

574.0645
5937

Stuttgarter Beiträge zur Naturkunde

aus dem Staatlichen Museum für Naturkunde in Stuttgart

Stuttgart

7. April 1963

Nr. 103

A new *Phytomyza* species on *Plantago media* L.*

By Kenneth A. Spencer, London

There has in the past been confusion about the identity of the *Phytomyza* species occurring as leaf- and stem-miners on different species of *Plantago*. Recently G. C. D. GRIFFITHS has bred a long series of specimens from leaf-mines on *P. media* L. at Box Hill, Surrey, England; the mines are distinctive and examination of male genitalia has shown that the species is new. I have also now been able to confirm that the specimens occurring as a leaf- and stem-miner on *P. lanceolata* and as a leaf-miner on *P. major* are identical and represent the true *plantaginis* R.-D. The holotypes of *P. plantaginicaulis* Hg., *P. biseriata* Hg. and *P. nannodes* Hend. have been examined and are synonymised with *plantaginis* R. D. below. It is considered that the species in Japan illustrated by SASAKAWA (1961: Fig. 140) as *plantaginis* R. D. must represent a further new species; specimens bred by GRIFFITHS from *P. coronopus* L. are treated as a local form of *P. plantaginis*, pending study of additional material.

Phytomyza griffithsi n. sp.

Head: frons broad, almost twice width of eye viewed from above; orbits well-differentiated, projecting above eye anteriorly; two equal ors, the lower at or below centre of frons between inner vertical bristle and base of antennae, one similar ori; orbital setulae in single row, sparse, only three to five hairs; jowls broad (Fig. 1 a), deepest at rear, in centre half vertical height of eye, cheeks forming broad ring below eye; eye distinctly slanting; third antennal segment slightly variable, longer than broad, either rounded at end or slightly cut away below, arista noticeably thickened basally.

Mesonotum: 3 + 1 dc, fourth well before level of pre-sutural bristle; acr sparse, normally in two rows or entirely lacking; inner post-alar always absent.

Wing: length variable, from 1.8–2 mm in male, from 2–2.6 mm in female, average in 20 specimens, 1.9 in male, 2.25 in female; costal ratios between veins r_1 and r_{2+3} , r_{2+3} and m_{1+2} and m_{1+2} and m_{3+4} 25 : 8 : 16 in male; 31 : 10 : 18 in female.

Colour: frons, jowls, face, palps and first and second antennal segments bright yellow, third antennal segment black; orbits entirely yellow, vti on yellow ground, vte just on black; mesonotum and scutellum matt grey; pleura matt grey but upper margin of mesopleura narrowly bright yellow; legs: fore-coxae yellow, mid- and hind-coxae blackish-grey, femora black but all knees bright yellow, tibiae and tarsi black; abdomen predominantly black but front tergites distinctly yellow laterally in male, less so in female; wing base bright yellow, squamal fringe pale, whitish.

Male genitalia: aedeagus in side view as in Fig. 1 b, distiphallus and mesophallus in ventral view as in Fig. 1 c; basiphallus with large, pale, triangular sidepiece on right side only.

Leaf-mine (Fig. 1 d): initially lower surface but largely upper surface, irregularly linear, finally almost filling the petiole, where pupation takes place.

* Herrn Professor Dr. ERWIN LINDNER zum 75. Geburtstag.

