



The Mymaridae of Egypt (Chalcidoidea: Hymenoptera)

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ABSTRACT

Diagnostic characters of the family Mymaridae, together with diagnosis and keys to the Egyptian genera of the family-based upon the external morphological characters of the adult female and male are presented with illustrations to facilitate their recognition. Synonyms, taxonomic notes, hosts, and habitat of the genera together with their representative species in Egypt are also provided to give general picture and high light on the occurrence, diversity, and distribution of the mymarids in Egypt. The study based on the materials kept in the main reference insect collections in Egypt, and the available literature.

INTRODUCTION

The Mymaridae (fairy wasps) are a family of chalcid wasps found in temperate and tropical regions throughout the world. It includes the most primitive members of the chalcid wasp and contains around 100 genera with about 1400 species (Noyes, 2005).

Fairyflies are very tiny insects and include the world's smallest known insects. They generally range from 0.5 to 1.0 mm long. Adult mymarids are rather fragile, the body generally being slender and the wings narrow with an elongate marginal fringe. Their delicate bodies and their hair-fringed wings have earned them their common name.

Very little is known of the life histories of fairyflies, as only a few species have been observed extensively. They are usually solitary, but can sometimes be gregarious. Their adult lifespans are very short, usually lasting for only a few days. All known fairyflies are parasitoids of the eggs of other insects, and several species have been successfully used as biological pest control agents (Huber 1986).

The family Mymaridae was first established in 1833 by Irish entomologist Alexander Henry Haliday. Earlier attempts of classification of this family were by Walker (1846) who treated the group as a genus *Mymar*, and classified all other known fairyflies under it as subgenera. They were elevated to the family rank (as Mymaridae) by Haliday in 1839. No accepted subfamily classification has been proposed.

Their diminutive size also makes mymarids very difficult to collect and study. Consequently, the mymarid faunas of all parts of the world are very incompletely known, and the true diversity of the group has yet to be ascertained. Systematic and biological research on the Mymaridae up until now has been reviewed by Huber (1986). The major taxonomic treatises on the group are those of Debauche (1948), Annecke & Doult (1961), Peck *et al.* (1964), and Schauff (1984). Further works which should be of interest are those of Annecke

(1961), Debauche (1949), Enock (1909), Ghesquière (1942), Girault (1910, 1913a,b, 1915a,b), Graham (1982), Hincks (1950, 1952, 1959), Kryger (1950), Matthews (1986), New (1974, 1976), Ogloblin (1935, 1936, 1946, 1952, 1956, 1959a,b), Sahad & Hirashima (1984), Soyka (1949, 1956a, 1961), and Valentine (1971).

The present study is the first taxonomical study on this family in Egypt, based on the material available in the Egyptian insect collections as well as records in literature. The study of additional material will certainly yield many more species belonging to these wasps and open scope for further studies on this family in Egypt.

MATERIALS AND METHODS

At the beginning of the study, and to obtain the general picture and high light on the occurrence, diversity, and distribution of the mymarids in Egypt, a revisionary survey for mymarid wasps was carried out, based on the materials kept in the main reference insect collections in Egypt (The collection of the Plant Protection Research Institute; Collection of the faculty of Science, Cairo University; Collection of the faculty of Science, Ain Shams University; Collection of Alfieri, Faculty of Agriculture, Al Azhar University and the collection of the Egyptian Entomological Society) and the available literature. Description of the family and keys to the genera of the Mymaridae occurring in Egypt together with illustrations are given. The taxonomic features and terminology used herein are based on Walker (1846). Descriptions and keys based upon the external morphological characters of the adult female and male, depending on the original description or other sources. Synonyms were reviewed and cited. Taxonomic notes, diagnosis, hosts, and habitat of the genera together with their representative species in Egypt are also provided. All taxa are arranged in alphabetical order in the text.

RESULTS AND DISCUSSION

Distinctive and Diagnostic characters of the family Mymaridae (Figs.1-7)

