

AGROMYZIDAE (DIPTERA) FROM THE AZORES AND MADEIRA¹

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With 2 figures

Records of Agromyzidae in the Azores and Madeira have been conveniently summarised by Frey (1945, 1949). Seventeen species are known from the Azores and 22 from Madeira.

The material considered here consists of 8 species from the Azores and 3 from Madeira. *Phytomyza tetrasticha* Hendel is recorded for the first time in the Azores and *Liriomyza subartemisicola* Frey from the Azores is found to be synonymous with *L. umbilici* Hering from the Canary Islands.

My thanks are due to Dr. W. Hackman of the Zoological Museum of the University, Helsinki for kindly lending me type specimens of *Liriomyza subartemisicola* Frey, making possible the establishment of this synonymy.

I also wish to thank my wife for preparing the genitalia drawings in Figs. 1-2.

Cerodontha Rondany

Cerodontha bistrigata Frey, 1945

Fig. 1.

Azores, Faial: At Pool 1 km ESE of Cabeço do Fogo, grassy ground, 4.IV.57, Loc. 90, 1 ♂, det. K. A. S.

1) Report No. 44 from the Lund University Expedition in 1957 to the Azores and Madeira.

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This species is only known from the Azores. Specimens from Faial were included in Frey's (1945: 94) original type series.

The distinctive aedeagus is shown in Fig. 1. *C. bistrigata*, together with

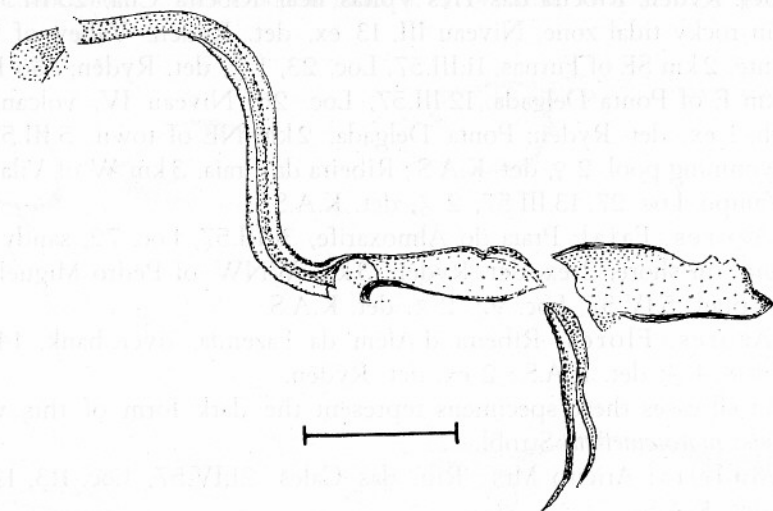


Fig. 1. — *Cerodontha bistrigata* Frey: aedeagus. Scale line = 0.1 mm.

a new species, *C. vandalitiensis* Spencer (in press), from southern Spain, can be included in the following revised extension of couplet 5 of Hendel's (1931-6: 266) key of European *Cerodontha* species:

- | | | |
|-----|---|------------------------------|
| 5. | Scutellum yellow apart from black patches laterally. | 5a |
| — | Scutellum entirely black. | 6 |
| 5a. | Mesonotum entirely black. | 5b |
| — | Mesonotum partially yellow. | 5c |
| 5b. | Frons and femora yellow. | <i>affinis</i> (Fallén) |
| — | Frons and femora dark, brown or black. | <i>vandalitiensis</i> sp.n. |
| 5c. | Mesonotum essentially black, with rectangular yellow patch before scutellum; third antennal segment predominantly black. | <i>phragmitophila</i> Hering |
| — | Mesonotum largely yellow, with black longitudinal bands laterally; third antennal segment yellow on inner side and below. | <i>bistrigata</i> Frey |

