REVUE SUISSE DE ZOOLOGIE 111 (1): 183-211; mars 2004

Revision of the *Minettia fasciata* species-group (Diptera, Lauxaniidae)

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Revision of the *Minettia fasciata* species-group (Diptera, Lauxaniidae). - The *Minettia fasciata* species-group is defined. It includes 4 Palaearctic species, namely *Minettia czernyi* Freidberg & Yarom, *Minettia fasciata* (Fallén) [= *M. rivosa* (Meigen), synonymy confirmed], *M. subvittata* (Loew) [= *M. cataracta* (Pandellé), syn. conf.] and *M. tabidiventris* (Rondani) [= *M. luteofrontata* (Becker), syn. nov; = *M. fasciata* auctt. nec Fallén]. *Sapromyza pallida* Meigen is treated as a nomen dubium. All available types were studied, the 4 species are described, illustrated and compared with each other. A key to the species of *Minettia* with latero-ventral black spots on the scutellum is presented.

Key-words: Diptera - Lauxaniidae - *Minettia fasciata* species-group - Palaearctic region.

INTRODUCTION

The Lauxaniidae are a large family of about 1800 described species worldwide. They are best represented in the tropics of the Old and New World (except for the Afrotropical region), and their diversity declines strongly towards the more temperate regions. Fewer than 180 species are recorded from Europe (Merz, 2003a). Most species are found in forests, on shrubs, trees, and leaves. They are less common in dry and wet grasslands. Despite their often remarkably high population densities and apparant importance in decomposing plant material, they are insufficiently known, even in the comparatively well studied Western Palaearctic region.

Minettia Robineau-Desvoidy, with almost worldwide distribution, is one of the most speciose genera of Lauxaniidae with somewhat less than 100 species described so far. The Palaearctic fauna is the most diverse with 56 described species, although the other regions are less intensively studied and may be much richer than is known today. The genus was divided into 3 subgenera by Shatalkin (2000). Within *Minettia* s. str. a number of species-groups may be recognized, one of which is called the *Minettia fasciata* group which is restricted to the Palaearctic region. This group also includes *Minettia nemorosa* Robineau-Desvoidy, 1830, which is the type species of *Minettia*. The group is characterized by the grey microtrichose mesonotum, a pair of black spots

Manuscript accepted 27.08.2003

on the lateroventral side of the scutellum (Figs 2-5), 0+3 dorsocentral setae, 6 rows of acrostichal setulae, only one dorsal preapical seta on the midtibia, dark transverse stripes on the abdominal tergites (Figs 6-7) and characteristic terminalia.

While studying a large number of specimens with this set of characters I realized that the limits of the described species differ from one author to another and that nomenclature is far from being resolved. The objective of this paper is to clarify the recognized synonymies by studying the types where still available, and to present diagnostic characteristics accompanied by illustrations, helping to define the limits of each species.

HISTORICAL REVIEW

The following account reviews the changing history of the names associated with the species of the *Minettia fasciata* group as briefly diagnosed above and extensively described below. This summary is not complete; only major revisions and catalogues are included which differ in their interpretations from other papers.

The first two species which belong to this complex are *Lauxania fasciata* Fallén, 1826, and *Sapromyza rivosa* Meigen, 1826, with Fallén having priority.

In 1830, Meigen described *Lauxania pallida* and Robineau-Desvoidy proposed in the same year the genus *Minettia* and described, among others, *M. nemorosa* which was designated as type species of *Minettia* by Westwood (1840).

The various interpretations of the different species started with Macquart (1835), who synonymized *nemorosa* with *rivosa*. The following history is given in an abbreviated form. Papers with descriptions of new species relevant for this study are marked with an asterix (*):

Westwood (1840): (1) *fasciata* (= *rivosa*, = *nemorosa*), (2) *pallida*; designation of *nemorosa* as type species of *Minettia*.

*Loew (1847): (1) *fasciata* (= *rivosa*), (2) description of *Sapromyza subvittata* Loew

Zetterstedt (1847): *rivosa* (= *fasciata*)

Schiner (1863): (1) *fasciata* (= *rivosa*, = *nemorosa*), (2) *pallida*, (3) *subvittata*

*Rondani (1877): (1) *fasciata* (= *rivosa*), (2) *subvittata*, (3) description of *Sapromyza tabidiventris* Rondani

*Becker (1895): (1) *fasciata* (= *rivosa*, = *nemorosa*), (2) *subvittata* (= *tabidiventris*), (3) description of *Sapromyza luteofrontata* Becker (*pallida* Meigen not included)

*Pandellé (1902): (1) *fasciata* (= *rivosa*, = *nemorosa*), (2) description of *Sapromyza cataracta* Pandellé (= *subvittata* auctt, = *fasciata* var sensu Zetterstedt)

Hendel (1908): (1) *cataracta*, (2) *dimidiata* Loew (= *pallida* Meigen, nec *pallida* Fallén), (3) *fasciata* (= *rivosa*, = *nemorosa*), (4) *luteofrontata*, (5) *subvittata* (= *tabidiventris*)

Czerny (1932): (1) *fasciata* (= *rivosa*, = *nemorosa*, = *luteofrontata*, = *subvittata* sensu Pandellé), (2) *pallida* Meigen (= *dimidiata* Loew), (3) *subvittata* (= *cataracta*, = ? *tabidiventris*)

*Czerny (1937): description of *Minettia quadrisetosa* Czerny

Collin (1948): (1) *fasciata*, (2) *rivosa* (no synonymy)

Papp (1984): (1) *fasciata (*= *nemorosa*, = *subvittata*, = *luteofrontata*, = *cataracta*), (2) *rivosa* (= *dimidiata*). Nomina dubia: (3) *pallida*, (4) *quadrisetosa*, (5) *tabidiventris*

Freidberg & Yarom (1990): (1) *czernyi* (= nom. nov. for *quadrisetosa* Czerny, nec Becker), (2) *fasciata*, (3) *rivosa*

Shatalkin (2000): (1) *czernyi*, (2) *fasciata*, (3) *pallida*, (4) *rivosa*, (5) *subvittata* (no synonymy)

It can be concluded from this non-exhaustive review of major papers about Lauxaniidae that the concept of each species and its synonymy varied from author to author. All papers prior to Czerny (1932) are unreliable as genitalic structures were not studied or illustrated, and types of the already described species were not examined. Even Czerny's monograph (1932), although illustrating for the first time the male terminalia of his *Minettia subvittata*, is not particularly helpful because a comparison with related species is missing. The first careful study of genitalic characters was presented by Collin (1948). Unfortunately, he named the two British species without the study of the types. The same deficiency characterizes all subsequent papers, including those of Papp (1979, 1984) and Shatalkin (1998, 2000). As a consequence of this unsatisfactory situation, faunistic papers, checklists and ecological studies including these species are difficult to use because it is impossible to know the identity of the species mentioned.

One species which was often treated as member of the *M. fasciata* group is *Sapromyza dimidiata* (Loew, 1847) (Hendel, 1908; Papp, 1984; see above). A study of the male holotype (ZMHB) revealed that this species belongs to the *M. lupulina* species-group, and so it is not further discussed here.

MATERIAL AND METHODS

This study is based on about 1150 specimens which are deposited in the following collections:

CAS	California Academy of Sciences, San Francisco, USA (P. A. Arnaud, B. Fisher)
CBM	private collection B. Merz, Genève, Switzerland
CCK	private collection Christian Kassebeer, Kiel, Germany
CGB	private collection G. Bächli, Dietikon, Switzerland
CMCT	private collection Miguel Carles-Tolrá, Barcelona, Spain
CME	private collection Martin Ebejer, Cardiff, Wales
CPG	private collection Paul Gatt, Rabat, Malta
ETHZ	Eidgenössische Technische Hochschule, Zürich, Switzerland (A. Müller)
INRA	Institut National de la Recherche Agronomique, Montpellier, France (M. Martinez)
MHNG	Muséum d'histoire naturelle, Genève, Switzerland
MHNN	Muséum d'histoire naturelle, Neuchâtel, Switzerland (J.-P. Haenni)
NML	Natur-Museum, Luzern, Switzerland (L. Rezbanyai-Reser)
MNHNP	Muséum National d'Histoire Naturelle, Paris, France (J. Charbonnel)

MZF	Museo Zoologico “La Specola”, Firenze, Italy (S. Whitman)
NHMB	Naturhistorisches Museum, Basel, Switzerland (D. Burckhardt)
NHMW	Naturhistorisches Museum, Wien, Austria (R. Contreras-Lichtenberg)
NRS	Naturhistorisk Rijksmuseum, Stockholm, Sweden (T. Pape)
SIZK	Schmalhausen Institute of Zoology, Kiev, Ukraine (V. A. Korneyev)
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (H. P. Tschorsnig)
SMO	Silesian Museum, Opava, Czech Republic (J. Roháček)
TAU	Tel Aviv University, Israel (A. Freidberg)
USNM	National Museum of Natural History, Washington D. C., USA (S. Gaimari)
ZMB	Zoological Museum Bergen, Norway (L. Greve-Jensen)
ZMHB	Zoologisches Museum, Humboldt Universität, Berlin, Germany (W. Mey, H. Wendt)
ZML	Zoological Museum, University Lund, Sweden (R. Danielsson)
ZMUC	Zoological Museum, University Copenhagen, Danmark (R. Meier)
ZSM	Zoologische Staatssammlung München, Germany (W. Schacht)

Morphological terms in the descriptions follow chapters 1.1-1.3 in Papp & Darvas (2000), but the interpretation of the antennal structures is according to Stuckenberg (1999).

DESCRIPTION OF THE *MINETTIA FASCIATA* SPECIES-GROUP

Diagnosis

Species of *Minettia* s. str. with the following combination of characters: scutellum lateroventrally with a pair of black spots (Figs 2-5); mesonotum uniformly grey or striped brownish-grey, 0+3 dorsocentral setae and 6 rows of acrostichal setulae at level of suture; midtibia with only one dorsal preapical seta; abdomen yellow to brown, in the middle of tergites 3-5 each with a darker transverse stripe which is interrupted medially (Figs 6-7); male pregonite composed of 2 subequal branches (Fig. 20); female sternite 8 with 2 ear-like projections laterally (Figs 45, 48).

