

AN ANNOTATED KEY TO SPECIES OF FAMILY MYTHICOMYIIDAE (DIPTERA) FROM EGYPT

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INTRODUCTION

Mythicomyiidae are tiny parasitoid flies (0.5 – 5.0 mm), found throughout most parts of the world except the highest altitudes and latitudes (Greathead and Evenhuis, 2001). Because of their extremely small size and curious body shape, the Mythicomyiidae have had a confused taxonomic history. Some taxa have been placed at one or another in the family Empididae (e.g., species of *Cephalodromia*), Stratiomyidae (e.g., species of *Glabellula*), or Rhagionidae (e.g., species of *Mythicomyia*) (Evenhuis, 2002).

Becker (1913) proposed the subfamily Cyrtosiinae (essentially comprising the genera which are now considered Mythicomyiidae) and placed it in Bombyliidae, where mythicomyiids have long been treated (Greathead and Evenhuis, 2001). Rohdendorf (1964) proposed raising the group to family level. Zaitzev (1991) was the first to give characters warranting raising the group to family level. Evenhuis (1993, 1994) and Evenhuis & Greathead (1999) treated the group as a separate family. Efflatoun (1945), in his study on the Egyptian Bombyliidae, treated some species of this group in four genera (*Cyrtosia*, *Empidideicus*, *Leylaiya* and *Platypygus*) under family Bombyliidae. But since that time many generic concepts have been changed, and some revisions have been carried out with the addition of new subfamilies and genera to family Mythicomyiidae globally and to the African fauna.

Family Mythicomyiidae is separated from Bombyliidae by the indentation of the inner eye margin near the level of the antennae, the unbranched vein R₄₊₅, the extremely reduced or absent palpi, wings held together over the abdomen at rest, the abdominal spiracles being placed in the terga, and the caudal spines of the pupa hooked at a 90° angle.

The present study provides an annotated illustrated key to 3 subfamilies, 6 genera, and 16 species of Mythicomyiidae known from Egypt according to the most recent taxonomic status. The distribution of each species in the eight ecological zones of Egypt is recorded (Table 1).

MATERIAL AND METHODS

The present study is based on specimens preserved in Eflatoun collections in the Entomology Department, Faculty of Science, Cairo University, and in the Entomological Society of Egypt. In addition to specimens collected by the authors from different localities that representing all ecological zones in Egypt using aerial net or yellow pan traps. The terminology employed follows McAlpine (1981).

RESULT AND DISCUSSION

Key to Egyptian species of Mythicomyiidae

1. R_{4+5} vein ending in costa at a level slightly beyond, at, or before end of M_2 vein; R_{4+5} and M_1 veins converging or parallel at wing margin (Fig. 1, C)
 subfamily **Leylaiyinae** / *Leylaiya mimnermia* Eflatoun, 1945
- R_{4+5} vein ending in costa at a level clearly beyond end of M_1 vein (Figs. 2, C; 4, D; 5, B) 2

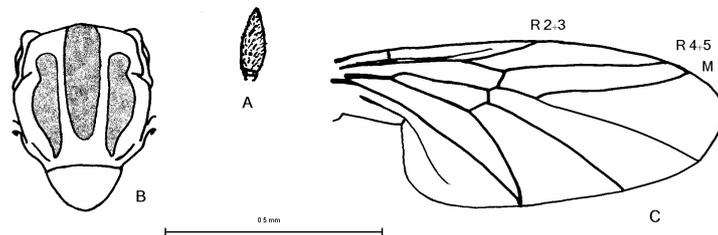


Fig. 1: *Leylaiya mimnermia* Eflatoun: **A:** Antenna, **B:** Thorax, **C:** Wing.

2. R_{2+3} vein apparently absent, confluent with R_{4+5} (Fig. 2, c); gonocoxites short, broadly triangular; aedeagus very large, bulbous in the basal part; Spermathecae spherical with globular, slightly flattened or barrel-shaped capsules, with an apical invagination (Fig. 3).....
Subfamily **Empidideicinae** / genus *Empidideicus* Becker 7

- R_{2+3} vein present (Fig. 5, B); spermathecae shaped otherwise (Fig. 5, C) 3
- 3. R_{2+3} vein ending in costa well separated from R_1 ; r_1 cell not a small triangular; antennal stylus placed apically on second flagellomere or not evident (Figs. 4, 5)..... subfamily **Platypyginae** 4
- R_{2+3} vein ending in R_1 , at or before junction with costa forming a small triangular cell r_1 subfamilies not represented in Egypt

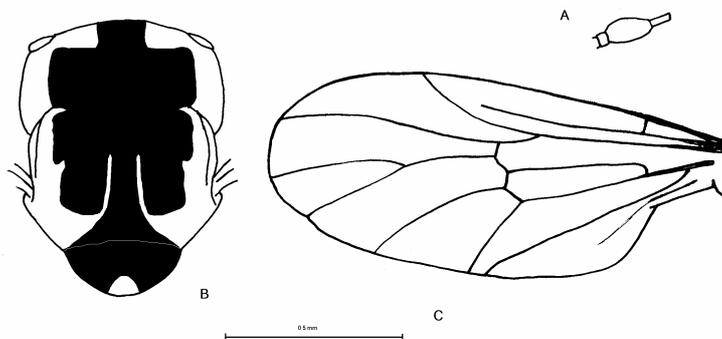


Fig. 2: *Empidideicus efflatouni* Engel: A: Antenna, B: Thorax, C: Wing.