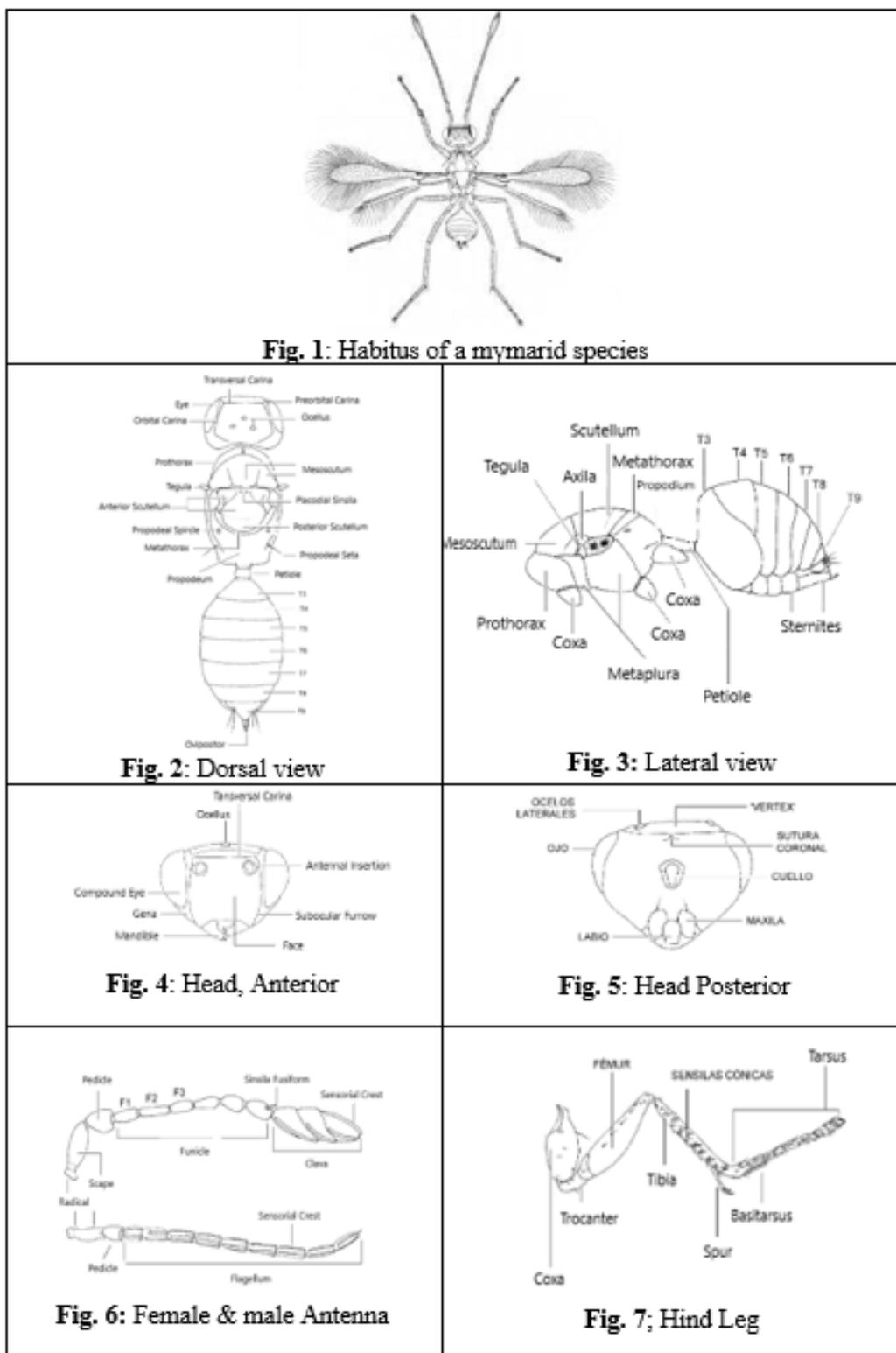
Members of the family Mymaridae are minute to moderate-sized insects, length varying from 0.35-1.8 mm. and have nonmetallic black, brown, or yellow bodies. Head with a transverse, membranous suture (sometimes called a trabecula or carina) below anterior ocellus and also along inner eye margins. The antennae of the females are distinctively tipped by club-like segments known as clava, while male antennae are thread-like (filiform). Antennal toruli situated far apart, much closer to eye margin than to each other and situated quite high on the head, about midway between mouth margin and vertex. Scutellum normally divided transversely into an anterior and posterior part. Metafemur at most with subapical tooth or lobe, usually not conspicuously enlarged; Tarsi with 3 – 5 tarsomeres.

Wings are usually slender and possess long bristles, giving them a hairy or feathery appearance, although some species may have greatly reduced stubby wings or lack wings altogether; forewings usually have hypochaeta, hind wings petiolate, the membrane of the disc not extending to the base of the wing. Generally, they can be distinguished from other chalcid wasps by the H-shaped pattern of sutures on the front of their heads.

All species of Mymaridae are internal, solitary, or gregarious parasitoids of the eggs of other insects (Huber, 1986). They search for host eggs in confined areas (like leaf litter, soil, or the tubules of bracket fungi). The most common hosts are the eggs of Auchenorrhynchous Homoptera, but eggs of other Hemiptera (especially Coccoidea, and less frequently Tingidae and Miridae) together with those of Coleoptera (especially, Curculionidae and Dytiscidae) and Psocoptera are commonly parasitized. Several mymarids parasitize the submerged eggs of aquatic insects and to do this they are capable of swimming

underwater, using their wings as paddles (Matheson & Crosby, 1912; Jackson, 1966). Several species have been used successfully in biological control programmes, the most notable being *Anaphes nitens* to control *Gonipterus scutellatus* (Coleoptera: Curculionidae), a serious pest of eucalyptus in southern Europe, South Africa, New Zealand, and South America.