Description of Male

Head (Fig. 1) bicoloured: frons and parafacial yellow to brown; fronto-orbital plate, ocellar triangle, occiput and postgena grey microtrichose; face partly pale brown, partly grey; frons with yellow stripe dorsal of lunule and with dirty brown transverse stripe at level of anterior fronto-orbital seta; parafacial with brown spot lateral of antennal base; head in profile about 1.35 times as high as wide; gena one quarter as high as compound eye; the latter elongate ovoid; frons (including frontal plates) slightly wider than length from lunule to posterior margin of posterior ocelli; frons anteriorly with black setulae; face longer than antenna, flat with shallow antennal grooves and slightly raised at vibrissal corner; occiput straight, not conspicuously concave medially above occipital foramen; fronto-facial angle 120-130°; parafacial with single row of about 10 short setulae in ventral third; antenna yellow, sometimes postpedicel dorsally grey to black infuscated; postpedicel about twice as long as wide, apically rounded; arista plumose, longest rays about as long as width of postpedicel; proboscis with yellow to black palpus. The following paired, black setae are present: 2

reclinate fronto-orbital setae of equal length; 1 strong ocellar seta and few smaller setulae posteriorly between ocelli; 1 very long inclinate medial vertical seta; 1 shorter lateroclinate lateral vertical seta; 1 slightly inclinate postocellar seta; one row of strong postocular setae and a slightly unordered row behind.

Thorax with grey ground colour, but to a variable extent brown to yellowish-brown striped; mesonotum in *M. czernyi* yellow with lines of acrostichal setulae pale grey only; sometimes with blackish stripe medial of line of dorsocentral setae; postpronotum usually mostly yellow; pleuron grey varying to orange with only traces of grey microtrichosity, or with a brown stripe on dorsal third of anepisternum only; scutellum dorsally grey, border grey or yellow, lateroventrally pale with a pair of conspicuous black spots laterally which are not connected with each other between apical scutellar setae (Figs 2-5); subscutellum either black or brown, microtrichose; all setae and setulae black; 0+3 dorsocentral setae of subequal length; at level of suture with 6 rows of acrostichal setulae, the setulae of the two median rows slightly longer; 1 strong prescutellar acrostichal seta; 1 postpronotal seta; 2 notopleural setae; 1 presutural and 1 postsutural intraalar seta; 1 supraalar seta; 2 postalar setae; basal and apical scutellar seta; 1 anepisternal seta; 2 katepisternal setae; 1 proepisternal seta.

Wing entirely hyaline, sometimes slightly tinged with yellow, but without pattern; halter and calypters yellow to whitish yellow.

Legs yellow, but femora on all legs may vary from greyish to black, in particular the forefemur; tibiae sometimes slightly darkened towards tip; anteroventral part of forefemur and ventral part of midfemur each with a brown to black subapical spot, which is sometimes weak; midfemur with a row of strong, outstanding setulae anteriorly in apical half; hindfemur with a strong anterodorsal preapical seta; all tibiae with 1 dorsal preapical seta; midtibia with 1 ventral apical seta.

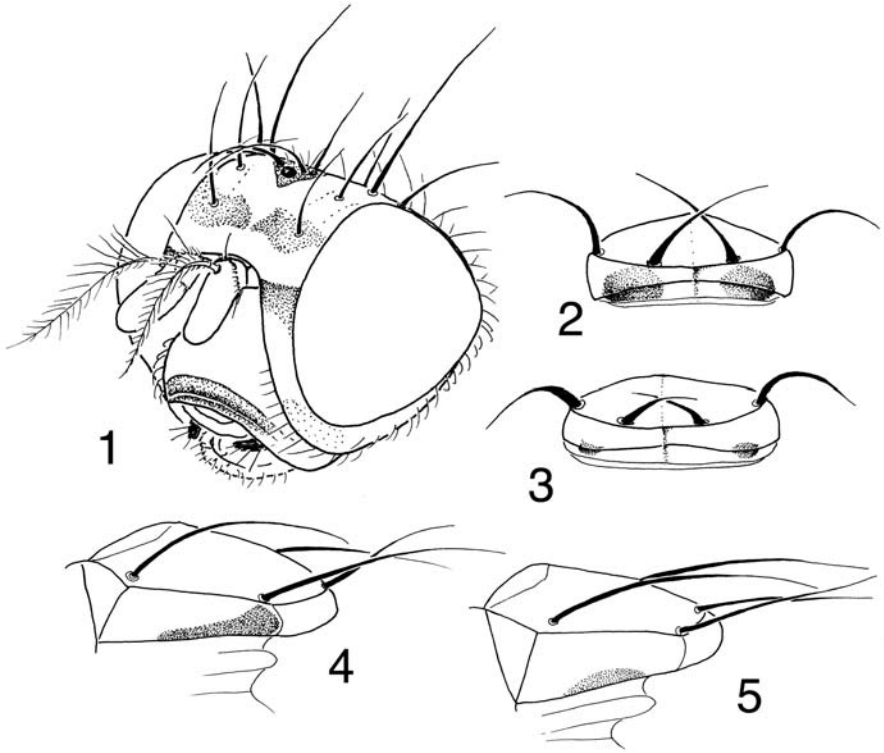
Abdomen brown to yellow, tergites 3-5 each with a brown to black transverse stripe in the middle which is broadly interrupted medially, or which may be reduced to more or less large lateral spots (Figs 6-7); sternites unmodified.

Male terminalia (Figs 9-34). Epandrium semicircular; surstylus black setulose, well developed, distally with tooth or invagination, and medially without tooth in middle; subepandrial plate with 1 long and sometimes 1-3 smaller black setulae (Fig. 19); hypandrium as in other species of genus; pregonite 2-branched, both branches of almost same length (except for *M. czernyi*, Fig. 15), apically more or less pointed and directed to the right [when seen from inside, Fig. 20]; postgonite forming an aedeagal sheath, distal margin straight (Fig. 25) or with 3 tooth like projections (Fig. 14); phallapodeme short to long; ejaculatory apodeme rather complicated, sclerotized medially (Fig. 33); aedeagus membranous, distally "spinulose" (Fig. 25).

Description of Female

As male, but tergites 3 and 4 of abdomen either unmodified (Fig. 6) or at posterior margin with 4-8 much thicker, enlarged, black setae medially of tergite 3 (Fig. 7) or tergite 4 (in *M. czernyi*); pleural membrane in some species with a conspicuous glandular area on level of segments 4-5 (Fig. 8).

Female terminalia (Figs 35-48) forming retractible pseudoovipositor; tergite 8 a well sclerotized plate (Fig. 40), or as two small "L-"shaped weak sclerites (Fig. 44);

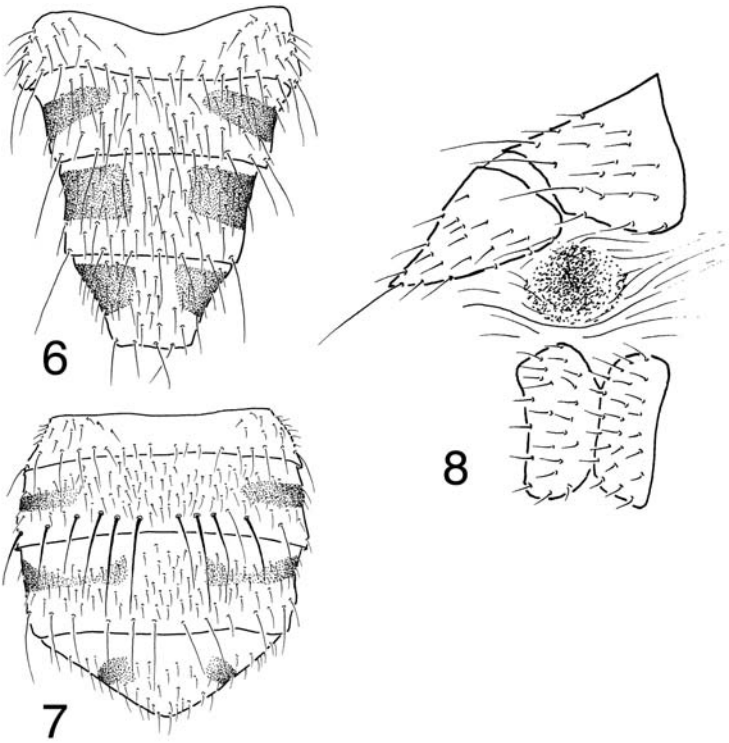


FIGS 1-5
Minettia fasciata (Fallén) (1), *M. czernyi* Freidberg & Yarom (2, 4) and *M. subvittata* (Loew) (3, 5): 1, head; 2-3, scutellum, posterior view; 4-5, scutellum, lateral view.

tergite 9 evenly curved distally, with (Fig. 40) or without (Fig. 44) soft, long setae apically; sternite 8 rather complex, with paired ear-like, heavily sclerotized, invaginated projections laterally (Figs 37, 41); sternite 9 and cerci as usual in genus; 3 (2+1) spermathecae present, with smooth surfaces, paired spermathecae slightly smaller (Fig. 42).

VARIABILITY

Colouration may vary considerably. The lateroventral black spots on the scutellum may occasionally be minute or even absent. The transverse dark stripes on tergites 3-5 may be indistinct or reduced to small dots laterally. The distribution of yellow and grey stripes on the mesonotum may vary within each species. Although the yellow palpus is a good characteristic for quick separation of *M. subvittata* from the other species of the group, it is sometimes almost entirely yellow also in *M. fasciata* or *M. tabidiventris*. In contrast, the terminalia are very characteristic (except for the distal margin of the surstylus in *M. tabidiventris*, see below), and its study is therefore recommended for a safe identification.



FIGS 6-8

Abdominal structures of *Minettia fasciata* species-group. 6, dorsal view of abdomen of holotype female of *Minettia fasciata* (Fallén); 7, dorsal view of abdomen of lectotype female of *M. subvittata* (Loew); 8, lateral view of last abdominal segments of female of *M. fasciata* (Fallén).

REMARKS

Palaearctic species of *Minettia* s. lat. have recently been divided into 3 genera: *Frendelia* Collin, *Plesiominettia* Shatalkin and *Minettia* s. str. (Shatalkin, 2000). No attempt has been made to classify European species of *Minettia* s. str. The only group which has been characterized is the *M. biseriata* species-group (Papp, 1981). This group shares with the *M. fasciata* species-group the shape of the head, the pectinate arista, 0+3 dorsocentral setae, and 6 rows of acrostichal setulae, but differs by the entirely yellow thorax, the mostly yellow abdomen (only last 1-4 tergites in some species with small black spots laterally), the lateroventrally uniform yellow scutellum (except for *M. cypriota* with a pair of black spots; the position of this species is still unresolved and needs further study) and details of the male terminalia with the 2 branches of the pregonite usually of very different size. Other species with a latero-ventral pair of black spots on scutellum have either 1+3 dorsocentral setae and/or the abdomen entirely yellow without brown stripes contrasting strongly to the uniform grey mesonotum (*M. desmometopa* (de Meijere), *M. dimidiata*, *M. flaviventris* (Costa), *M. longiseta* (Loew), *M. lupulina*, *M. tubifer* (Meigen)), see also key below. Other

species of *Minettia* s. str. have the scutellum lateroventrally uniformly yellow, grey or black and may therefore be easily separated from species of the *M. fasciata* species-group.