- 4. Oral cavity with a prominent ventral sulcus, and produced posteriorly resulting in well developed postgena of either two lateral points or one single medial point 5
- Oral cavity without a prominent ventral sulcus; postgena normal, or if produced posteriorly not pointed6

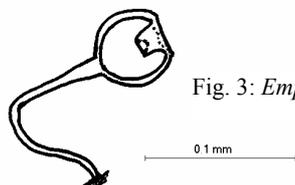


Fig. 3: *Empidideicus mariouti* Efflatoun: Spermatheca.

- 5. Discal cell open distally, not closed by cross-vein; postgena developed into single point *Cephalodromia nitens* Loew, 1846
- Discal cell closed distally by cross-vein; postgena developed into two lateral processes or posterior end of sulcus squared; vein Sc incomplete; Proboscis long; gonocoxites broad, rounded apically; aedeagus conical with slightly curved apex (Fig.4) *Cyrtisiopsis melleus* Loew, 1856

- 6. Discal cell closed distally by cross-vein; gonocoxites short, rounded; aedeagus very large *Platypygus maculiventris* Loew, 1874
- Discal cell open distally, not closed by cross-vein; gonocoxites triangular; aedeagus narrow, conical Genus *Cyrtosia* Perris (9)

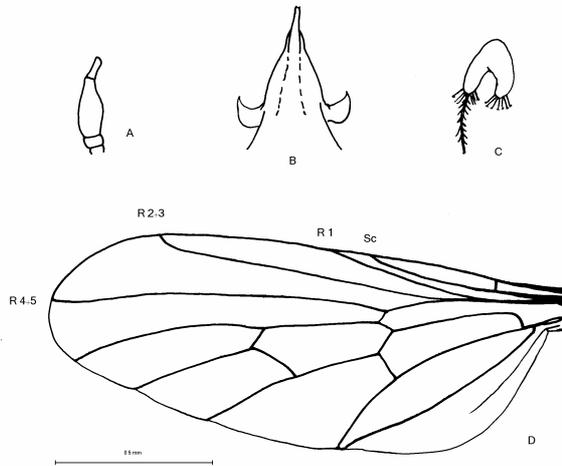


Fig. 4: *Cyrtosiopsis melleus* Loew: A: Antenna, B: Aedeagus, C: Spermatheca, D: Wing.

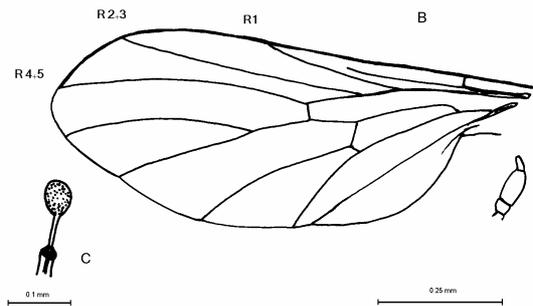


Fig. 5: *Cyrtosia opaca* Loew: A: Antenna, B: Wing, C: Spermatheca.

- 7. Middle ocellus in an almost straight line with lateral ocelli; scape, pedicel and stylus of flagellum yellow to reddish-yellow, with rest of flagellum blackish; thorax pale yellowish-white with three blackish longitudinal stripes on dorsum very broad and completely united to each other except on lower third; wings with a very pale yellowish ill-defined venation (Fig. 2)
*E. efflatounia* Engel, 1933