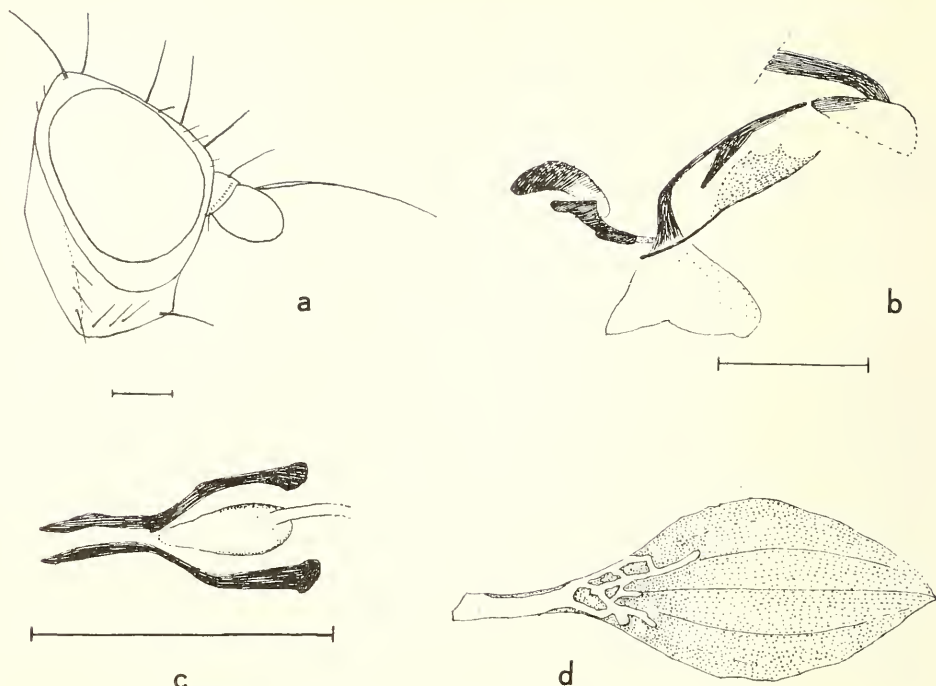


Fig. 1. *Phytomyza griffithsi*, (a) head in profile, (b) aedeagus, side view, (c) distiphallus, ventral view, (d) leaf mine. (Scale line = 0.1 mm.)

Holotype ♂, Box Hill, Surrey, England, emerged 11. VII. 1962 from leaf-mine on *Plantago media* L., found 24. VI. 1962. 9 ♂♂, 11 ♀♀ paratypes, emerged between 1. and 23. VII. 1962, otherwise same data (all G. C. D. GRIFFITHS); 1 ♂, 1 ♀, Mühlhausen, Thuringia, Germany, bred from *P. media*, 11. VIII. 1954 (H. BUHR).

This species closely resembles *plantaginis* R.D. Differences are the bright, entirely yellow second antennal segment and the paler upper orbits, with the vti always on yellow ground. The male genitalia are characteristic with the sidepieces of the mesophallus straighter and the two sides of the distiphallus far closer together; the greatly enlarged, triangular, right-hand sidepiece of the basiphallus is distinctive.

The leaf-mine always ends in the petiole. In *plantaginis* R.D. the mine is frequently limited to the leaf-blade but mines do also occur somewhat resembling those of the new species.

Phytomyza plantaginis R.-D., 1851

Phytomyza robinaldi, Goureau, 1851

Phytomyza biseriata Hering, 1936, SYN. NOV.

Phytomyza nannodes Hend., SYN. NOV.

Phytomyza plantaginicaulis Hering, 1944, SYN. NOV.

The type series was bred by Col. GOUREAU from leaf-mines on *Plantago lanceolata* and sent by him to ROBINEAU-DESVOIDY for identification. ROBINEAU-DESVOIDY published his brief description in August, 1851. GOUREAU published his own description in July, 1851, using the name *plantiginis* proposed by ROBINEAU-DESVOIDY and as a second name also *robinaldi* G. GOUREAU illustrates a simple upper-surface linear mine on *Plantago lanceolata* and mentions that as an exception the mines may be lower surface.

From examination of male genitalia I have confirmed that the species occurring commonly on *P. lanceolata* also occurs on *P. major* L. Genitalia of specimens, including

the holotype, bred from the flower-stems of *P. lanceolata*, described by HERING as *P. plantaginicaulis* (Hering, 1944) are also identical and this species is now formally synonymized with *plantaginis* R.-D.

The aedeagus in side view of *P. plantaginis* R.-D. is shown in Fig. 2 a and the distiphallus complex in Fig. 2 b; the sidepiece of the basiphallus on the right side is greatly reduced, on the left black, distinctively elongated.