Sex differentiation: Antenna of the female with apical 1–3 segment(s) widened to form a distinct clava; Antenna of male filiform, the apical segment(s) similar in width to preceding segments.



Key to the genera of Mymaridae of Egypt based on Females

- 1- Tarsi 5-segmented 2
 – Tarsi 4-segmented 4
- 2- Antenna with 8 funicle segments *Gonatocerus* Nees
 – Antenna with at most 7 funicle segments 3
- 3- Funicle 7-segmented, with segment 2 usually very short, ring-like; fore wing distinctly curved apically slightly but distinctly curved at the apex, posterior margin slightly concave, especially towards the apex, and apex rounded. *Camptoptera* Förster
 – Funicle 5-segmented, segment 2 not very short; forewing hind margin having a distinct recurved notch behind the venation and thereafter going almost straight to apex *Alaptus* Westwood
- 4- Metasoma with petiole distinct, longer than wide, tube-like; body well sclerotized, the head and metasoma not shriveled when air-dried 5
 – Metasoma with petiole inconspicuous, shorter than wide, ring-like; body usually weakly sclerotized, head and metasoma shriveled when air-dried..... 6
- 5- Fore wing oar-like, narrow and without membrane for most of the length, then abruptly widening apically, frequently with a brown spot in the apical half of blade; hind wing without membrane, filamentous *Mymar* Curtis
 – Fore wing normal in shape, with membrane for its entire length and without distinct brown apical spot; hind wing with membrane *Polynema* Haliday
- 6- Eye in lateral view extending to the back of the head so gena extremely narrow or absent, at least dorsally; mandibles not meeting medially, greatly reduced to minute stubs without teeth; hypopygium prominent, extending to apex of gaster *Erythmelus* Enock
 – Eye in lateral view not extending to the back of the head so gena at least half as wide as eye width; mandibles meeting medially, with 3 or 4 teeth; hypopygium inconspicuous 7
- 7- Antennal clava 1-segmented; posterior scutellum with each lobe about as long as wide; fore wing narrow, without distinct lobe behind venation antennal clava solid, Fore wing with posterior margin behind venation only slightly lobed *Anagrus* Haliday
 – Antennal clava 3-segmented; posterior scutellum with each lobe about twice as long as wide; fore wing wider, with more prominent lobe behind venation Female antennal clava compact Fore wing with distinctly rounded basal lobe and smoothly rounded apex *Stethynium* Enock

Key to the genera of Mymaridae of Egypt based on Males

- 1- Tarsi 5-segmented 2
 – Tarsi 4-segmented 4
- 2- Flagellum 11-segmented *Gonatocerus* Nees
 – Flagellum at most 10-segmented 3
- 3- Flagellum 10-segmented, with segments 2 and 4 minutes, ring-like; fore wing with a posterior margin not incised behind venation, and posterior margin curved apically so apex of wing appearing distinctly curved *Camptoptera* Förster
 – Flagellum 8- or 9-segmented, without ring-like segments *Alaptus* Westwood
- 4- Metasoma with petiole distinct, longer than wide, tube-like; body well sclerotized 5
 – Metasoma with petiole inconspicuous, shorter than wide, ring-like; body lightly sclerotized 6
- 5- Fore wing oar-like, narrow and without membrane for most of the length, then abruptly widening apically, usually with a brown spot in the apical half of blade *Mymar* Curtis

- Fore wing normal in shape, with membrane for its entire length and without distinct brown apical spot *Polynema* Haliday
- 6- Eye, in lateral view, extending to the back of the head so gena extremely narrow or absent, at least dorsally; mandibles greatly reduced to minute stubs without teeth, not meeting medially *Erythmelus* Enock
- Eye, in lateral view, not extending to the back of the head so gena at least half as wide as eye width; mandibles meeting medially, with 3 or 4 teeth7
- 7- Posterior scutellum with each lobe about as long as wide; fore wing narrow and without distinct lobe behind venation *Anagrus* Haliday
- Posterior scutellum with each lobe about twice as long as wide; fore wing wider and with distinct lobe behind venation *Stethynium* Enock

I- Genus *Alaptus* Westwood 1839 (Fig. 8)

Alapus Poutiers, 1928

Type species: *Alaptus minimus* Westwood, by monotypy.

Metalaptus Malenotti, 1917

Type species: *Metalaptus torquatus* Malenotti, by monotypy. Synonymy by Girault (1913).