Cerodontha denticornis (Panzer, 1806), cf. Hendel, 1931-6: 269

Azores, São Miguel: Caldeiras, 5 km SE of Ribeira Grande, 14.III.57, Loc. 28, 2 ex, det. Rydén; Furnas, hot springs, 24.III.1957, Loc. 59, 2 ex,

det. Rydén; Furnas, Park, 11.III.57, Loc. 24, 1 sex indet., det. K.A.S.; Relva, tanque da Rocha Quebrada, 15.III.57, Loc. 31, 1 ♂, 1 ♀, det. K. A. S.; Fonte da Rocha near Relva, 4.5 km W of P. Delgada, spring, 5.III.57, Loc. 11, 1 ex, det. Rydén; Ribeira das Três Voltas near Ribeira Chã, 23.III.57, Loc. 55, in rocky tidal zone, Niveau III, 13 ex, det. Rydén; Valley of Ribeira Quente, 2 km SE of Furnas, 11.III.57, Loc. 23, 1 ♂, det. Rydén; São Pópulo, 7.5 km E of Ponta Delgada, 12.III.57, Loc. 26, Niveau IV, volcanic sand beach, 1 ex, det. Rydén; Ponta Delgada, 2 km NE of town, 5.III.57, Loc. in swimming pool, 2 ♀, det. K.A.S.; Ribeira da Praia, 3 km W of Vila Franca do Campo, Loc. 27, 13.III.57, 2 ♂, det. K.A.S.

Azores, Faial: Praia do Almoxarife, 31.III.57, Loc. 72, sandy grassy ground, on shore, 2 ex, det. Rydén; 3 km WNW of Pedro Miguel, freshwater pool, 5.IV.57, Loc. 92, 2 ♂, det. K.A.S.

Azores, Flores: Ribeira d'Além da Fazenda, river bank, 14.IV.57, Loc. 108, 1 ♂, det. K.A.S.; 2 ex, det. Rydén.

In all cases these specimens represent the dark form of this variable species, *nigroscutellata* Strobl.

Madeira: Arieiro Mts., Rib. das Cales, 21.IV.57, Loc. 113, 1300 m., 1 ♂, det. K.A.S.

***Liriomyza* Mik**

***Liriomyza umbilici* Hering, 1927**

Fig. 2.

Holotype ♂ in Zoologisches Museum, Berlin. *Liriomyza subartemisicola* Frey, 1945, **syn. nov.** Lectotype ♂ in Zoological Museum of University, Helsinki.

Azores, São Miguel: Ribeira da Praia, 3 km W of Vila Franca do Campo, swept in vegetation, 3 ♂, 1 ♀, 13.III.57, Loc. 27; Ribeira Seca, W of Ribeira Grande, 3 ♀, 18.III.57, Loc. 37, det. Rydén and K.A.S.

L. umbilici was described from the Canary Islands and was bred from leaf-mines on *Umbilicus pendulinus* DC. Frey (1945: 93) described *L. subartemisicola* from a number of localities, including S. Miguel, in the Azores. Comparison of the genitalia of paratypes of *L. umbilici* and *L. subartemisicola* with those of one of the males mentioned above confirms that only a single species is involved.

The aedeagus of a paratype of *L. umbilici* from Palma is shown in Fig. 2: 1, 2 and the surstylus in 3.

This species is extremely close morphologically to *Liriomyza langei*

Frick, which is widespread and polyphagous in California. I have previously (Spencer, 1963 b) synonymised *L. langei* with *L. bryoniae* (Kalt.), which has been recorded in the Azores (Frey, 1945: 94) as a leaf-miner on *Solanum dulcamara* L. (as *L. solani* Macq.). *L. bryoniae* is a serious pest of