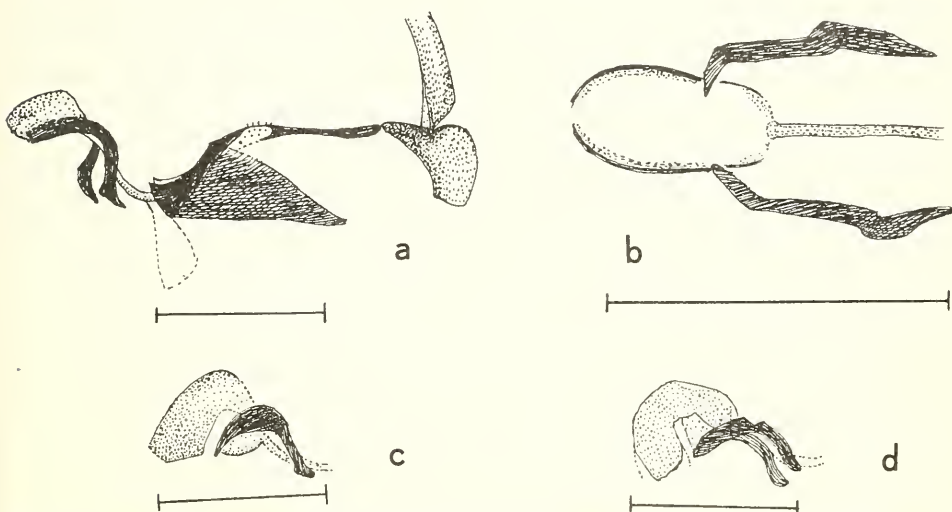


Fig. 2. *Phytomyza plantaginis*, (a) aedeagus, side view (specimen ex *P. lanceolata*, Devon, England), (b) distiphallus, ventral view, (c) distiphallus, side view (*P. nannodes*, paratype, Japan), (d) distiphallus, side view (specimen ex *Plantago coronopus*). (Scale line = 0.1 mm.)

HERING (1936: 77) described *P. biseriata* from two caught specimens near Berlin. Examination of the genitalia of the male holotype shows that this species is synonymous with *P. plantaginis* R.-D.

HENDEL (1936: 435) described *P. nannodes* from caught specimens from Eastern Siberia and Japan. I have examined the female holotype and also the male genitalia of a paratype. HENDEL gives two characters in his key (1936: 508) for separating this species from *plantaginis* R.-D. It is stated that the basal cone of the female ovipositor is without pale pubescence dorsally; this is inaccurate, as the pubescence is clearly apparent in the holotype when using a high magnification. It is correctly stated that the lower ors is below the centre of the frons; however, although the lower ors in *plantaginis* R.-D. is normally higher at about the centre of the frons, I have seen European specimens in which it is situated further forward, approaching that in *nannodes* Hd. The distiphallus complex of the paratype of *nannodes* Hd. is shown in Fig. 2 c. This agrees closely with typical *plantaginis* R.-D. particularly in the curving black sidepieces of the mesophallus but the distiphallus itself is somewhat larger. From examination of the genitalia of specimens bred from *P. lanceolata* and *P. major* from a number of localities in Europe, I have found that the somewhat membranous distiphallus varies slightly in size and it is my opinion that *nannodes* Hd. is synonymous with *plantaginis* R.-D.

SASAKAWA (1961: 460) records *P. nannodes* Hd. in Japan. The illustrations given of the male genitalia agree closely with those of European *plantaginis* R.-D., including the minute spines on the paraphallus.

SASAKAWA (1961: 464) also records *plantaginis* R.-D. in Japan. However, the male genitalia as illustrated, with a brush of long hairs at the end of the distiphallus, do not agree with typical *plantaginis*. The male genitalia of a specimen I have examined bred from *P. major* at Matsuyama, Japan agree exactly with those of European *plantaginis*.