The present diagnosis of the *M. fasciata* species-group includes 4 species: *M. czernyi*, *M. fasciata*, *M. subvittata* and *M. tabidiventris*. *M. czernyi* is placed in the group tentatively because it differs in the structure of terminalia of both sexes from the other 3 species. Pending a thorough study of the terminalia of all *Minettia* s. str. I prefer to keep it here because of the external similarities with some pale specimens of *M. subvittata* with which it may be confused.

Biology and Distribution

Nothing is known about immature stages of the 4 species of the *M. fasciata* species-group (Miller, 1977; Smith, 1989). Adults may be found in various biotopes. They may be observed abundantly on leaves in open deciduous forests, on shrubs and hedges and on isolated trees. As an exception for European Lauxaniidae they are sometimes common in meadows, grasslands and even crop fields (Reddersen, 1994) where they feed on fungi (Reddersen, 1995). The species-group has its apparent center of distribution in the Mediterranean region where all 4 species may be found. The diversity declines north of the Alps and the Carpathian ridge with only 2 species penetrating as far north as Scandinavia. Surprisingly, one species, *M. fasciata*, occurs also in the Western parts of the Nearctic region.

KEY TO THE PALAEARCTIC SPECIES OF *MINETTIA* S. STR. WITH A PAIR OF LATEROVENTRAL BLACK SPOTS ON SCUTELLUM

1 Scutellum dorsally and lateroventrally of same colour: yellow, grey or black . . . . . other species of *Minettia*

1* Scutellum lateroventrally either with a pair of black spots or entirely blackish on ventral side, contrasting to the grey or yellow dorsal surface (Figs 2-5) 2

2 Scutellum lateroventrally entirely blackish, including the area between apical scutellar setae . . . . . *Minettia lupulina* species-group (4 species; Merz, in prep.)

2* Scutellum lateroventrally with a pair of black spots which are not fused between apical scutellar setae (Figs 2-5) 3

3 1+3 dorsocentral setae present 4

3* 0+3 dorsocentral setae present, presutural dorsocentral seta absent 5

4 Midtibia with 2 dorsal preapical setae; acrostichal setulae in 6 rows; palpus, postpronotum, dorsal surface of scutellum, and femora mainly yellow . . . . . *M. tubifer* (Meigen, 1826)

4* Midtibia with 1 dorsal preapical seta; acrostichal setulae in 4 rows; palpus, postpronotum, dorsal surface of scutellum, and femora mainly black . . . . . *M. flaviventris* (Costa, 1844) part

5 Acrostichal setulae in 4 rows; mesonotum entirely grey including postpronotum; a pair of blackish longitudinal stripes near or along line of dorsocentral setae often present; abdomen yellow without transverse stripes on tergites; palpus black 6

5* Acrostichal setulae in 6 rows; mesonotum yellow to grey, postpronotum at least partly yellowish; legs usually mostly yellow, rarely femora strongly black; other characters variable 7

6 Postpedicel black; presutural dorsocentral seta always absent; female: tergite 3 short, at posterior margin medially with 4-6 very long, black, thick setae . . . . . *M. longiseta* (Loew, 1847)

6* Postpedicel orange-brown, blackish at most along dorsal margin; presutural dorsocentral seta usually present, sometimes absent on one, rarely on both sides; female: tergite 3 not modified, with normal short, black setulae at posterior margin . . . . . *M. flaviventris* (Costa, 1844) part

7 Mesonotum and abdomen more or less uniformly yellow, rarely pale grey microtrichose along acrostichal setulae; palpus yellow; black lateroventral spots on scutellum small; female: tergite 3 unmodified and without long setae at posterior margin . . . . . *M. cypriota* Papp, 1981

7* Mesonotum at least with conspicuous medial grey stripe along acrostichal setulae; abdomen yellow to brown, but tergites 3-5 usually each with a transverse black stripe which is interrupted in middle (*M. fasciata* species-group, see also Tab. 1) 8

8 Ground colour of subscutellum yellow; scutellum lateroventrally with two large black spots which are larger than separating area (Figs 2, 4); mesonotum mainly yellow to brown, with only a rather narrow grey stripe medially; palpus yellow to brown; male: surstylus connected with subepandrial plate by a conspicuous sclerite (Figs 10-11); postgonite with 3 dorsal hooks (Fig. 14); female: tergite 4 with 2 pairs of very long black setae at posterior margin in middle *M. czernyi* Freidberg & Yarom, 1990

8* Ground colour of subscutellum black; black spots lateroventrally on scutellum smaller, and wider apart from each other than length of one black spot (Figs 3, 5); mesonotum usually more extensively greyish along lateral margin with usually a grey band on level of presutural and postsutural intraalar seta; female: either all tergites with usual setae and setulae (Fig. 6), or tergite 3 with 4-6 pairs of very long setae leaving a gap between them (Fig. 7) 9

9 Male 10

9* Female 12

10 Surstylus strongly concave, with undulated distal margin which is conspicuously invaginated (Figs 28-29), sometimes with an additional medial projection (Figs 30-31) (mesonotum usually uniformly grey without paler stripes over lines of dorsocentral setae, but sometimes with a narrow, black stripe medially of line of dorsocentral setae) . . . . . *M. tabidiventris* (Rondani, 1877)

10* Surstylus, indistinctly concave, with a sharp projection at distal posterior margin (Figs 17, 22-23) (mesonotum usually with a more or less developed paler stripe over line of dorsocentral setae) 11

11 Surstylus distinctly longer than wide (Fig. 18); subepandrial plate with 1-3 weaker and shorter setulae in addition to the long seta (Fig. 19); palpus usually entirely black in distal half or only indistinctly brownish ventrally . . . . . *M. fasciata* (Fallén, 1826)

11* Surstylus only slightly longer than wide, almost square (Fig. 24); subepandrial plate usually with one strong seta only (Fig. 22); palpus usually yellow, sometimes dorsally bordered by black margin . . . . . *M. subvittata* (Loew, 1847)

12 Tergite 8 evenly sclerotized (Fig. 40); tergite 9 distally with 2 thick, long, black setae (Figs 39-40); sternite 8 with evenly convex surface; ear-like projection distally rounded (Fig. 39); abdominal pleura at most with a small glandular area on level of tergites 4-5 (mesonotum usually uniformly grey without paler stripes over lines of dorsocentral setae, but sometimes with a narrow, black stripe medially along dorsocentral setae) . . . . . *M. tabidiventris* (Rondani, 1877)

12* Tergite 8 with two faint, L-shaped sclerites (Figs 44, 47); tergite 9 without long apical setae (Figs 43, 46); sternite 8 with a medial longitudinal rib (Figs 45, 48); ear-like projection weakly invaginated, posteriorly sharply pointed (Figs 43, 46); a large glandular area present on pleura on level of tergites 4-5 (Fig. 8) (mesonotum usually with a more or less developed paler stripe through dorsocentral setae) 13

13 Tergite 3 without long black setae along posterior margin (Fig. 6); palpus usually black at least in apical half, sometimes with brown or yellow border ventrally, but tip almost always black or dark brown; sternite 8 with more elongated ear-like lateral projection (Fig. 43), its apex more pointed and its ventral plate in ventral view larger, half-moon shaped (Fig. 45) . . . . . *M. fasciata* (Fallén 1826)

13* Tergite 3 with a row of long black setae at posterior margin which is interrupted in the middle, the middle 2-4 setae are longest and distinctly longer than width of tergite 4 (Fig. 7); palpus usually yellow to brown throughout, dorsal margin sometimes bordered by black, rarely more extensively darkened, but usually with at least a distinct brown stripe to tip; sternite 8 with shorter lateral ear-like projection (Fig. 46), in profile more triangular, its ventral plate in ventral view short, with a lateral point (Fig. 48) . . . . . *M. subvittata* (Loew, 1847)

DESCRIPTION OF THE SPECIES OF THE *MINETTIA FASCIATA* SPECIES-GROUP

The following part lists for each species first the synonymy, then the type material, followed by additional material studied. Labels of primary types are cited verbatim. The diagnosis does not repeat the characteristics given in the description of

the *M. fasciata* species-group, but only those characteristics which are needed to separate a species from the other members of this species-groups.

Minettia czernyi Freidberg & Yarom, 1990 Figs 2, 4, 9-15, 35-38

Minettia quadrisetosa Czerny, 1937: 89. Type locality: [Israel]: Rehoboth bei Jaffa.
Minettia czernyi Freidberg & Yarom, 1990: 98 (replacement name for *Minettia quadrisetosa* Czerny, 1937, nec Becker, 1907).

TYPE MATERIAL

Lectotype ♂ (here designated, examined): "Rehoboth bei Jaffa, 27.VII.33, J. Aharoni coll." (printed), "Minettia quadrisetosa Cz. ♂, det. L. Czerny" (in Czerny's handwriting), "Type Czerny 1935" (in Lindner's handwriting), "Lectotypus ♂ Minettia quadrisetosa Czerny, 1937, desig. B. Merz 2003", Minettia czernyi Freidberg & Yarom 1990, det. B. Merz'2003" (upper side), "n. name for M. quadrisetosa Czerny 1937 nec Becker, 1907" (lower side of same label) (SMNS). The specimen is double mounted with a minutien pin, and is in good condition with strong colours, all legs, wings and antennae present, body slightly covered with debris; left posterior fronto-orbital seta, left medial postalar seta and both left scutellar setae are absent; both anterior fronto-orbital setae partly broken.

Paralectotypes (examined): 1♀, same labels as lectotype; 1♂, same labels as lectotype, but 26.VII.33, and "Cotype Czerny 1935" (in Lindner's handwriting) (SMNS).

Comment: The species was described based on 4♂♂ and 2♀♀ from Rehoboth, 25-27.VII.1933. Only 2♂♂ and 1♀ are present in the SMNS (Tschorsnig, in litt.). Freidberg & Yarom (1990) studied a couple in the NHMW which apparently belongs to the type series as well. The fate of the last ♂ is not known. In order to avoid further confusion about the identity of the species, a lectotype is designated here. Another ♂ with the label "Rehoboth bei Jaffa, 25.XI.1933" (SMNS) is not a syntype because it does not correspond with the data mentioned in the original description.

OTHER MATERIAL EXAMINED (35 specimens)

CYPRUS: Lemasos. ISRAEL: Antipatris, Dan, Ein Bazan, Hammat Gader, Herzliyya, Panyas, Ramat-Aviv, Tel-Dan. LEBANON: Aakkar. (CBM, MHNG, USNM)

DIAGNOSIS

Head almost entirely yellow, with faint brown crossband at level of anterior fronto-orbital seta; palpus yellow; mesonotum mat yellow with at least broad grey stripe over line of acrostichal setulae, often with grey pattern between dorsocentral and intraalar setae; pleuron mostly yellow; scutellum lateroventrally with pair of very large black spots; legs almost entirely yellow, only forefemur anteroventrally in apical quarter and midfemur ventrally subapically with rather conspicuous brown spots; abdomen yellow with rather indistinct brown, narrow, transverse bars on tergites 3-5. Male: surstylus in profile slightly recurved (Fig. 10), slightly wider than long when maximally extended (Fig. 12), posterior margin medially concave (Fig. 10) and slightly folded downwards (Fig. 11); subepandrial plate entirely separated from surstylus, with one seta (Figs 10-11); two branches of pregonite of unequal size present (Figs 15), with

left gonite much larger, apically swollen and with an indistinct apical tooth; postgonite very large, deeply concave medially (Figs 13-14) and posteriorly with 2+1 strong, black teeth (Fig.14). Female: tergite 4 medially at posterior margin with 4 very long, and 2 shorter black setae, the longest setae longer than the following tergite; tergites 8 and 9 well developed, without longer setae (Figs 15-16); sternite 8 basally with two small, ear-like, roundish projections with a channel-like sclerotization (Figs 35, 37-38); cercus small, with some longer setae apically. Wing length: (4.00) 4.25-4.75 mm.

