distinctly pilose arista and yellow femora. This species exhibits variation in the degree of the darkening of the front and antennal segment 3. In Samoan specimens, the front is pale brown with a trace of yellow undertone, the frontalia is darkened ventrally, and segment 3 is brown on the outer side but yellow along the basal margin of the inner side. The specimens agree exactly with the original description in all other points.

### 20. **Phytobia** (**Calycomyza**) **humeralis** (von Roser)

*Agromyza humeralis* v. Ros., 1840, Korresp.-Bl. Wuertt. Landw. Ver. **8**: 63.
*Dizygomyza bellidis* Kaltenbach: Bezzi, 1928, Dipt. Fiji Is., 167 (Fiji: Lautoka).

This species is nearly cosmopolitan. The front is yellow, the parafrontalia is black dorsally; the mesonotum is shiny black but the lateral sides from the notopleura to the dorsal margin of the humeral calli are yellow. The larva makes a small blotch mine on the leaves of *Aster* and *Erigeron* spp. and pupates in the mine.

## Genus **Liriomyza** Mik

### 21. **Liriomyza brassicae** (Riley)

*Agromyza brassicae* R., 1884, Ann. Rep. U. S. Dept. Agr., 322.
*Liriomyza pusilla* Meigen: Bezzi, 1928, Dipt. Fiji Is., 167 (Fiji: Lautoka).

DISTRIBUTION: Europe, S. Africa, N. America, Japan, Malaya, India, Philippines, Micronesia, Fiji, Polynesia, Australia. New to the fauna of Austral and Mangareva Islands.

AUSTRAL: 1♀, Tapapatauai I., 19. VIII. 1934, 2 m, E. C. Zimmerman. MANGAREVA: 1♀, Taraururoa I., 28. V. 1934, Zimmerman.

This is a well-known pest on cultivated cruciferous plants.

## Genus **Phytoliriomyza** Hendel

### 22. **Phytoliriomyza tahitiensis** Sasakawa, n. sp. Fig. 5.

*Male*: Head yellow, ocellar triangle slightly brownish at center, occiput brown but not reaching to postorbit; antenna and palpus yellow, arista testaceous. Thorax yellow; mesonotum brownish testaceous, slightly gray-dusted; scutellum with pale brown triangle laterally; humerus and hypopleura each with pale brown spot; sternopleura with pale brown, small triangle. Wing hyaline, very slightly tinged with brown; veins pale brown; calypter yellowish, with margin and fringe brownish; halter yellow. Legs yellow, tibiae and tarsi brownish. Abdomen testaceous; tergite with yellow posterior margin; epandrium and cercus yellowish.

*Head*: Front nearly 2× as wide as eye, converging ventrally; parafrontalia 1/5 width of front. Ocellar triangle extending ventrally to level of 1. *ors*; *oc* long, parallel, accompanying with a pair of setulae. Lunule lower than semicircular, 1/2 as high as length of front. Parafrontalia slightly projecting above eye in profile; *ors* 2, directed upwards, *ori* 1, subequal to 2. *ors*, inwards; 1 or 2 *oh* proclinate; eye oblique, height and width ratio as 16 : 11, covered densely with white hairs which are equal in length to pubescence on arista; gena about 1/5 eye height; *pm* 3, anterior one only slightly shorter than *vi*. *Antennae* very slightly separated at base; segment 3 shorter than broad, rounded, with conspicuously long pile which is about 1.5× as long as aristal thickness; arista almost 3× as long as whole length of antenna, swollen on basal 1/4, rather distinctly pubescent. *Thorax*: Mesonotum with 1+3 *dc*, anterior two about 1/2 length of 3. *dc*, 2. *dc* just behind suture, distance between 2. and 3. *dc* almost 1/3 as long as that between 3. and 4. *dc*; *acr* and *ia* absent. *Wing*: Costa ending slightly beyond termination of $M_{1+2}$, with sections 2–4 in proportion of 38 : 12 : 9; r-m at middle of discal cell; m-m 2/3 length of penultimate section of $M_{1+2}$; ultimate section of $M_{1+2}$ 8× as long as penultimate; ultimate section of $M_{3+4}$ 2× as long as penultimate. *Abdomen*: Tergite sparsely covered with setae, *mar* long; tergite 6 as long as 5. *Terminalia*: Epandrium with 1 heavy and 1 minute spine at ventrocaudal angle; surstylus incurved, subtriangular, bearing 7 short setae. Hypandrium 1/3 length of phallapodeme, sidepiece narrow. Basiphallus well sclerotized; distiphallus equal to length of phallapodeme. Ejaculatory apodeme 40 $\mu$ long, 28 $\mu$ in greatest width. *Length*: Body and wing 0.96 mm.