GRIFFITHS has recently bred a short series of specimens from *Plantago coronopus* L., on the Gower Peninsula, Wales. The distiphallus complex of a male is shown in Fig. 2 d. Here also the distiphallus is distinctly larger than in typical *plantaginis*. In the adult the orbits are conspicuously darker than in normal specimens of *plantaginis* R.-D. I have seen. It seems possible that this may represent a distinct species but I feel it can only be treated as a local form, until additional material from other localities can be examined.

P. plantaginis has also been recorded in Australia (SPENCER, 1963) and North America. HENDEL (1931-1936: 455) gives a detailed description of the species; FRICK (1951: 576) described an experiment in which parthenogenetic reproduction is confirmed; DE MEIJERE (1926, 1946, 1949) and KURODA (1958) describe the larva, with a number of illustrations.



Fig. 3. *Phytomyza tenella*, aedeagus, side view (Bérisal, Switzerland). (Scale line = 0.1 mm.)

P. plantaginis R.-D. is frequently confused with *P. tenella* Mg., which it closely resembles. In *tenella* the eye is somewhat more upright, the jowls may be slightly deeper, the palps are darker, more brownish and in the specimens I have seen there is always a short, inner post-alar bristle present, which is lacking in *plantaginis*. The male genitalia of *tenella* are entirely distinct and the aedeagus of a specimen from Bérisal, Switzerland is shown in Fig. 3. This agrees closely with those of the holotype which has recently been examined by GRIFFITHS.

Acknowledgments

I am grateful to GRAHAM GRIFFITHS for allowing me to describe his new species and have pleasure in dedicating the species to him.

Difficult taxonomic problems in the Agromyzidae can now frequently only be clarified by examination of the genitalia of holotypes. I am therefore particularly grateful to Professor Dr. E. M. HERING for the loan of the holotypes of *Phytomyza biseriata* Hg. and *P. plantaginicaulis* Hg. and to Professor Dr. M. BEIER for the loan of the holotype of *P. nannodes* Hd.

I wish to thank my wife for the preparation of all illustrations in this paper.

References

- FRICK, K. E., 1951, Parthenogenetic Reproduction in *Phytomyza plantaginis* R.-D., the Second Reported Case in the Family Agromyzidae. Science, Vol. 114, No. 2970, p. 576.
- GOUREAU, 1851, Mémoire pour servir à l'histoire des Diptères dont les larves minent les feuilles des plantes. Ann. Soc. ent. France 9: 142.
- HENDEL, F., 1931—1936, Agromyzidae in LINDNER. Flieg. pal. Reg. 6.
- HERING, MARTIN, 1936, Agromyziden-Nachlese (Dipt.). Deutsch. ent. Z. 1936, p. 77.
- 1944, Minenstudien 18. Mitt. Deutsch. ent. Ges. 13: 118.
- KURODA, M., 1958, Studies in the spiracles and cephalopharyngeal sclerites of the larvae of the Agromyzid flies. Kontyû 26: 149.
- DE MEIJERE, J. C. H., 1926, Die Larven der Agromyzinen II. Tijd. v. Ent. 49: 282.
- 1946, Die Larven der Agromyzinen, Nachtrag 8. Ibid 87: 74.
- 1949, Die Larven der Agromyzinen, Nachtrag 9. Ibid 92: 25.
- ROBINEAU-DESVOIDY, 1851, Description d'Agromyzes et de Phytomyzes écloses chez M. le colonel GOUREAU. Rev. Mag. Zool. 3: 404.
- SASAKAWA, M., 1961, A Study of the Japanese Agromyzidae. Pacific Insects 3: 307—472.
- SPENCER, K. A., 1963, A Synopsis of the Australian Agromyzidae. Rec. Aust. Mus., Vol. 25, No. 15.

Anschrift des Verfassers:

Kenneth A. Spencer, 19, Redington Road, Hampstead, London, NW. 3, England

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Stuttgarter Beiträge Naturkunde Serie A \[Biologie\]](#)

Jahr/Year: 1963

Band/Volume: [103](#)

Autor(en)/Author(s): Spencer Kenneth A.

Artikel/Article: [A new *Phytomyza* species on *Plantago media* L. 1-5](#)