REMARKS

This species differs from the other 3 species of the group by the slightly longer wings on average, the more yellowish ground colour, in particular of the head, pleuron (the latter mostly grey in the other species) and subscutellum; the black spots on the lateroventral side of the scutellum are much larger; the legs have only two limited brown spots, and the terminalia (♂ and ♀) are characteristic. It may be argued that *M. czernyi* does not belong to the *M. fasciata* species-group, due to genitalic differences, but taking into account the structural similarity with pale specimens of *M. subvittata* and *M. fasciata* it is difficult to place the species elsewhere at the present moment. Further studies of all described species of *Minettia* are needed before placing the species more accurately.

DISTRIBUTION

So far only known from three Eastern Mediterranean countries: Cyprus, Israel, Lebanon.

Minettia fasciata (Fallén, 1826) Figs 1, 6, 8, 16-20, 43-45

Lauxania fasciata Fallén, 1826: 15. Type locality: Sweden: Skåne, Esperöd, nr. Stenshufvud.
Sapromyza rivosa Meigen, 1826: 265. Type locality: not given ("im Sommer ziemlich gemein an Gestraden") (according to Papp, 1984: "? Germany"). [synonymy confirmed]
Minettia nemorosa Robineau-Desvoidy, 1830: 647. Type locality: not given (according to Papp, 1984: "France").

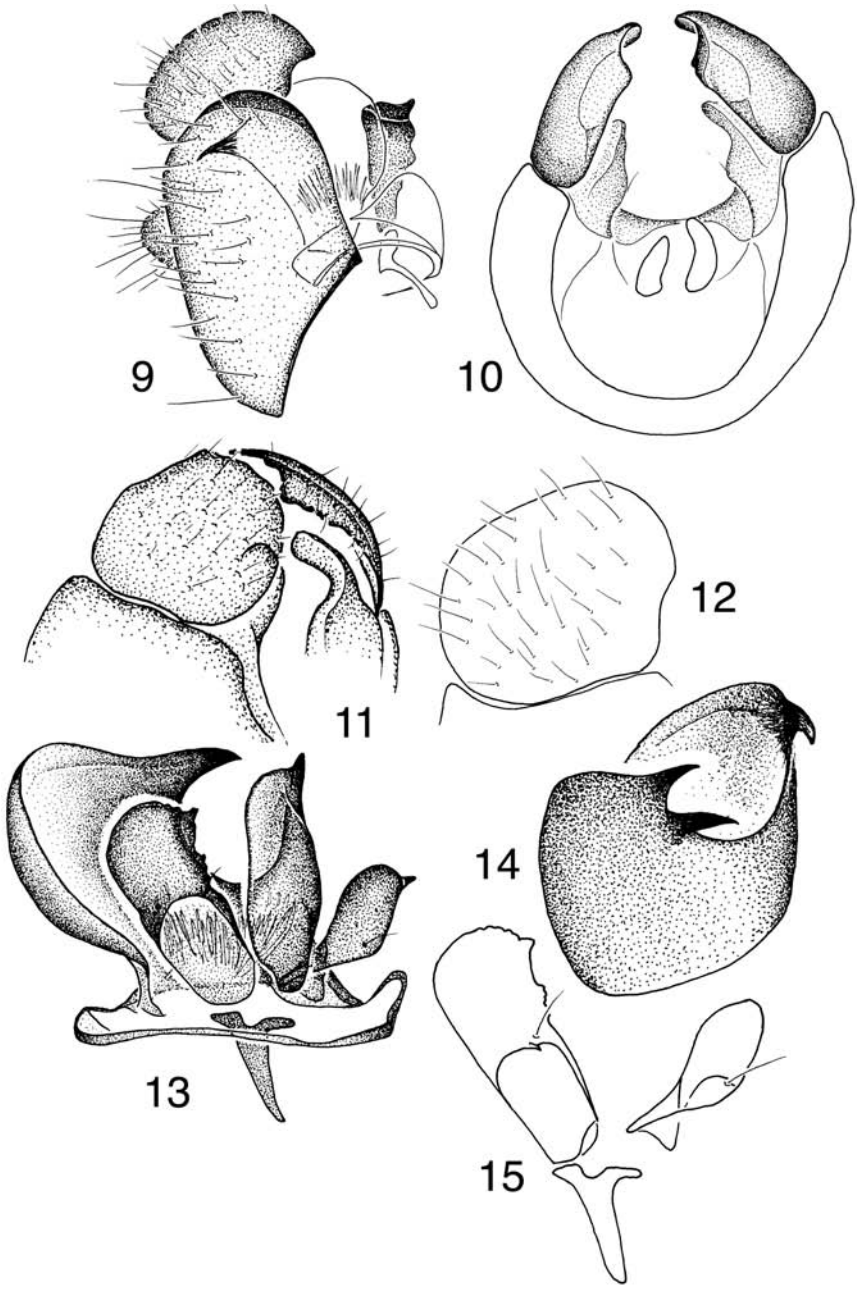
TYPE MATERIAL

Type material of fasciata

Holotype ♀ (examined): "Lauxania fasciata ♀, Fall. Suppl" (handwritten); "Holotype ♀, Lauxania fasciata Fallén, desig. B. Merz 2002" (red label, handwritten) (ZML). The type material of this species is extensively discussed by Merz (2003b) and the comments do not need to be repeated here.

Type material of rivosa

Lectotype ♂ (here designated, examined): "Meigen" (upper side of round label, handwritten); "2402 40" (lower side of same round label, handwritten); "rivosa" (square label, handwritten); "Lectotype ♂, Sapromyza rivosa Meigen, 1826, desig. B. Merz'2002" (red square label, handwritten); "Minettia fasciata (Fallén), det. B. Merz'2002" (white label, handwritten) (MNHNP). The specimen is directly pinned and in a good state of preservation (only right hindleg, last 4 tarsal segments of left midleg and few setae missing; both wings slightly damaged; tip of abdomen slightly



FIGS 9-15

Male terminalia of *Minettia czernyi* Freidberg & Yarom: 9, epandrium, surstylus and inner terminalia, lateral view; 10, epandrium and surstyli, posterior view; 11, surstyli, oblique view; 12, surstylus in maximal lateral extension; 13, inner terminalia, anterior view; 14, postgonite, oblique view; 15, pregonites and phallapodeme in maximal extension.

covered with debris). The genitalia are partly covered with debris, but the right surstylus is clearly visible (as in Figs 16-19).

Paralectotype ♀ (examined): "Meigen" (upper side of round label, handwritten); "2402 40" (lower side of same round label, handwritten); "Paralectotype ♀, Sapromyza rivosa Meigen, 1826, desig. B. Merz'2002" (red square label, handwritten); "Minettia fasciata (Fallén), det. B. Merz'2002" (white label, handwritten) (MNHNP). The condition of the specimen is worse than the lectotype, with the left eye slightly squashed and the lunule sunken into the head.

Comment: Meigen (1826) described this species based on an unknown number of specimens. Two specimens remain in the collection of the MNHNP. They agree well with the original description (p. 265) and illustration (Morge, 1975-1976, plate CXLII, Figs 11-12) and are considered to be syntypes. Because of the difficult taxonomy in the species-group I am designating a lectotype herein in order to avoid further confusion about the identity of this species.

The synonymy of *S. rivosa* with *L. fasciata* was already proposed by Westwood (1840), but they were treated as good species by Collin (1948) and subsequent authors. The comparison of all available type specimens confirms the opinion of Westwood (1840).

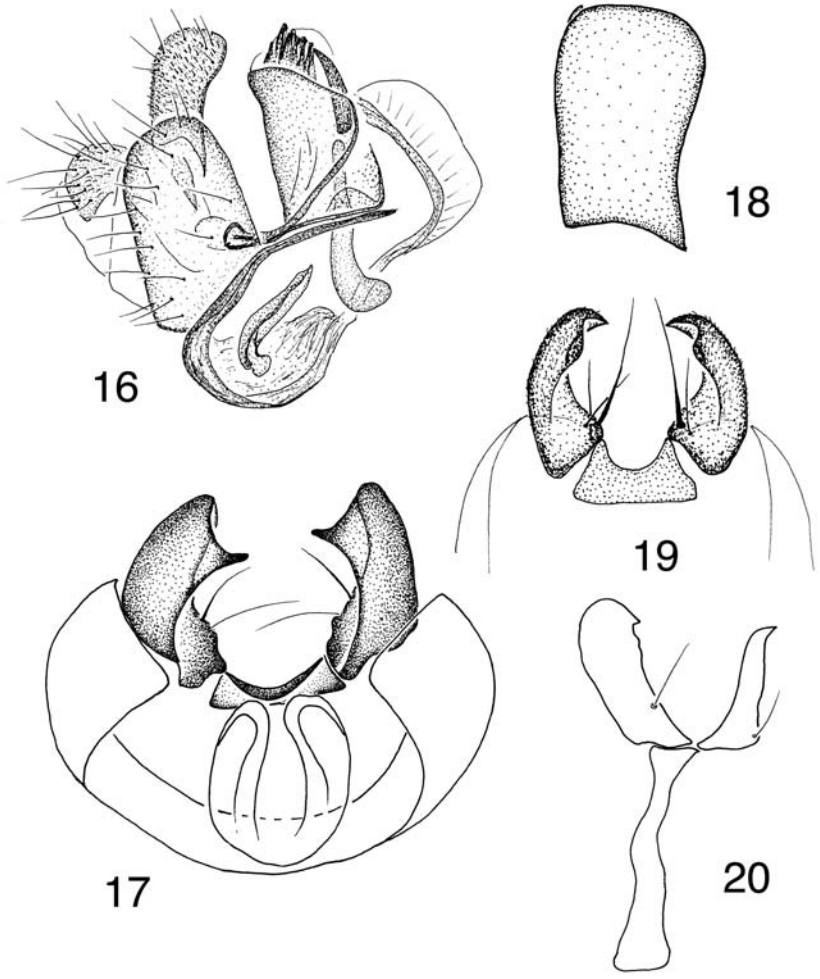
Lauxania fasciata has priority over *S. rivosa* because the exact publication date is not known for the latter and is therefore by default 31 December (ICZN, 1999), whereas *L. fasciata* was published on 6 December.