Parvulinus Mercet, 1912

Type species: *Parvulinus auranti* Mercet, by monotypy. Synonymy by Girault (1913).

Diagnosis: A member of the *Alaptus* group may be identified by Female funicle 5-segmented or rarely with a minute additional segment. Mesophragma large, broadly truncate, extending well into the gaster. Anterior scutellum being separated from the posterior scutellum by a transverse suture that divides the scutellum into two completely separate sclerites. Hind margin of fore wing having a distinct recurved notch excised beneath the venation and thereafter almost straight to the apex. Some members of this genus are the smallest known insects, being less than 0.2 mm in overall body length.

Geographic Distribution: Neotropical, Afrotropical, Oriental, and Palaearctic regions.

Hosts and habitat: Known hosts belong to Psocoptera (Lin *et al.*, 2007), Hemiptera (Cicadellidae, Coccidae, Diaspididae), and Amphibia (Caeciliidae) (Noyes, 2013).

The Universal Chalcidoidea Database records 42 species of *Alaptus* worldwide, of which the following 3 are in our fauna: *Alaptus minimus* Westwood, 1839; *A. pallidicornis* Forster, 1856 and *A. priesneri* Soyka, 1950.

II- Genus *Anagrus* Haliday, 1833 (Fig. 9)

Anagrus Haliday, 1833

Type species: *Ichneumon atomus* Linnaeus, by subsequent designation (Westwood, 1839).

Pteratomus Packard, 1864

Type species: *Pteratomus putnamii* Packard, by monotypy. Synonymy formalized by Annecke and Doutt (1961), following Girault (1929).

Paranagrus Perkins, 1905

Type species: *Paranagrus optabilis* Perkins, by subsequent designation (Gahan and Fagan, 1923). Synonymy by Bakkendorf (1926).

Anagrella Bakkendorf, 1962

Type species: *Anagrella mymaricornis* Bakkendorf, by monotypy. Synonymy by Viggiani (1970).

Diagnosis: The *Anagrus* group can be identified by the following combination of characters: Female funicle 6-segmented, antennal clava solid; Thorax with axillae advanced into side lobes of mesoscutum, posterior scutellum divided by a longitudinal sulcus, medially not more than twice as long as anterior scutellum; Fore wing with posterior margin behind venation only slightly lobed; Tarsi 4-segmented; protibial spur comb-like.

Geographic Distribution: Cosmopolitan.

Hosts and habitat: Cicadellidae and Delphacidae, Cercopidae, Tingidae, and Odonata (Zygoptera) (Lin *et al.*, 2007). Associated with insects belonging to Coleoptera (Curculionidae), Hemiptera (Diaspididae, Tingidae), Lepidoptera (Bombycidae, Gelechiidae, Geometridae, Pyralidae), and Odonata (Zygoptera: Calopterygidae, Coenagrionidae, and Lestidae) (Noyes, 2013).

This genus is represented in Egypt by five species: *Anagrus aegyptiacus* Soyka, 1950; *A. atomus* (Linnaeus, 1767); *A. empoasca* Dozier, 1932; *A. incarnatus* Haliday, 1833 and *A. unilinearis* Soyka, 1950.

III- Genus *Camptoptera* Forster, 1856 (Fig. 10)

Camptoptera Forster, 1856

Type species: *Camptoptera papaveris* Forster, by monotypy.

Stichothrix Forster, 1856

Type species: *Stichothrix cardui* Forster, by monotypy. Synonymy by Annecke and Doutt (1961).

Eomymar Perkins, 1912

Type species: *Eomymar muiri* Perkins, by monotypy. Synonymy by Huber and Lin (1999).

Congolia Ghesquiere, 1942

Type species: *Congolia sycophila* Ghesquiere, by original designation. Synonymy by Debauche (1949).

Sphegilla Debauche, 1948

Type species: *Sphegilla francisca* Debauche, by original designation. Synonymy by Yoshimoto (1990).

Wertanekiella Soyka, 1961

Type species: *Wertanekiella brevicornis* Soyka, by original designation. Synonymy under *Sphegilla* by Mathot (1969).

Camptoptera Ogloblin and Annecke, 1961)

Type species: *Camptoptera semialbata* Ogloblin and Annecke, by original designation.

Staneria Mathot, 1966

Type species: *Staneria diademata* Mathot, by original designation. Synonymy by Huber and Lin (1999).

Diagnosis: The *Camptoptera* group can be identified by the following characters: Female body small to minute; Head and mesosoma with faint reticulate sculpture and setae short, inconspicuous in lateral view; Antennal scape varying from relatively short to relatively long; funicle 7-segmented, second funicle segment usually very short, ring-like, clava solid; Mandible 1-toothed; Fore wing without dark area slightly but distinctly curved apically, posterior margin slightly concave, especially towards the apex, and apex rounded; Tarsi 5-segmented; Mesophragma not extending into gaster.