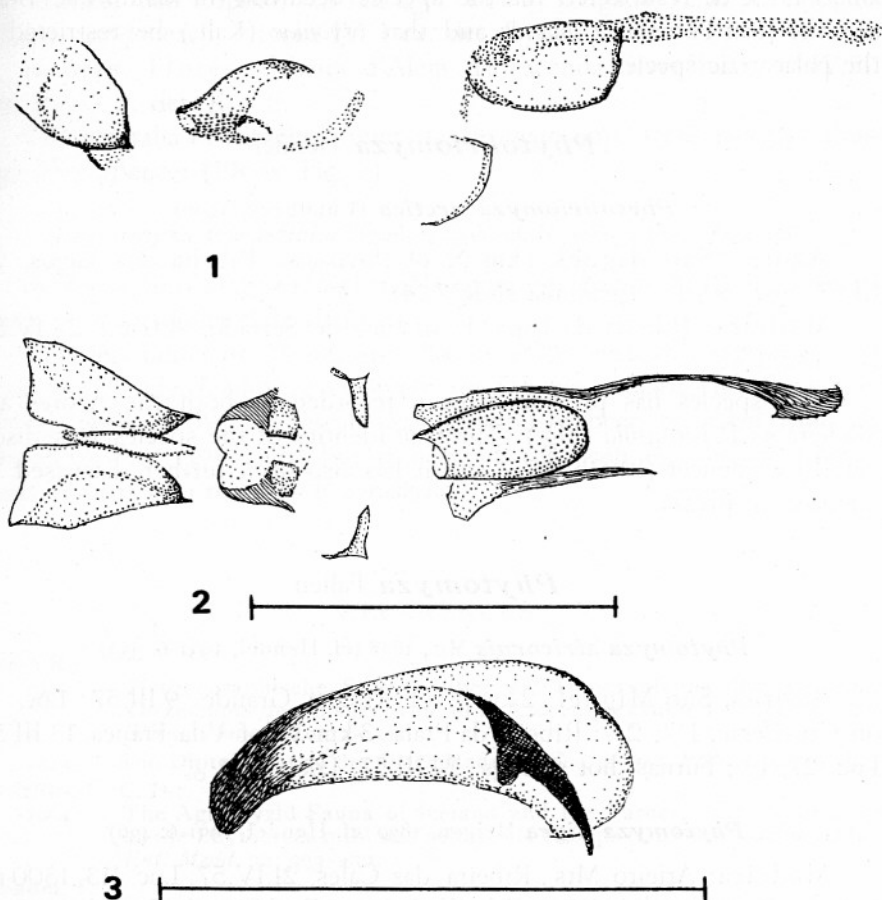


Fig. 2. — *Liriomyza umbilici* Hering: 1, aedeagus, side view; 2, same, ventral view; 3, surstylus. Scale line = 0.1 mm.

tomatoes in Spain; it has been found attacking tomatoes in glasshouses in England but elsewhere in western Europe it is found most commonly in Botanical Gardens, often with a very extensive host range.

Prof. H. Lange of the University of California, Davis, has recently informed me (private communication) that *L. langei* cannot be reared on tomato. Faced with this biological evidence it has to be concluded that despite the similarity in genitalia between European *bryoniae* and American *langei* in fact distinct species are represented. I therefore propose that *langei* Frick be resurrected for the species occurring in California, Brazil and the Juan Fernandez Islands and that *bryoniae* (Kalt.) be restricted to the palaearctic species.

***Phytoliriomyza* Hendel**

***Phytoliriomyza arctica* (Lundbeck, 1900)**

Azores, São Miguel: 1 km N of Povoação, Ribeira dos Lagos, 24.III.57, Loc. 60, 1 ♂ (genitalia slide 724).

Madeira: Ribeira da Lapa, E. of Pico do Serrado, 900 m., 27.IV.57, Loc. 132, 1 ♂.

This species has previously been recorded in both the Azores and Madeira as *P. perpusilla* (Mg.). The true identity of the species was discovered by Spencer (1963b: 377) and it has also been further discussed by Spencer (in press).

***Phytomyza* Fallén**

***Phytomyza atricornis* Mg., 1838 (cf. Hendel, 1931-6: 353)**

Azores, São Miguel: 2 km E of Ribeira Grande, 9.III.57, Loc. 19, on Cruciferae, 1 ♂, 2 ♀: Ribeira da Praia, 3 km W of Vila Franca, 13.III.57, Loc. 27, 1 ♀; Furnas, hot springs, 24.III.57, Loc. 59, 1 ♂.