Type material of nemorosa

This species was described from a large number of specimens, but the collection of Robineau-Desvoidy, now in the MNHNP, is mostly destroyed. No specimen of this species could be found in the MNHNP (Charbonnel, in litt.). Because of the insufficient description presented by Robineau-Desvoidy it is not possible to unambiguously establish the identity of the species. It seems most reasonable to follow Macquart (1835), Westwood (1840) and most subsequent authors who synonymized it with *L. fasciata* and/or *S. rivosa*.

OTHER MATERIAL EXAMINED (598 specimens)

Palaearctic - AUSTRIA: Süd-Steiermark. BELGIUM: Flanders: Knokke, Oostkamp. BULGARIA: Achtopol. CROATIA: Brazza Island; Unie Island; Dalmatia: Savudrja. DANMARK: Jylland: Hansted reserve. ENGLAND: Cambs: Wicken Fen; Herts: Harpenden; Oxfordshire: Wychwood Forest; Norfolk: Wretham Heats; Suffolk: Bury St. Edmunds; Wiltshire: Marlborough. FRANCE: Alpes-de-Haute-Provence: Montagnes de Lure; Alpes Maritimes: Menton, Nice, Sospel; Ariège: Salege; Aude: Aunat, Belcaire, Marsa; Aveyron: Nant; Bouches-du-Rhône: Marseille, Peyrolles; Calvados: Luc-sur-Mer; Corsica: Ghisonaccia, Larc; Doubs: Liesle, Vallée de la Loue; Drôme: Chalancon, Dieulefit; Gard: Camprieux, Dourbies; Haute Savoie: Bossey, Le Pas de l'Echelle, Monnetier, Salève; Manche: Pontorson; Seine-et-Oise: Forêt St. Germain; Var: Les Maures, Sollies Pont; Yvelines: Fontainbleu, Maisons Laffitte. GERMANY: Bayern: Dachau, Etterschlag, München, Schöngeising; Berlin: Berlin; Brandenburg: Eberswalde. GIBRALTAR: Gibraltar. GREECE: Corfu: Hricida; Epyrus: Ionina; Peloponnes: Akhaia, Lakonfas. HUNGARY: Kalocsa. ITALY: Cosenza: Cirella, Grisolia, Marcellina, Santa Maria del Cedro, Verbicaro; Liguria: Monterosso al Mare; Lucca: Orecchiella; Macerata; Mantova: Marmirolo; Puglia: Mte. Gargano; Sardegna: Cuglieri, Dorgali, Iglesias, Oliena, Villacidro; Sicilia: Etna, Linguaglossa, Nebrodi, Randazzo; Verona: Grezzana, Malchesine. LIECHTENSTEIN: Balzers, Ruggell. MALTA: Buskett, Chadwick Lakes, Ghadira,



FIGS 16-20

Male terminalia of *Minettia fasciata* (Fallén): 16, epandrium, surstylus and inner terminalia, lateral view; 17, epandrium and surstyli, posterior view; 18, surstylus in maximal lateral extension; 19, surstyli, anterior view; 20, pregonites and phallapodeme in maximal extension.

Gozo-Mgarr-ix-Xini, Mgiebah, Salina Bay, Wied Qanotta. MOROCCO: Rabat. POLAND: Szczecin (= Stettin). PORTUGAL: Estonil, Valenca. SERBIA & MONTENEGRO: Radovici. NETHERLANDS: Noord-Holland: Zandvoort; Zeeland: Ouddorp. SPAIN: Cadiz: Hozgarganta valley; Catalagna: Barcelona; Galicia: Santiago de Compostela; Mallorca: Drach. SWEDEN: Skane. SWITZERLAND: Bern: Ostermundigen; Fribourg: Mt. Vuilly; Genève: Bernex, Cartigny, Champel, Chancy, Dardagny, Jussy, Russin, Sézegnin; Schaffhausen: Beringen, Merishausen, Rüdlingen; Ticino: Gordola, Minusio, Mt. S. Giorgio; Vaud: Cudrefin; Valais: La Rippe, Leuk; Zürich; Zürich. TUNISIA: Ain Sobah, Tabarka. WALES: Glamorgan, Oxwich Bay, Kenfig. **Nearctic** – CANADA: British Columbia: Vancouver area. USA: Oregon: Sand Lake, Tillamook Co; Washington: Pierce Co. (CAS, CBM, CCK, CGB, CMCT, CME, CPG, ETHZ, INRA, MHNG, MHNN, NHMB, NRS, SIZK, SMNS, SMO, USNM, ZMUC, ZSM)

DIAGNOSIS

Palpus black or at least dark brown in distal half, the orangish-brown base sometimes extending ventrally almost to the tip; mesonotum usually not uniformly grey, but with faint to strong orange to yellow stripes along dorsocentral setae; these stripes may be narrow or very wide and almost reach the line of intraalar setae; lateroventral black spots on scutellum small; legs yellow, forefemur sometimes with dark brown pattern or entire legs more extensively darkened, including the apical quarter of all tibiae. Male: surstylus elongated, with an apical tooth (Fig. 17) and usually with 1 strong and 1-3 weak setae on the subepandrial plate (Fig. 19); medial branch of pregonite with a subapical tooth, and apical tooth usually not prominent (Fig. 20); postgonite without tooth-like projection distally. Female: tergite 3 with unmodified black setae along posterior margin (Fig. 6); pleurae on level of tergites 4-5 with a conspicuous black glandular area (Fig. 8); tergite 8 with a pair of "L-"shaped sclerites (Figs 43-44); tergite 9 distally without long, black setae, usually wider than long, almost rectangular, smoothly concave medially along posterior margin (Fig. 44); sternite 8 raised medially, with a pair of long ear-like projections (Fig. 45); opening in lateral view more slit-like, elongated, apically sharply pointed (Fig. 43); ventral plate of ear-like projection in ventral view large, semicircular (Fig. 45). Wing length: 3.7-4.25 mm.

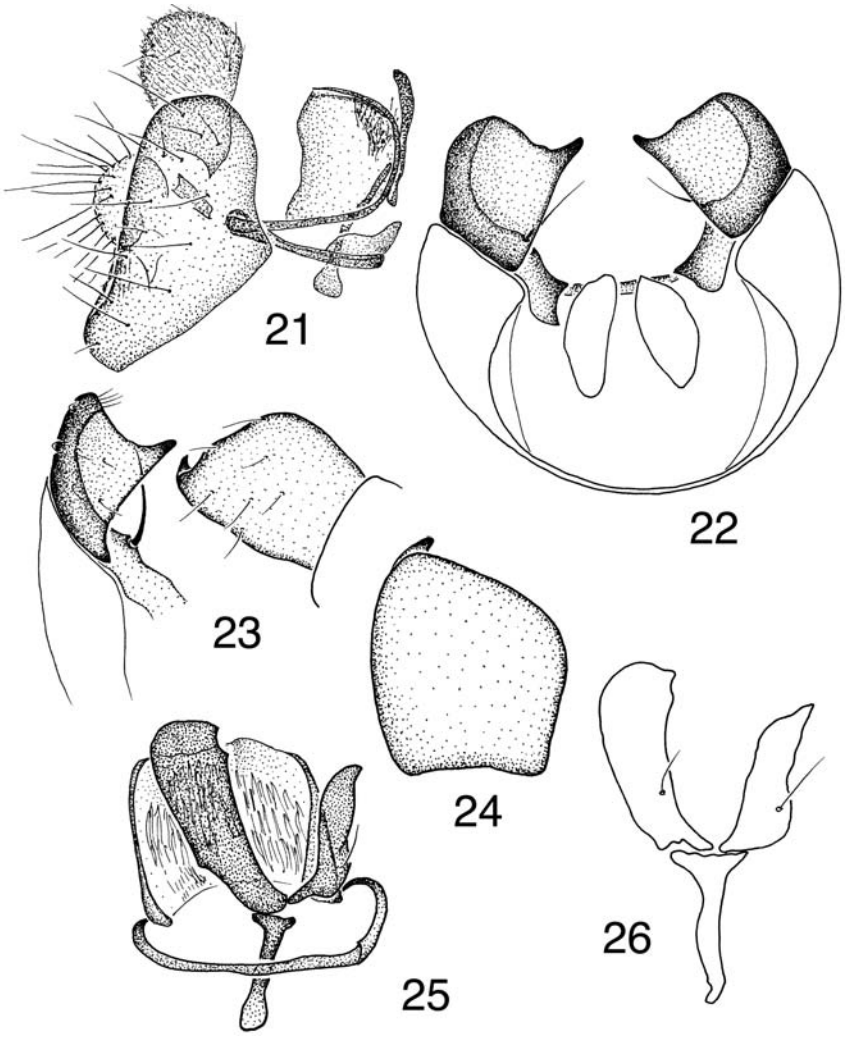
REMARKS

Externally, this species is somewhat intermediate between *M. tabidiventris* and *M. subvittata*. The colour of the mesonotum is quite variable. Specimens from southern Europe tend to be paler than those from northern Europe and the mountains, and may then be easily confused with *M. subvittata*. Specimens with an entirely grey mesonotum (as in *M. tabidiventris*) are rare. A faint paler stripe over the line of dorsocentral seta is usually visible under certain illumination.

M. fasciata is the sister species of *M. subvittata*, both having the same type of genitalia in both sexes, and females of both species have a large glandular area in the abdominal pleurum. The differences in the colour of the palpus as presented in the key apply to about 90% of the specimens. Those with a black tip clearly belong to *M. fasciata*, but a pale palpus may be found in conjunction with a rather yellow thorax in specimens of both species from mediterranean countries. The males differ clearly in the shape of the surstylus which is distinctly longer than wide in profile in *M. fasciata* (Fig. 18) and more square in *M. subvittata* (Fig. 24). Usually, the subepandrial sclerite carries 1-3 weak setulae in addition to the strong seta in *M. fasciata* (Fig. 19), but only one strong seta is present in *M. subvittata* (Fig. 23). The females can be separated by the chaetotaxy of the abdomen and the shape of the ear-like projections of sternite 8, as explained in the key.

DISTRIBUTION

Widespread and common all over Europe. Also known from North Africa, but apparently absent from Israel. According to Shatalkin (2000) also in the Caucasus and the "Near East". An isolated population is known in the Western part of the Nearctic region. These specimens are identical with specimens from Western Palaearctic region. At the present moment it is impossible to explain this remarkable bimodal distribution of this species.



FIGS 21-26

Male terminalia of *Minettia subvittata* (Loew): 21, epandrium, surstylus and inner terminalia, lateral view; 22, epandrium and surstyli, posterior view; 23, surstyli, oblique view (paralectotype); 24, surstylus in maximal lateral extension; 25, inner terminalia, anterior view (paralectotype); 26, pregonites and phallapodeme in maximal extension.