Geographic Distribution: Cosmopolitan.

Hosts and habitat: Eggs of Scolytidae and Buprestidae, and possibly Cicadellidae, Aleyrodidae, and Thripidae (Lin *et al.*, 2007). *Kerria lacca* (Hemiptera: Kerriidae), *Archips pronubana* (Lepidoptera: Tortricidae), *Coniopteryx vicina* (Neuroptera: Coniopterygidae), *Frankliniella occidentalis* and *Thrips* sp. (Thysanoptera: Thripidae) (Noyes, 2013).

This genus is represented in Egypt by only one species not identified to the species level (*Camptoptera* sp.).

IV- Genus *Erythmelus* Enoch, 1909 (Fig. 11)

Erythmelus Enoch, 1909

Type Species: *Erythmelus goochi* Enoch, by monotypy.

Enaesius Enoch, 1909

Type species: *Enaesius agilis* Enoch, by monotypy. Synonymy by Debauche (1948).

Paralleaptera Enoch, 1909

Type species: *Paralleaptera panis* Enoch, by monotypy. Synonymy by Schauff (1984).

Erythmelus Viggiani and Jesu, 1985

Type species: *Erythmelus lygivorus* Viggiani and Jesu, by original designation. Synonymy by Triapitsyn (2003).

Diagnosis: *Erythmelus* can be identified by the following characters. Female funicle 5 or 6-segmented, very rarely apparently 4-segmented, clava with 5 or 6 longitudinal sensillae; Mandible without teeth, reduced to a small stub; Wings sparsely setose to subnudus; Tarsi 4-segmented; Hypopygium prominent, extending to apex of gaster, ploughshare-shaped.

Geographic Distribution: Australia, Belgium, Czechoslovakia, India, Iran, Italy, Mexico, Peoples' Republic of China, Peru, South Africa, Sri Lanka, Taiwan, United Arab Emirates, United States of America

Hosts and habitat: Tingidae and Miridae (Lin *et al.*, 2007). Associated with hosts belonging to Cicadellidae, Miridae, Tingidae, Pamphiliidae, Lasiocampidae, Lymantriidae, Pyralidae, Tortricidae (Noyes, 2013).

This genus is represented in Egypt by only one species not identified to the species level (*Erythmelus* sp.).

V- Genus *Gonatocerus* Nees, 1834 (Fig. 12)

Gonatocerus Nees, 1834

Type species: *Gonatocerus longicornis* Nees, by monotypy.

Lymaenon Walker, 1846

Type species: *Lymaenon acuminatus* Walker, by subsequent designation (Gahan and Fagan, 1923). Synonymy by Forster (1856).

Rachistus Forster, 1847

Type species: *Ooconus litoralis* Haliday, by subsequent designation (Gahan and Fagan, 1923). Synonymy by Forster (1856)

Cosmocomoidea Howard, 1908

Type species: *Cosmocomoidea morrilli* Howard, by monotypy. Synonymy by Boucek and Graham (1972); originally a subgenus of *Lymaenon*.

Oophilus Enoch, 1909

Type species: *Oophilus longicauda* Enoch, by monotypy. Synonymy by Girault (1911)

Agonatocerus Girault, 1913

Type species: *Agonatocerus humboldti* Girault, by original designation. Synonymy by Girault (1915)

Gonatoceroides Girault, 1913

Type species: *Gonatocerus (Gonatoceroides) australicus* Girault, by original designation. Synonymy by Girault (1915)

Gastrogonatocerus Ogloblin, 1935

Type species: *Gonatocerus membraciphagus* Ogloblin by original designation. Subgenus of *Gonatocerus*.

Diagnosis: *Gonatocerus* can be identified by the following characters. Female antenna with funicle 8-segmented, clava entire; Face usually with subantennal sulci distinct, convergent ventrally; Pronotum without a transverse ridge; Anterior scutellum transverse, shorter than posterior; Marginal vein with hypochaeta about midway between proximal and distal

macrochaetae; Propodeum with a median carina or two submedian carinae or grooves; Mesophragma not projecting into gaster, petiole short.

Geographic Distribution: Cosmopolitan.

Hosts and habitat: Cicadellidae and Membracidae (Lin *et al.*, 2007).

Noyes (2013) lists associated insects belonging to Cicadellidae, Membracidae, Delphacidae, Diaspididae, Coccidae, Eriococcidae, Miridae (Hemiptera), Apionidae (Coleoptera), Agromyzidae, Ephydriidae, Tephritidae (Diptera), Tenthredinidae (Hymenoptera), Pyralidae and Tortricidae (Lepidoptera).