- Middle ocellus placed in front and not almost in a straight line with the lateral ocelli; antennae completely blackish; thorax yellow with the dark longitudinal stripes on dorsum absent or very indistinct and never united to each other; wings with a well marked blackish-brown venation 8
- 8. Thoracic dorsum dull velvety blackish-brown with the three dark longitudinal stripes extremely ill-defined or absent; femora dark brown to blackish and reddish yellow apically *E. carthaginiensis* Becker, 1907
- Thoracic dorsum chamois to honey-yellow with the three dark longitudinal stripes blackish-brown and fairly distinct; femora entirely yellow
..... *E. mariouti* Efflatoun, 1945
- 9. Thoracic dorsum dull, with or without darker longitudinal stripes 10
- Thoracic dorsum dull or shining, with darker longitudinal stripes indistinct or absent 15
- 10. Legs with tarsi, tibiae, and apices of femora pale yellowish-white or whitish, contrasting with the blackish femora; stylus of flagellum pale yellowish to whitish; wing venation ill-marked; thorax ashy-gray with the longitudinal stripes well defined *C. gulperii* Efflatoun, 1945
- Legs blackish or entirely reddish-yellow with apical tarsal segments obscure or blackish; stylus of flagellum blackish; wing venation well marked; thorax darker colored 11
- 11. Wings distinctly tinged brown; thorax velvety brownish-gray; the three longitudinal stripes velvety blackish-brown with the median one divided by a narrow pale median line *C. tetragramma* Bezzi, 1926
- Wings hyaline or feebly tinged brownish; thoracic longitudinal stripes (if present) less conspicuous 12
- 12. Scutellum of a uniform blackish or blackish-gray color 13
- Scutellum entirely yellow or blackish with margin only yellow
16
- 13. Proboscis from one and quarter to two times the head length; thoracic dorsum grayish-brown to light brownish-gray; three longitudinal stripes velvety blackish brown with the median one divided by a narrow thin pale and usually somewhat more distinct than the shorter side stripes 14

- Proboscis less than one and quarter times, and often shorter than, the head length; thoracic dorsum colored otherwise and tomented 15
- 14. Thorax brownish-gray; longitudinal stripes deep velvety blackish-brown; pubescence distinctly coarser and more dense; legs reddish-yellow with femora occasionally obscured about base; abdominal segments with the yellowish transverse bands on lower border large, often occupying almost the lower half of segment; comparatively large species *C. injii* Efflatoun, 1945
- Thorax blackish-gray; longitudinal stripes velvety brownish-black; pubescence normal, not particularly coarse; legs blackish with apices of femora, bases of tibiae and metatarsi reddish-yellow; abdominal segments with the yellowish transverse bands on lower borders very narrow; comparatively medium sized species *C. abragi* Efflatoun, 1945
- 15. Legs blackish, usually with apices of femora and bases tibiae yellow, and often metatarsi and sometimes tibiae more or less extensively yellow; stylus of flagellum comparatively short and stout *C. nubila* Bezzi, 1925
- Legs more or less pale or dark redish-yellow, with blackish color of femora (if present) less extensive; tibiae more or less obscured; stylus of flagellum normal, often thin 16
- 16. Scutellum with posterior margin only more or less extensively yellow.....
..... *C. marginata* Perris, 1839
- Scutellum entirely yellow or with base only blackish or obscured 17
- 17. Blackish color of thoracic dorsum extending on sides to lower margin except on humeral and posterior calli which are yellow 18
- Sides of thorax in front of and behind transverse suture extensively yellow19
- 18. Abdomen yellowish-red to dark reddish-brown; legs yellow to yellowish-red with femora blackish except at apex *C. luteiventris* Bezzi, 1926
- Abdomen blackish with lower border of segments yellow; legs including femora yellow to reddish-yellow 19
- 19. Yellow sides of thorax interrupted by a broad black production immediately behind and touching the transverse suture which reaches down to lower margin *C. separata* Efflatoun, 1945

- Broad black production of dorsum immediately behind transverse suture, very short, not reaching lower margin *C. opaca* Loew, 1846

Table (I)
Distribution of Mythicomyiid species in the ecological zones of Egypt

Species \ Ecological Zone	Coastal Strip	Lower Nile Valley	Upper Nile Valley	Eastern Desert	Western Desert	Fayoum Basin	Sinai	Gebel Elba
<i>Cephalodromia nitens</i>	*							
<i>Cyrtisioptis melleus</i>		*		*			*	
<i>Cyrtosia abragi</i>				*				*
<i>Cyrtosia gulperii</i>								*
<i>Cyrtosia injii</i>				*				*
<i>Cyrtosia luteiventris</i>				*			*	
<i>Cyrtosia marginata</i>	*							
<i>Cyrtosia nubila</i>				*				*
<i>Cyrtosia opaca</i>								*
<i>Cyrtosia separata</i>	*							
<i>Cyrtosia tetragramma</i>	*			*				
<i>Empidideicus carthaginiensis</i>	*						*	*
<i>Empidideicus efflatouni</i>		*						*
<i>Empidideicus mariouti</i>	*							
<i>Leylaiya mimnermia</i>				*				
<i>Platypygus maculiventris</i>				*				

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SUMMARY

An annotated key to species of family Mythicomyiidae (order: Diptera) from Egypt is given. 3 Subfamilies, 6 Genera, and 16 Species are involved. Some figures of wings, antennae and genitalia are provided to illustrate the most important characters used for the key. The distribution of species in the ecological zones of Egypt is tabled.

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