Minettia subvittata (Loew, 1847) Figs 3, 5, 21-26, 46-48

Sapromyza subvittata Loew, 1847: 28. Type localities: Italy: Neapel; Greece, Turkey ("Kleinasien")

Sapromyza cataracta Pandellé, 1902: 398. Type localities: France: Marseille; Italy: Trieste. [synonymy confirmed]

Minettia rivosa auctt. nec Meigen, 1826: Freidberg & Yarom (1990).

TYPE MATERIAL

Type material of subvittata

Lectotype ♀ (here designated, examined): (small, white label with 2 black triangles on top), "Italien, Neapel, 8.1845, Zeller" (handwritten, blue label); "Coll. H. Loew" (printed, white label); "Typus" (printed, red label); "11596" (printed, white label); "Sapromyza subvittata m. [handwriting Loew], Type ♀ Loew [handwriting of unknown person]" (white label); "Zool. Mus. Berlin" (printed, yellow label"); "Lectotypus ♀, Sapromyza subvittata Loew, 1847, desig. B. Merz'2002" (handwritten, red label). (ZMHB). The specimen is directly pinned and is in good condition, with only the right posterior fronto-orbital seta and left medial vertical seta missing, some setae on head partly broken; left lateral postalar seta and right second postsutural dorsocentral seta absent; left wing slightly broken.

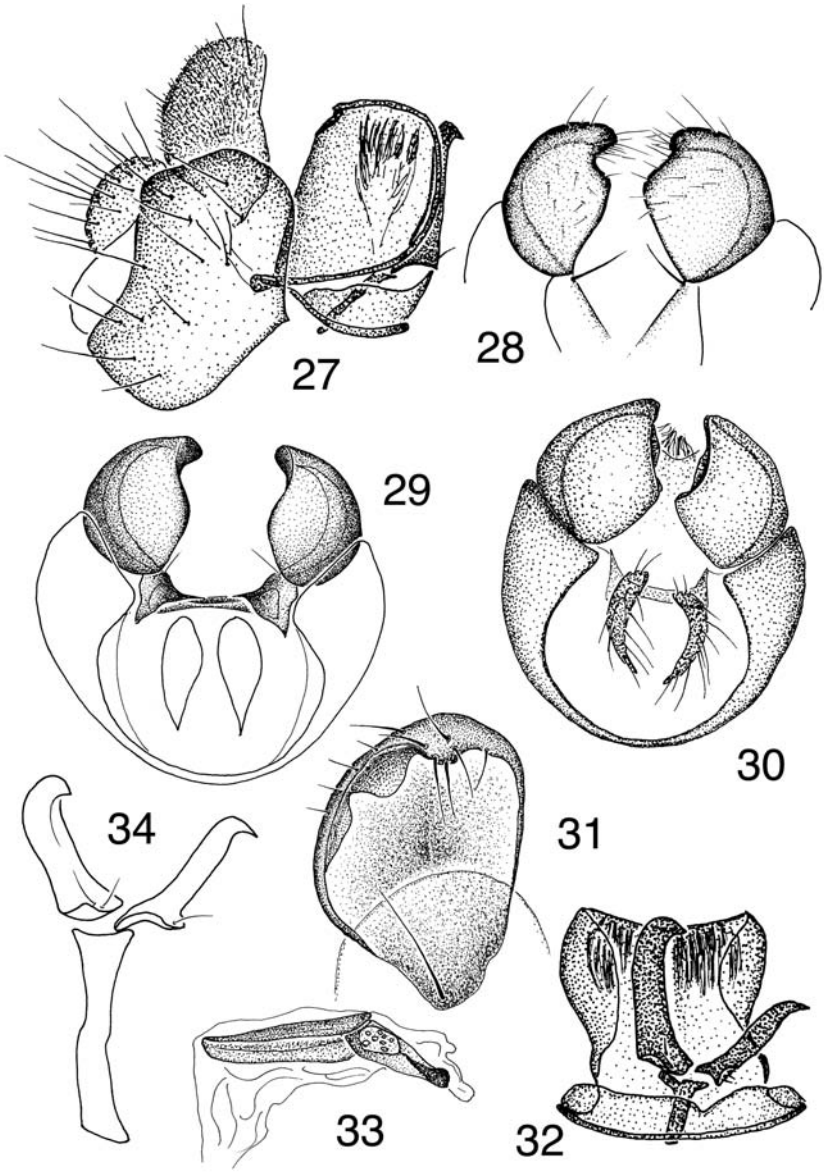
Paralectotype ♂ (examined): (small square, pink label), "KleinAsien, coll. H. Loew" (handwritten, blue label); "Coll. H. Loew" (printed, white label); "Paratypus" (printed, red label); "Sapromyza subvittata Cotype ♀ Loew, 1847" (handwritten [not by Loew], white label); "Zool. Mus. Berlin" (printed, yellow label"); "Paralectotypus ♂, Sapromyza subvittata Loew, 1847, desig. B. Merz'2002" (handwritten, red label). The abdomen has been removed and is stored in glycerol in a glass vial on the same pin as the remaining specimen. Paralectotype ♂ (examined): "95" (handwritten, small, square white label); "Rhodus, coll. H. Loew, Erber 5." (handwritten, blue label); "Coll. H. Loew" (printed, white label); "Paratypus" (printed, red label); "Zool. Mus. Berlin" (printed, yellow label"); "Paralectotypus ♂, Sapromyza subvittata Loew, 1847, desig. B. Merz'2002" (handwritten, yellow label); "Minettia tubifer (Mg.), det. B. Merz'2002" (handwritten, white label) (both ZMHB).

Comment: Another female from the collection H. Loew (ZMHB) labelled "Italien, Neapel, Zeller S., 29.7.1845" does not belong to the syntypic series, because the collecting date (July) does not correspond with the original description (August). This specimen belongs to *Minettia tubifer* (Meigen). The abdomen of the specimen has been removed, and is kept in glycerol in a glass vial on the same pin.

The lectotype is labelled "Typus", and the other specimens "Paratypus", but Loew (1847) did not designate a holotype and the red "Typus"-label was apparently added later to the specimen. It was probably this specimen that Czerny (1932) studied for his re-description and which he appeared to consider as the holotype (only by interference, he never referred to one of the specimens as the "Type" or "Holotype", but he did refer to Paratypes). However, his action was ambiguous and does not fulfill the requirements of the ICZN (1999), articles 74.5 or 74.6. Therefore, a lectotype designation is necessary in order to fix unambiguously the identity of the species. The lectotype corresponds perfectly with the description of Loew and maintains the current concept of the species (Shatalkin, 1998, 2000).

Type material of cataracta

Lectotype ♀ (here designated, examined): "♀, 6522" (handwritten), "Sapromyza cataracta (Pandellé's handwriting), "Lectotypus Sapromyza cataracta Pandellé, 1902, ♀, desig. B. Merz'2003" (red label), "Minettia subvittata (Loew), det. B.



FIGS 27-34

Male terminalia of *Minettia tabidiventris* (Rondani): 27, epandrium, surstylus and inner terminalia, lateral view; 28, surstyli, posterior view (paralectotype); 29-30, two extreme forms of epandrium and surstyli, posterior view; 31, surstylus, medial view of extreme form with medioapical projection; 32, inner terminalia, anterior view; 33, aedeagal apodeme; 34, pregonites and phallapodeme in maximal extension.

Merz'2003" (white label) (MNHNP). The specimen is directly pinned and is in very good condition (colours strong, little debris on integument; mesonotum medially sunken, legs slightly shrivelled).

Comment: Although the species was described at least from two specimens, only the above mentioned female could be found in the MNHNP. (Charbonnel, in litt.). According to the catalogue of Pandellé, the code "6522" means "Marseille, Abeille (abdomen 3ème arc. avec une série marginale d'aiguillons couchés robuste atteignant le 5ème arceau)" [= collected by Abeille in Marseille, 3rd abdominal segment with a series of long setae reaching 5th segment] (Charbonnel, in litt.). It cannot be excluded that further type specimens occur elsewhere. Therefore it is proposed here that a lectotype is designated in order to fix the identity of this species.

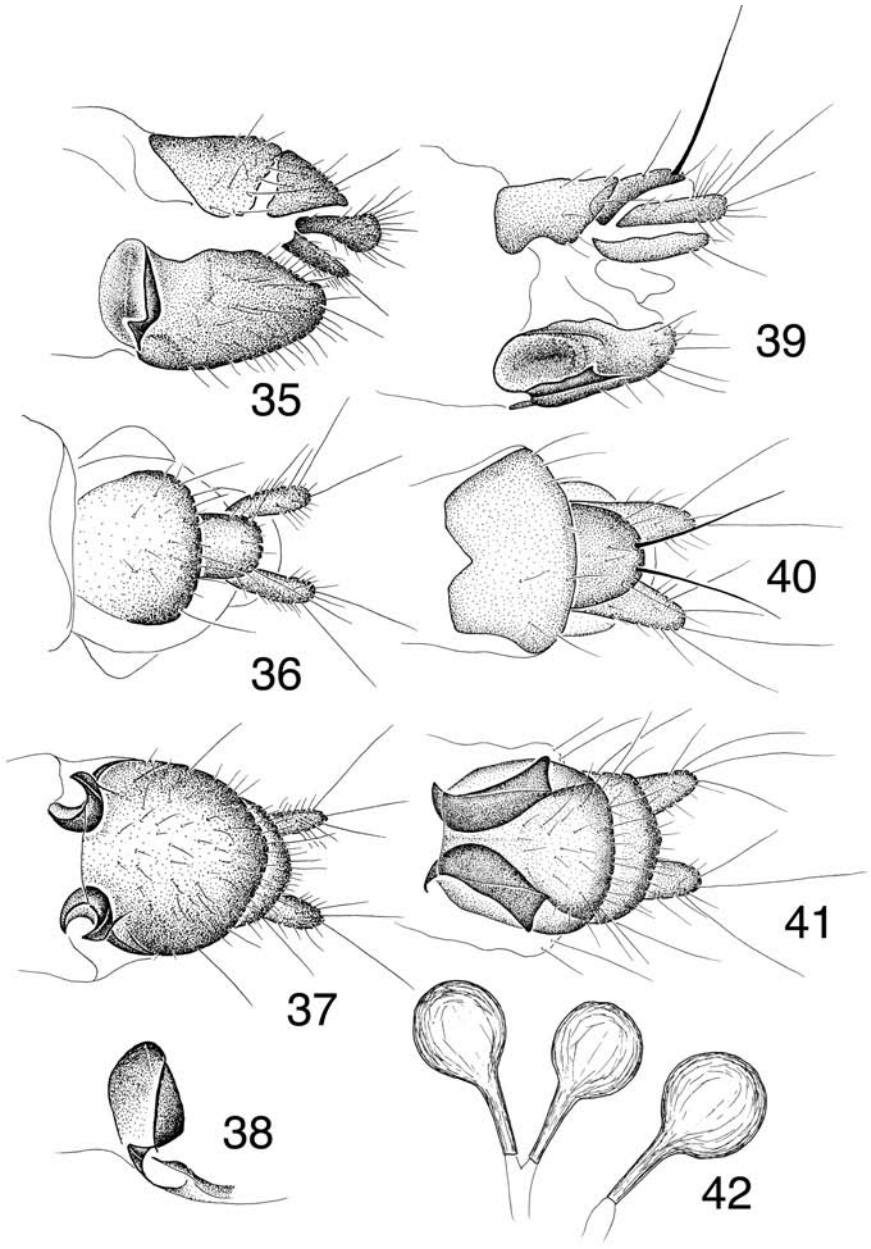
The specimen is characterized by the entirely yellow palpus, the strongly plumose arista, the pair of black spots lateroventrally on the scutellum, 0+3 dorsocentral setae and 3 pairs of strong medial and 3 pairs of weaker lateral setae at the posterior margin of tergite 3. Although the genitalia are retracted into the preabdomen it is obvious that tergite 9 does not have long black apical setae, and sternite 8 is bulging medially. This combination of characters is the same as in *S. subvittata*. Therefore this synonymy which was first proposed by Czerny (1932) without studying the types is confirmed herewith.