This genus is represented in Egypt by five species: *Gonatocerus aegyptiacus* Soyka, 1950; *G. africanus* Soyka, 1950; *G. dakhlae* Soyka, 1950; *G. flavus* Soyka, 1950 and *G. priesneri* Soyka, 1950.

VI- Genus *Mymar* Curtis, 1829 (Fig. 13)

Mymar Curtis, 1829

Type species: *Mymar pulchellum* Curtis, 1832, designated by ICZN, Opinion 729 (1965)
Oglobliniella Soyka, 1946

Type species: *Mymar pulchellum* Curtis, 1832, by original designation. Junior objective synonym of *Mymar* Curtis, 1829, designated by ICZN, Opinion 729 (1965)

Pterolinononyktra Malac, 1943

Type species: *Pterolinononyktra obenbergeri* Malác, 1943, by monotypy. Synonymy by Annecke & Doult, (1961)

Diagnosis: *Mymar* belongs to the *Polynema* group of genera and can be distinguished by the following characters: Female body colour generally variable, from yellowish-brown to dark brown. Antennal segments with variable colours, from yellow to dark brown. Legs usually slightly lighter than the body. toruli almost touching transverse trabecula and laterally with preorbital trabecula. Female antennal scape elongated, longer than the width of head and medially constricted, funicle 6-segmented, F2 very long, longer than the other funicular segments, clava entire. Mesosoma with pronotum entire; mid lobe of mesoscutum without seta; each side lobe of mesoscutum often with one long seta; each axilla with one seta; propodeum smooth, with one seta behind each spiracle. Wings characteristic, with fore wing oar shaped and distinctly petiolate consisting of submarginal vein only, and expanded, membranous apex dark brown in apical half beyond venation; hind wing abbreviated, filiform, or poorly developed with only a few marginal cilia. Metasoma with petiole is often much longer than broad.

Comments. *Mymar* is distinguished from other genera of the *Polynema* group as follows: Scape much longer than broad and constricted medially; forewing oar-shaped, with a long, very slender petiole consisting of submarginal vein only, and with apical dark patch beyond venation; hind wing filamentous or abbreviated, and without membrane.

Geographic Distribution: Cosmopolitan.

Hosts and habitat: Delphacidae and Cicadellidae (Lin *et al.*, 2007; Noyes, 2013).

Remarks: *Mymar* species parasitize Cicadellidae and Delphacidae. No hosts are yet recorded for *Mymar* in the Arabian Peninsula or surrounding countries. Triapitsyn & Berezovski (2001) revised the genus. Two species, *M. taprobanicum* Ward, 1875, reported as *Oglobliniella aegyptiaca* nov. spec. by Soyka (1950), and *Mymar africanum* Annecke, 1961. This genus is represented in Egypt by only one species *Mymar taprobanicum* Ward, 1875.

VII- Genus *Polynema* Haliday, 1833 (Fig. 14)

Polynema Haliday, 1833

Type species: *Polynema flavipes* Walker, by subsequent designation (Huber and Boucek, 2001).

Eutriche Nees, 1834

Type species: *Eutriche gracilis* Nees, by monotypy. Synonymy by Forster (1847). Treated under *Polynema* (*Polynema*) by Triapitsyn and Fidalgo (2006).

Doriclytus Forster, 1847

Type species: *Doriclytus vitripennis* Forster, by monotypy. Treated as subgenus of *Polynema* by Triapitsyn and Fidalgo (2006).

Maidliella Soyka, 1946

Type species: *Maidliella neofuscipes* Soyka, by original designation. Synonymy by Annecke and Doutt (1961). Treated under *Polynema* by Triapitsyn and Fidalgo (2006).

Novickyella Soyka, 1946

Type species: *Novickeyella gracilior* Soyka, by original designation. Synonymy by Soyka (1956). Treated under *Polynema* by Triapitsyn and Fidalgo (2006).

Barypolynema Ogloblin, 1946

Type species: *Barypolynema reticulatum* Ogloblin, by original designation. Synonymy under *Polynema* (*Doriclytus*) by Triapitsyn and Fidalgo (2006).

Notopolynema Ogloblin, 1960

Type species: *Barypolynema reticulatum* Ogloblin, by original designation. Synonymy under *Polynema* (*Doriclytus*) by Triapitsyn and Fidalgo (2006).

Tarphypolynema Ogloblin, 1960

Type species: *Anagrus saga* Ogloblin, by original designation. Synonymy under *Polynema*.

Dorypolynema Hayat and Anis, 1999

Type species: *Polynema mendeli* Girault, by original designation. Subgenus of *Polynema*.

Resisoma Yoshimoto, 1990

Type species: *Resisoma howdeni* Yoshimoto, by original designation. Synonymy under *Polynema* (*Doriclytus*) by Triapitsyn and Fidalgo (2006).