***Phytomyza nigra* Meigen, 1830 (cf. Hendel, 1931-6: 436)**

Madeira: Arieiro Mts, Ribeira das Cales, 21.IV.57, Loc. 113, 1300 m., 1 ♂, 2 ♀ (genitalia slide 1158); Ribeira da Lapa, E of Pico do Serrado, 900 m., on Juncus and grass, 27.IV.57, Loc. 132, 2 ♂, 1 ♀ (genitalia slide 1159).

These specimens are remarkable by their large size. The wing length of the males is 3 mm. and of one female 3.5 mm. The genitalia agree exactly with the smaller, typical form in which the wing length is around 2 mm. The aedeagus was recently illustrated by Griffiths (1964: Fig. 7).

Phytomyza plantaginis R.-D., 1851 (cf. Hendel, 1931-6: 455)

Azores, São Miguel: Lagoa do Fogo, 22.IV.57, Loc. 54, wet heath, 1 ♂, det. K.A.S.; Fonte da Rocha near Relva, 4.5 km W of Ponta Delgada, 5.III.57, Loc. 11, Spring, 1 ex, det. Rydén; Ribeira das Três Voltas near Ribeira Chã, 23.III.57, Loc. 55, in rocky tidal zone, Niveau III, 2 ex, det. Rydén; São Pópulo, 7.5 km E of Ponta Delgada, 12.III.57, Loc. 26, volcanic sand beach, Niveau IV, 1 ex, det. Rydén.

Azores, Flores: Ribeira d'Além da Fazenda, river bank, 14.IV.57. Loc. 108, 1 ♂, det. K.A.S.

The genitalia of this leaf-miner on *Plantago* spp. were recently illustrated by Spencer (1963a: Fig. 2).

Phytomyza tetrasticha Hendel, 1927 (cf. Nowakowsky, 1959: 198)

Azores, São Miguel: Relva, Nascente dos Lagos, 15.III.57, Loc. 32, spring, 1 ♂ (genitalia slide 1157).

This leaf-miner on *Mentha* spp. has recently been differentiated from *P. obscura* Hendel feeding exclusively on *Satureja vulgaris* (L.) Fritsch by Nowakowski (1959). *P. obscura* has previously been recorded from the Azores by Frey (1945: 96) but it has not yet been established whether these records also refer to *P. tetrasticha*.

REFERENCES

- Frey, R.:
1945. Tiergeographische Studien über die Dipterenfauna der Azoren. I. Verzeichnis der bisher von den Azoren bekannten Dipteren. *Soc. Scient. Fenn.* 8(10): 1-114.
1949. Die Dipterenfauna der Insel Madeira. *Soc. Scient. Fenn.* 8(16): 1-49.
- 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. Medd.* 32: 393-450.
- Hendel, F.:
1931-6. Agromyzidae in Lindner, *Flieg. pal. Reg.* 6: 1-570.
- Hering, M.:
1927. Die Minenfauna der Canarischen Inseln. *Zool. Jahrb. (Abt. syst.)* 53: 405-486.
- Nowakowski, J. T.:
1959. Studien über Minierfliegen. 3. Revision der in Labiaten und Boraginaceen minierenden Arten aus der Gruppe der *Phytomyza obscura* Hendel. *Deutsch. ent. Z. (N. F.)* 6: 185-229.

Spencer, K. A.:

1963a. A new *Phytomyza* species on *Plantago media* L. *Stuttgart. Beitr. Naturkunde* 103: 1-5.

1963b. A Synopsis of the neotropical *Agromyzidae* (Diptera). *Trans. R. ent. Soc. Lond.* 115: 291-389.

In press. The genus *Phytoliriomyza* Hendel (*Agromyzidae*: Diptera): A clarification of the four European species, with a list of eight other species now known in the genus. *Ann. Mag. Nat. Hist.*