Other material examined (237 specimens)

CROATIA: Verudela. CYPRUS: Akamas peninsula, Akrotiri peninsula, Diarizos valley, Lemasos, Lefkara, Kalvasos, Kissousa. FRANCE: Alpes-de-Haute-Provence: Montagnes de Lure; Alpes Maritimes: Menton; Aude: St. Pierre de la Mer; Bouches-du-Rhône: Arles, Etang de Berre, Les Baux; Drôme: Curnier; Gard: Pont du Gard, Remoulins. Hérault: Grables, Montpellier, St. Gily-du-Fesc; Pyrénées-Orientales: Port Vendres; Var: Cavalière; Vaucluse: Cucuron; Yvelines: Maisons Laffitte. GREECE: Crete: Agios Galini, Agia Pelagia; Epyrus: Ioanina; Kilkis: Polycastro; Madeconia: Florina, Lahanas hills, Struma valley; Thessaloniki; Peloponnes: Lakonfas, Akhaia. HUNGARY: Kalocsa. ISRAEL: Aniam, Antipatris, Herzliyya, Mezdat Nimrod, Meron, Montfort, Mt. Carmel, Panyas, Park HaYarden, Ramat Aviv, Ramot Naftali, Rehobot, Qusbiye, Snir, Tel Aviv, Tel Dan, Zomet. ITALY: Cosenza: Marcellina, Santa Maria del Cedro; Puglia: Mt. Gargano; Trieste: Trieste. SERBIA & MONTENEGRO: Radovici. SPAIN: Cataluna: Barcelona. TURKEY: Antalya: Antalya, Cavusköy, Kemer, Phaselis, Side; Isparta: Kovada lake; Samsun: Samsun. (CAS, CBM, CGB, CMCT, CME, CPG, INRA, MHNG, MHNN, SIZK, SMNS, SMO, TAU, USNM, ZSM)

Diagnosis

More brownish than grey, with very wide orange to brown stripes along the lines of dorsocentral setae, leaving comparatively narrow grey stripes along the acrostichal and intraalar setae, but dark specimens may have a similar pattern to *M. fasciata*; palpus yellow, rarely with dorsal margin brown to black; black lateroventral spots on scutellum small (Figs 3, 5); legs yellow, but femora often partly grey to black; black transverse stripes on tergites 3-5 (Fig. 7) tend to be narrower than in *fasciata* and *tabidiventris* but this is not a reliable character. Male: surstylus rather square in profile (Fig. 24); apically with a tooth-like projection at posterior margin; subepandrial plate with 1 strong black seta (Figs 22-23); medial pregonite with a subapical tooth, apical tooth barely longer (Fig. 26); postgonites distally without tooth like projection. Female: 3-4 pairs of medially separated, very long, black setae at posterior margin of



FIGS 35-42

Female terminalia of *Minettia czernyi* Freidberg & Yarom (35-38) and *M. tabidiventris* (Rondani) (39-42): 35, 39, lateral view; 36, 40, dorsal view; 37, 41, ventral view; 38, ear-like projection, enlarged; 42, spermathecae.

tergite 3 (Fig. 7); abdominal pleurae with a dark glandular area on level of segments 4-5; tergite 8 with a pair of "L-"shaped sclerites (Fig. 47); tergite 9 with moderatly enlarged black setae at distal margin (Fig. 46), about as wide as long, almost rhomboid, at posterior margin medially smoothly concave (Fig. 47); sternite 8 raised medially, with a pair of rather short ear-like projections (Fig. 48); opening in lateral view triangular (Fig. 46); ventral plate of this ear-like projection in ventral view small, laterally pointed. Wing length: 3.65-4.55 mm.

REMARKS

This species resembles very much pale specimens of *M. fasciata* and a safe separation is only possible by the study of the terminalia (♂ or ♀) as given in the key. As explained under *M. fasciata* the colour of palpus and mesonotum are not fully reliable characters.

M. subvittata may also be confused with dark specimens of *M. czernyi*. The latter species, however, always has much larger black spots lateroventrally on the scutellum (Fig. 2, 4), and differs in the genitalia of both sexes. Tergite 4 instead of tergite 3 has conspicuously long apical setae in *M. czernyi*.

DISTRIBTUTION

A circummediterranean species with northernmost records from Hungary and the Paris area (Yvelines: Maisons Laffitte).

Minettia tabidiventris (Rondani, 1877) Figs 27-34, 39-42

Sapromyza tabidiventris Rondani, 1877: 61. Type locality: not given (according to Papp, 1984: "Italy").

Sapromyza luteo-frontata Becker, 1895: 218. Type locality: "Herkunft nicht angegeben, daher wahrscheinlich aus Posen oder Schlesien". **Syn. n.**

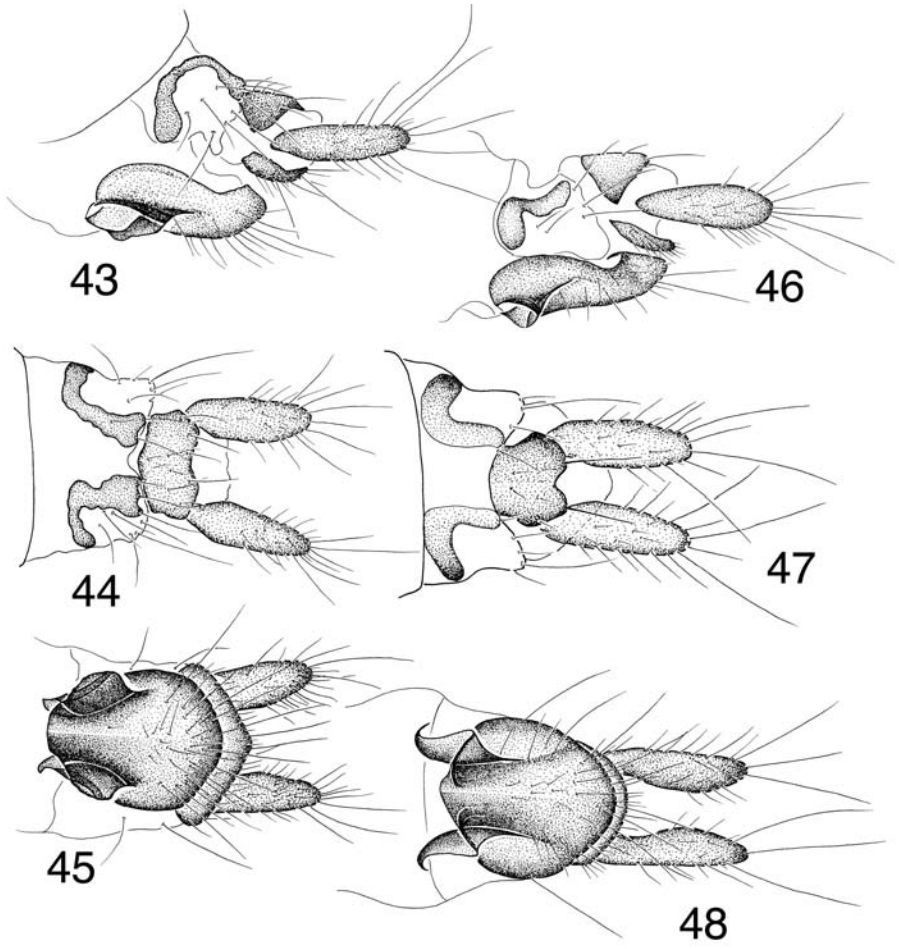
Minettia fasciata auctt. nec Fallén, 1826: Collin (1948); Papp (1979, 1984); Remm & Elberg (1979); Freidberg & Yarom (1990); Shatalkin (2000).

TYPE MATERIAL

Type material of tabidiventris

Lectotype ♂ (here designated, examined): "1553" (printed in red), "Lectotypus ♂, Sapromyza tabidiventris Rondani, 1877, desig. B.Merz'2003" (red label) (MZF). The condition of the specimen is good, with strong colours and antennae and legs fully present; surstylus mostly visible. The following setae are missing: left posterior frontoorbital, left medial vertical, right posterior notopleural, right anterior dorsocentral, left anterior katepisternal and a series of setulae on the dorsal surface of the abdominal tergites.

Paralectotypes (examined): 1♂, 3♀♀, with same label "1553", "Paralectotypus Sapomyza tabidiventris Rondani, 1877, desig. B. Merz'2003". The male paralectotype was dissected and the abdomen with the genitalia are stored in gylcerol in a glass vial which is attached to the pin of the specimen. The condition of the paralectotypes varies from rather good to bad, each specimen with some damage. One additional ♂ is glued on a cardpoint and has the same label "1553", but represents the species



FIGS 43-48

Female terminalia of *Minettia fasciata* (Fallén) (holotype) (43-45) and *M. subvittata* (Loew) (46-48): 43, 46, lateral view; 44, 47, dorsal view; 45, 48, ventral view.

Minettia lupulina (Fabricius, 1787), and therefore differs in various external characters from the original description and is not considered part of this type series.

Comment: This species was described from an unknown number of specimens ("non infrequens, exemplaribus preaecedentis [= *subvittata* Lw.] permixta"). All five syntypic specimens belong clearly to the same species, fitting perfectly the original description. However, because of the difficult taxonomy of the group with the inclusion of another species in the series with the same number ("1553"), a lectotype is designated in order to fix the identity of the species.