Formicomymar Yoshimoto, 1990

Type species: *Formicomymar venezeelaensis* Yoshimoto, by original designation. Synonymy under *Polynema* (*Doriclytus*) by Triapitsyn and Fidalgo (2006).

Diagnosis: *Polynema* can be identified by the following characters. Females generally dark brown to black; Face without pit next to each torulus; Antennal funicle 6-segmented, clava solid; Propleura not abutting anteriorly; Fore wing venation short, hardly reaching a one-quarter length of the wing, with marginal vein punctiform; Petiole attached to gastral tergum.

Geographic Distribution: Cosmopolitan.

Hosts and habitat: Recorded hosts associates belong to Cicadellidae, Lestidae, Membracidae, Miridae and Nabidae (Lin *et al.*, 2007), Tettigoniidae (Subba Rao and Hayat, 1983), Diaspididae, Miridae, Nabidae, Agromyzidae, Ephydriidae, Coccidae, Issidae, Membracidae (Noyes, 2013).

This genus is represented in Egypt by 2 species, *Polynema aegyptiaca* Soyka, 1950, and *Polynema dakhlae* (Soyka, 1950).

VIII- Genus *Stethynium* Enoch, 1909 (Fig. 15)

Stethynium Enoch, 1909

Type species: *Stethynium triclavatum* Enoch, by monotypy.

Diagnosis: *Stethynium* belongs to the *Anagrus* group of genera and can be differentiated by the following characters.

Stethynium can be differentiated by the following characters. Female antennal clava 3-segmented, compact with sutures strongly oblique; Posterior scutellum about twice as long as the width of each lobe; Fore wing with distinctly rounded basal lobe and smoothly rounded apex, marginal vein very short, forming a smooth sigmoid curve with stigmatal vein; Mesophragma projecting into the base of gaster with broadly rounded apically.

Geographic Distribution: Worldwide, except Afrotropical (Lin *et al.*, 2008).

Hosts and habitat: Known hosts belong to Cicadellidae and gall-forming Eulophidae (Lin *et al.*, 2007). *Stethynium empoascae* parasitizes *Amrasca devastans* Distant in India (Subba Rao and Hayat, 1983). The eucalyptus gall wasp, *Ophelimus maskelli* (Hymenoptera: Eulophidae) is parasitized by *Stethynium opheolimi* Huber and *S. breviovipositor* Huber, the only instance of mymarids as larval parasitoids of holometabolous insects (Huber *et al.*, 2006). These are considered as potential candidates for classical biological control of *O. maskelli*.

This genus is represented in Egypt by only one species, *Stethynium triclavatum* Enock, 1909.

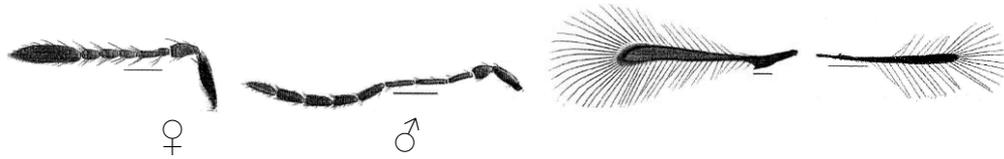


Fig. (8): *Alaptus* sp.

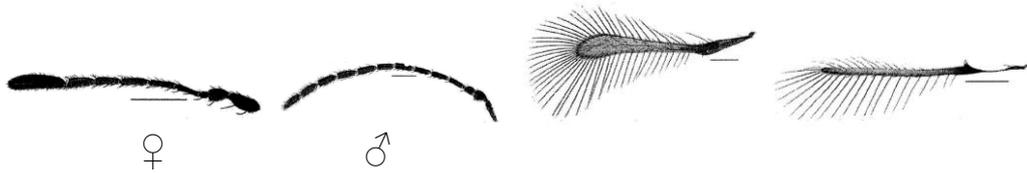


Fig. (9): *Anagrus* sp.

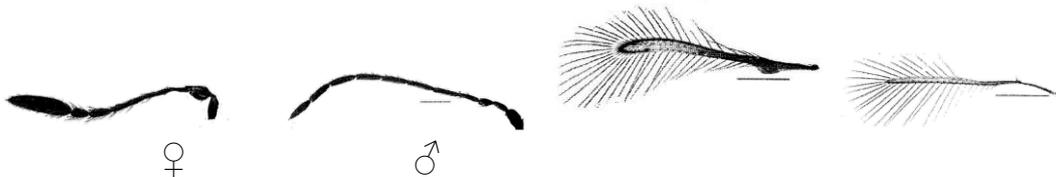


Fig. (10): *Camptoptera* sp.