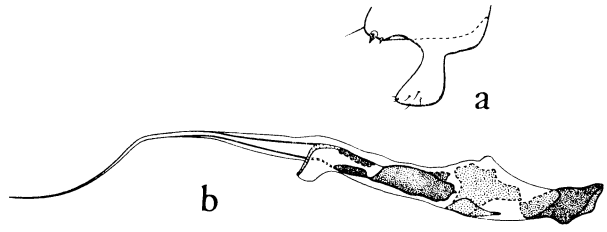


Fig. 5. ♂ terminalia of *Phytoliriomyza tahitiensis* Sasakawa, n. sp. a, surstylus; b, phallus.

Female unknown.

DISTRIBUTION: Tahiti.

Holotype ♂ (BISHOP 3429), Fautaua, 25 m, nr. Papeete, Tahiti, 5–11. VII. 1961, in Malaise trap, J. L. Gressitt.

This species is readily distinguished from the Holarctic *P. perpusilla* (Meigen), the Hawaiian *montana* Frick and the North American *arctica* (Lundbeck) by the largely yellow pleura and the smaller size. The ♂ terminalia of *tahitiensis* is similar to the British *scotica* Spencer, but the distiphallus is provided with a distinct ventral process.

## Genus **Pseudonapomyza** Hendel

**23. Pseudonapomyza dilatata** Sasakawa, n. sp. Fig. 6.

*Female*: Head blackish brown; ocellar triangle shiny; dorsal part of parafrontalia weakly shining; thorax with mesonotum brownish black, densely gray-dusted; pleura dark brown; abdomen dark brown, darkened posteriorly and more or less shining bluish. Wing hyaline; veins pale brown but extremely whitish at base; calypter white, with margin white and fringe yellow-white; halter yellow; legs blackish brown.

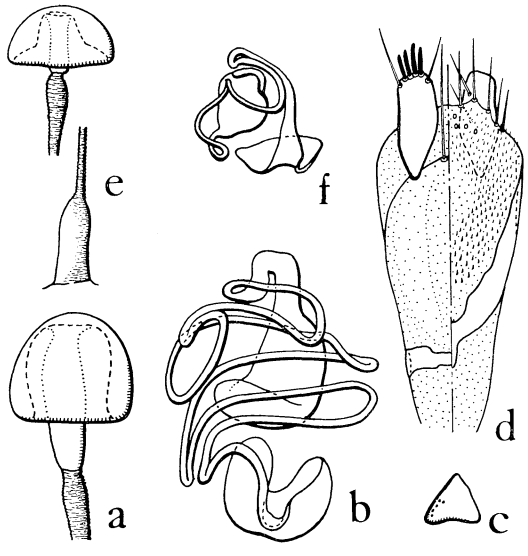


Fig. 6. ♀ terminalia of *Pseudonapomyza dilatata* Sasakawa, n. sp. (c–f) and *P. spicata* Mall. (a–b). a & e, spermatheca and basal part of duct; b & f, ventral receptacle; c, egg guide; d, tergite 9, sternite 9 and cerci.