Type material of luteofrontata

Holotype ♀ (examined): "14/8 46" (handwritten); "Coll. H. Loew" (printed); "11607" (printed); "Type" (red label, printed); "luteo-frontata Beck." (Becker's hand-

writing); “Holotypus ♀, Sapromyza luteo-frontata Becker 1895” (red bordered label, L. Papp’s handwriting); “Minettia fasciata Fall. ♀, det. L. Papp” (handwritten); “Zool. Mus. Berlin” (yellow label, printed); “Minettia tabidiventris (Rondani), ♀, det. B. Merz’2003” (handwritten) (ZMHB). The specimen is in a moderately good state of preservation (no debris, pin not damaged, colours strong, but right posterior half of pleura (meron, anatergite, katatergite, anepimeron) and right half of abdomen eaten by pest and some setae on head and thorax missing).

Comment: Becker (1895) described this species from one specimen in the Loew collection. He alternatively considered this species to be a male (title) or a female (diagnosis). Although not very comprehensive, the description of Becker fits the present specimen well. It is thus concluded to be the holotype.

The comparison of the types of *tabidiventris* and *luteofrontata* clearly shows that they are conspecific and their synonymy is proposed here.

Other material examined (255 specimens)

CROATIA: Dubrovnik (Ragusa). CYPRUS: Akrotiri, Diarizos valley, Kissousa, Kofinous, Kouklia, Lemasos. DANMARK: Jylland: Thy. Nors. FRANCE: Alpes-de-Haute-Provence: Montagnes de Lure; Alpes Maritimes: Le Bar-sur-Loup; Aude: Marsa; Doubs: Vallée de la Loue; Drôme: Chalancon; Gard: Claret; Haute Savoie: Bossey, Le Pas de l’Echelle, Monnetier, Salève; Hérault: Grables, Lattes; Hautes Alpes: Agnielles; Haute Savoie: Albertville; Pyrénées-Orientales: Argèles-s-Mer, Collioure; Vaucluse: Beaumont. GERMANY: Baden-Württemberg: Lottstetten; Bayern: Bamberg, Dachau, Erlau b. Passau, Etterschlag, München, Schöngeising; Rheinland-Pfalz: Mainz; Sachsen-Anhalt: Wernigerode. GREECE: Corfu: Corfu, Merlin Marah; Macedonia: Seres; Sterea Elada: Itea, Paranssos mountains. HUNGARY: Kalocsa. ISRAEL: Mt. Carmel, Mt. Meron, N. Amud, N. Bezet, Panyas, Park HaYarden. ITALY: Trento: Mt. Lessini; Sicily: Nebrodi, Randazzo; Verona: Erbezzo. LIECHTENSTEIN: Balzers, Ruggell. MALTA: Buskett. NORWAY: Oslo: Hovedoya; Tey: Bamble. PORTUGAL: Praia des Macas. SPAIN: Catalana: Barcelona; Granada: Sierra de Alhama. SWEDEN: Gotland: Ardre, Ljugarn. SWITZERLAND: Bern: Mörigen, Sonceboz; Genève: Bernex, Cartigny, Chancy, Chèvres, Collonge-Bellerive, Dardagny, Russin, Sézegnin; Fribourg: Mt. Vuilly; Graubünden: Brienz-Surava, Valbella; Neuchâtel: Neuchâtel; Sankt Gallen: Betlis-Quinten; Schaffhausen: Merishausen, Rüdlingen; Schwyz: Gersau; Valais: Baltschieder, Leuk; Zürich: Dietikon, Unterengstringen, Winterthur, Zürich. TURKEY: Antalya: Cavusköy, Selale. WALES: Tenby: Manorbier Beach. (CBM, CGB, CPG, CMCT, INRA, ETHZ, MHNG, MHNN, NHMB, NML, NRS, SMNS, SMO, TAU, USNM, ZMB, ZMUC, ZSM)

Diagnosis

Palpus always black at least in apical half; mesonotum uniformly grey microtrichose, without paler stripes along lines of dorsocentral setae, but sometimes with narrow black stripe just medially of line of dorsocentral setae; scutellum lateroventrally with two small black spots (as in Figs 3, 5); legs yellow, but anterior femur often dark brown to black and apices of tibiae often also darkened; transverse dark bands on tergites 3-5 broadly interrupted, leaving sometimes only 1-2 pairs of dark spots (as in Fig. 7). Male: surstylus almost square in profile, distal margin characteristically concave and invaginated (Figs 28-31); left pregonite usually with a simple apical tooth (Fig. 34); postgonite distally without protuberances; subepandrial plate usually with 1 rather short seta only (Figs 28, 31). Female: without long setae along posterior margin of tergite 3; pleurae usually with only weak glandular area on level of tergites 4-5; tergite 8 forming a large sclerotized plate (Fig. 40); tergite 9 with a pair of very long,

black, soft setae in the middle of the posterior margin (Fig. 40); sternite 8 indistinctly raised medially, ear-like projections not separated by depression (Fig. 41); ear-like projection in profile more or less parallel-sided, with deep invagination (Fig. 39). Wing length: 3.75-4.45 mm.

VARIABILITY

Specimens from Southern Europe (France, Alpes Maritimes; Italy, Sicily; Greece, Macedonia; Malta) show considerable variation in the outline of the distal margin of the surstylus. It is evenly concave in typical specimens (Figs 28-29) but there is a tendency to develop an additional tooth-like projection near the middle. The most extreme forms exhibit a very strong medial projection giving the impression of the presence of 3 lobes (Figs 30-31). The shape and orientation of this projection is subject to strong variability. Because of the continuous variation of this character and the presence of different types of projections in the same population it is concluded that one variable species only is involved.

REMARKS

M. tabidiventris differs from the couplet *fasciata* and *subvittata* by the usually entirely grey mesonotum without paler stripes over the lines of the dorsocentral setae, in the male in the shape of the surstylus and the left pregonite and in the female in the entirely sclerotized tergite 8, the long pair of setae along the posterior margin of tergite 9 and the structure of sternite 8 with a slightly concave surface and parallel-sided ear-like projection in profile.

DISTRIBUTION

Known throughout Europe except the very north of Scandinavia, Turkey and Israel. Apparently absent from North Africa. According to Shatalkin (2000) also in the Caucasus.

DOUBTFUL SPECIES

Lauxania pallida Meigen, 1830, nomen dubium

Lauxania pallida Meigen, 1830: 381. Type locality: not given ("von Herrn von Winthem").

No syntypic specimens could be found in the collections of Meigen in Paris (MNHNP, Charbonnel, in litt.), nor in Vienna (NHMW, Contreras-Lichtenberg, in litt.). The description is short, and the species is compared by Meigen with *Minettia lupulina* (Fabricius, 1787), differing from the latter by the black antenna, entirely transparent wing and the apparently uniformly grey scutellum dorsally (see Morge, 1975-1976, plate CCX, Fig. 8). Although sometimes treated as a species of the *Minettia fasciata* group (Papp, 1984) it seems more reasonable to assume that *L. pallida* either is a senior synonym of *Sapromyza longiseta* Loew, 1847 (if Meigen's illustration of *pallida* is a male) or it is one of the species of the *M. lupulina* group, as it was suggested by various authors who synonymized it with *Sapromyza dimidiata* Loew (Becker, 1902; Hendel, 1908; Czerny, 1932). Because of the insufficient description and the lack of type specimens, *L. pallida* must be considered at the present moment as nomen dubium.

TAB. 1
Synoptic comparison of the 4 species of the *Minettia fasciata* species-group. M = Male; F = Female; bold = diagnostic characters

Character	*M. czernyi*	*M. fasciata*	*M. subvittata*	*M. tabidiventris*
Colour of palpus	yellow	at least apically, but usually entirely black	usually yellow	usually black
Colour of mesonotum	yellow with medial grey stripe along line of acrostichal setulae	variable, from golden-grey to ash-grey, striped or unstriped	yellow-grey with yellow stripes over line of dorsocentral setae	usually uniformly grey, rarely with yellow dorsocentral stripes
Size of black spots on scutellum	**large**	small	small	small
Colour of subscutellum	**yellow**	black	black	black
F: Marginal setae on tergites	**tergite 4 with 4-6 long, thick setae medially**	without enlarged setae	**tergite 3 with 6-8 long, black setae medially**	without enlarged setae
M: Surstylus	sides bulging, irregularly shaped, **apically undulating**	parallel-sided, **twice as long as wide,** with apico-dorsal tooth	parallel-sided, **as long as wide,** with apico-dorsal tooth	sides bulging, **apically concave or with medial protuberance**
M: Setae on subepandrial plate	1 long	**1 long and 1-4 small**	1 long	1 long
M: Left gonite	**large and thick,** small process below tip	slender, small process below tip	slender, small process below tip	slender, **evenly pointed**
F: Tergite 8	1 rectangular sclerite	2 L-shaped sclerites	2 L-shaped sclerites	1 rectangular sclerite
F: Tergite 9	short setulose	short setulose	short setulose	**one pair of long medial marginal setae**
F: Sternite 8	**evenly convex, without keel**	medially raised, with an indistinct keel	medially raised, with an indistinct keel	**more or less flat**
F: Ear-like projection of sternite 8	small, round, **higher than wide in profile**	slit-like, long, **parallel-sided in profile**	short, strongly **pointed in profile**	**distally semicircular,** longer than wide in profile

TAXONOMIC SUMMARY

The *Minettia fasciata* species-group contains at present four valid species:

Minettia czernyi Freidberg & Yarom, 1990
= *M. quadrisetosa* Czerny, 1932 (junior primary homonym of *M. quadrisetosa* Becker, 1907)

Minettia fasciata (Fallén, 1826)
= *M. rivosa* (Meigen, 1826) (synonymy first proposed by Westwood, 1840, confirmed herein)
= *M. nemorosa* (Robineau-Desvoidy, 1830) [synonymy doubtful] (synonymy of *rivosa* with *nemorosa* proposed by Macquart, 1835: 403)

Minettia subvittata (Loew, 1847)
= *M. cataracta* (Pandellé, 1902) (synonymy first proposed by Czerny, 1932, confirmed herein)
= *M. rivosa* auctt. nec Fallén, 1826: Freidberg & Yarom (1990)

Minettia tabidiventris (Rondani, 1877)
= *M. luteofrontata* (Becker, 1895), **syn. n.**
= *M. fasciata* auctt. nec Fallén, 1826: Collin (1948), Papp (1979, 1984), Freidberg & Yarom (1990), Shatalkin (1998, 2000)

ACKNOWLEDGEMENTS

It is my pleasure to thank my colleagues and the curators of the institutions listed in the "Material and Methods" section who sent me precious specimens in their care and who supplied me with important information. In particular I would like to thank Mrs J. Charbonnel (Paris) for her patience with my frequent questions concerning types and label information. I extend my thanks to L. Papp (Budapest), A. Shatalkin (Moscow) and I. Yarom (Hazeva) for fruitful discussions and to W. Schacht (Munich) who put an unpublished version of the English translation of the keys of Shatalkin (2000) at my disposal. F. Marteau (Geneva) helped me with the preparation of the plates, and S. Gaimari (Sacramento) reviewed a draft of the manuscript.

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