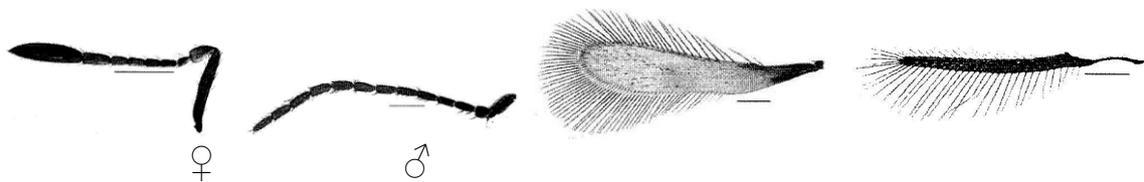


Fig. (11): *Erythmelus* sp.

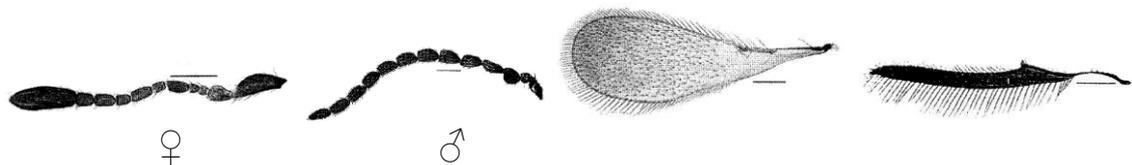


Fig. (12): *Gonatocerus* sp.



Fig. (13): *Mymar* sp.

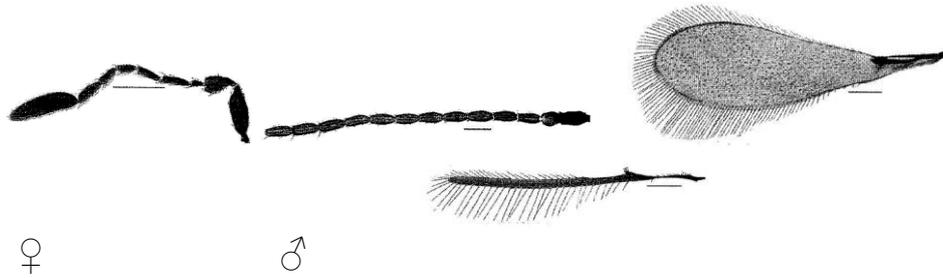


Fig. (14): *Polynema* sp.

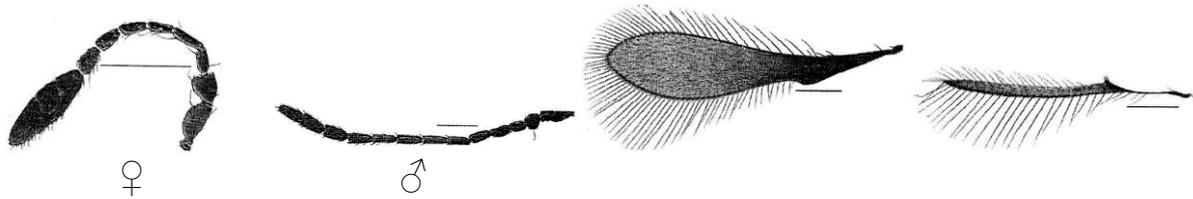


Fig. (15): *Stythenium* sp.

Conclusion

The Mymaridae are the most primitive members of the chalcid wasp superfamily (Chalcidoidea) (Gokhman, 2009). About 1424 species of fairyflies are grouped in about 100 genera. (Pitkin, 2004).

The largest genera are *Anagrus*, *Anaphes*, *Gonatocerus*, and *Polynema*, which comprise around half of all known species. They are the most commonly encountered fairyflies, followed by the genera *Alaptus*, *Camptoptera*, *Erythmelus*, *Ooctonus*, and *Stethynium*, which make up a further quarter of known species (Elisabetta Chiappini & Huber, 2008; Triapitsyn, 2003).

The Mymaridae are considered to be monophyletic, but their exact relationships with other chalcid wasps remain unclear (Cronin & Strong, 1990).

No commonly accepted subfamilies have been acknowledged, but two proposals are notable. Annecke & Doutt (1961) proposed the subfamilies Alaptinae and Mymarinae based on the morphology of the gasters. Peck *et al.* (1964) proposed the subfamilies Gonatocerinae and Mymarinae based on the number of segments (tarsomeres) in the tarsi. Both systems included further tribal categories.

All known fairyflies are parasitoids of eggs of other insects. Their most common hosts are insects belonging to the order Hemiptera (true bugs), especially Auchenorrhyncha (leafhoppers, cicadas, and allies) and Coccoidea (scale insects). Other important host orders include Coleoptera (beetles), Diptera (true flies), Odonata (dragonflies and allies), Psocoptera (booklice and allies), and Thysanoptera (thrips).

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