*Head*: Front narrower than long and also width of eye (8 : 10); parafrontalia about 1/5 width of front, almost parallel-sided. Ocellar triangle with ventral tip at level of 1. *ors*, bearing 2 setulae plus *oc*. Lunule small, about 1/3 as high as length of front. In profile ventral 1/2 of parafrontalia linearly projecting above eye, bearing 1 *ors* and 4 incurved *ori*; *oh* in a sparse row; eye height and width ratio as 21 : 14; gena about 1/5 eye height; *vi* longer than 4 *pm*. *Antennae* approximated at base; segment 3 angulate dorsoapically, with minute pile; arista about 2× as long as whole length of antenna, swollen on basal 1/5, microscopically pubescent. *Thorax*: Mesonotum with 0+3 *dc*, 1. *dc* about 1/2 length of 3.; 4 rows of *acr*, ending at posterior 1/3 of distance between 2. and 3. *dc*; *ia* slightly longer than *ipa*, accompanying with 2 rows of setulae; *ipa* 1/3 length of *opa*; humerus with 5–6 setulae plus *h*; mesopleura with 1 dorsally directed setula; sternopleura with 2 setulae before sp. *Wing*: Costal sections 2–3 and distance between $R_{4+5}$ and $M_{1+2}$ in proportion of 33 : 13 : 21. *Abdomen*: Tergite 6 as long as 5; sternite 6 slightly shorter than tergite 6. *Terminalia*: Ovipositor sheath slightly longer than tergite 6;

apodeme 1.3× as long as sheath, weakly sclerotized, pouched on anterior 1/6. Egg guide triangular, 16 μ long, with 5 sensillae. Tergite 9 membranous, very weakly sclerotized on distal part, with transverse sclerite basally; sternite Y-shaped, 136 μ long, with 5 pairs of *nsm* and 3 pairs of sensillae; cercus with 4 short *ts*. Spermatheca dark brown, semiorbicular, 24× 36 to 29×44 μ; neck brown, 28 μ long; duct slightly brown-tinged but darkened basally and strongly expanded, 396 μ long, 6 μ in diameter. Ventral receptacle slightly brown-tinged, folded 4×, 198 μ long. *Length*: Body 1.8 mm, wing 1.56. Male unknown.

DISTRIBUTION: Samoa.

Holotype ♀ (BISHOP 3365), Fagatogo, Samoa, 30. XII. 1954, C. P. Hoyt, *ex* Job's tears leaf-mine (*Coix lacryma-jobi* L.).

This species is immediately distinguishable from *P. spicata* by the blunter angle of antennal segment 3, 4 pairs of the lower fronto-orbital bristles and the matt mesonotum. The ♀ terminalia are quite distinctive. In *spicata*, ovipositor sheath is longer, being 1.3× as long as tergite 6; the apodeme is strongly sclerotized, as long as the sheath and pouched on anterior 1/2; sternite 9 is provided with 3 pairs of marginal setae; the spermathecae (fig. 6a) are larger, 40×40 to 48×48 μ; the spermathecal ducts are pale brown and broadened gradually towards the base; the ventral receptacle (fig. 6b) is pale brown, 690 μ long and folded 10 times.

### 24. **Pseudonapomyza spicata** (Malloch)

*Phytomyza spicata* Mal., 1914, Ann. Hist.-Nat. Mus. Hung. **12**: 334; 1935, Ins. of Samoa **6** (9): 341 (Samoa: Apia, Upolu).

*Pseudonapomyza atra* Meigen: Bezzi, 1928, Dipt. Fiji Is., 167 (Fiji: Lautoka, Labasa).

SAMOA: 1♂, Apia, Upolu, 13. IX. 1923, Swezey & Wilder (det. by Malloch as *Phytomyza spicata*); 4♂♂, 8♀♀, Swains I., 6. IV. 1935, E. H. Bryan, Jr.; 1♀, Pago Pago, Tutuila I., 12. IV. 1941, N. L. H. Krauss.

This minute grass-miner occurs widely throughout the Pacific. The distinguishing features are the fine point on antennal segment 3, the distiphallus of the ♂ terminalia with a long ventral process covered with minute setulae and the characteristically folded ventral receptacle of the ♀ terminalia.

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