

Diptera of the UAE - collated records from the literature with additions of new records, accompanied by some notes on Mydidae and Stratiomyidae new to the UAE

by Brigitte Howarth



Fig 1. A Mydidae visits the light-trap at Umm al-Qaiwain on 14th September 2006. Picture: Drew Gardner

Diptera are the two-winged flies, the name originating from the Greek words *dis*, meaning two, and *pteron*, meaning wing. Flies are the second largest group of insects with approximately 125,000 species described worldwide. This account is the most complete to date for UAE Diptera and includes 28 families, of which 7 are new records to the UAE. The total Diptera species count for the country is at least 135, of which 18 are new additions (marked ⁽ⁿ⁾ but see below table for further clarification), some of which still need further identification to genus or species level. This article uses the author's species list originally compiled for *The Emirates - A Natural History* (Howarth, 2005), which was unfortunately omitted from the publication.

The publishers of *The Emirates - A Natural History*, Trident Press, are kindly thanked for their permission to publish this updated checklist here. It will also be published, in English, in the forthcoming Arabic edition of *The Emirates - A Natural History*, now in press.

The version of the checklist below includes updates, omissions from the literature not listed in the original compilation, and new records. It is by no means exhaustive: many more species are known to be present, but these await identification. Some of the new records were kindly identified by Nigel Wyatt, curator of Diptera, Natural History Museum (NHM), London, (marked ^{**}) during a summer visit to the Museum in August 2004, in exchange for specimens (marked ^{***}) donated to the Museum collections. Specimens held by the author are also identified (*). The remaining records have been gathered from the literature (some of which are also

marked * as representatives are in the collections residing with the author).

To give a brief overview of the flies, their classification has traditionally divided them into three suborders, the Nematocera (e.g. mosquitoes, sand-flies, midges and gnats), the Brachycera (e.g. bee-flies, horse-flies, robber-flies), and the Cyclorrhapha (e.g. house-flies, fruit-flies, hover-flies and blow-flies).

However, recent phylogenetic work places all Diptera into two suborders, the Nematocera and Brachycera, the Cyclorrhapha now being part of the Brachycera. Both suborders are well represented in the UAE. The Nematocera include both flies of medical importance as well as many that are not involved with diseases. Phlebotomine sandflies (Psychodidae) are of medical importance, some species of which transmit viruses, while others transmit dermal and visceral leishmaniasis (Lewis, 1978). The UAE is listed as an area where the diseases are likely to occur due to the presence of the genera from which the disease-causing parasites have been isolated elsewhere. This suborder also includes mosquitoes, Anopheles, of which a number of species present in the UAE can transmit malaria (e.g. *Anopheles culicifacies*, *A. dthali*, *A. paltrinieri*, *A. serpentii* and *A. stephensi*) (Glick, 1992). However, towards the end of 2000, the Emirates was declared by the Ministry of Health to be clear of locally transmitted Malaria (Department of Preventative Medicine website). Blackflies, also known for disease transmission, are represented in the UAE, from Hatta, by *Simulium (Wilhelmia) buettikeri*.

Fig 2. The second Mydidae observed at Umm al-Qaiwain, a different species to that in Figure 1.
Picture: Drew Gardner.



The most diverse family of the Brachycera in the UAE are bee-flies (Bombyliidae) represented by at least 50 species. They are often seen hovering low over the ground. Bee-flies vary in size from a few millimetres to having a wingspan of 3 cm (e.g. *Exoprosopa megerlei*). Asilidae (robber-flies) are usually found sitting on sand or vegetation observing their environment closely for potential prey. The most familiar flies are part of the Brachycera e.g. house-flies, fruit-flies, bluebottle flies, and hover-flies.

Most of the new records included in this list stem from the results of surveys undertaken to assess the environmental impact of development projects, although some records have been collected as a result of visits to Wadi Tarabat at the base of Jebel Hafit. Collecting methods have included flight interception trapping (malaise trapping), sweep-netting, and light trapping, using a mercury vapour light run from a portable generator. Specimens collected were pinned using standard entomological technique, and each data label associated with individual specimen includes at least the date, locality by name (usually accompanied by GPS coordinates), the collector's name, and the name of the person who has determined the specimen.

Although the presence of most new records listed are of no great surprise, either because they occur in neighbouring countries or because the habitat is particularly suitable, the two most notable sets of records are those of the Mydidae and Stratiomyidae. The first sighting of a member of the Mydidae was made on 14th September 2006 at Umm al-Qaiwain, ($N 25.51866^{\circ}$, $E 55.59565^{\circ}$) during night-time light trapping in Khor al-Beida, specifically in Khor Yfrah. Two females of different species came to the light, and only one was photographed (Fig. 1) and then captured. The next day at the same locality, another female was observed and photographed (Fig. 2), and a fourth female of the same species depicted in Fig. 2 was observed and captured. On 2nd October 2006, Richard Hornby observed a further female within the Shah oilfields ($N 22.85228^{\circ}$, $E 53.77838^{\circ}$) and photographed it (pers. comm.). This individual appears to be of the same species as is seen in Fig. 2. The final observation of Mydidae was made on 2nd October 2006 in Dubai within the area being developed for the Dubailand project ($N 24.98911^{\circ}$, $E 55.31231^{\circ}$), this being the first male to be observed (Fig. 3).

Thus far, despite considerable effort, identification to genus and species of the UAE Mydidae is not complete. Mydidae are a group that comprise only 65 genera worldwide with approximately 500 species (Dikow: Mydidae and Apioceridae

website). All species tend to be found in desert or semi-desert environments, often associated with ancient dune systems. All UAE sightings confirm the latter.

In the United States, a species of Mydidae bordering on extinction was given conservation status 'endangered' in 1993 (US Fish and Wildlife Publication, 1993) due to the destruction of 97% of its habitat range. In 1997 a recovery plan was published to ensure its return from the brink of extinction (US Fish and Wildlife Publication, 1997).

Although the occurrence of Mydidae from different localities within the UAE suggests the family may not warrant such measures, ancient dune systems are disappearing, and without proper knowledge of all species that occur, many may be lost to the country, or, indeed, altogether, before they are recognised as being at risk.

The second notable record is that of several of the Stratiomyidae, or commonly, soldier-flies. These flies received their common name due to their appearance; their bright colours and stripes looking like the smart uniform of soldiers. Several individuals of one species were observed and collected on 8th May 2005 at Wasit Nature Reserve, Sharjah ($N 25.36642^{\circ}$, $E 55.47303^{\circ}$), being captured both in the flight interception trap and whilst visiting the light-trap. These individuals were subsequently identified as belonging to the genus *Nemotelus*. During a return visit a year later on April 24th 2006 to the same locality, the same species was seen and photographed (Fig. 4) but also yielded another species of *Nemotelus*, bringing the total to two for that genus.



Fig 3. The Mydidae in this image is a male. Males are much smaller and have more sections to the antennae. Picture: Drew Gardner.



Fig 4. *Nemotelus* feeding on the pollen of *Xylophyllum qatarense*. Picture: Drew Gardner

During a third visit to the site, though not exactly to the same locality (N 25.36345°, E 55.46716°) on April 28th 2006, both *Nemotelus* species were observed and a third soldier-fly was also recorded, being identified as belonging to the genus *Odontomyia* (Fig. 5). The habitat at Wasit is that of a brackish body of water fed by non-brackish water, with adjoining dune habitat. Soldier-flies were observed very close to the water's edge. *Odontomyia* is usually associated with alkaline fresh water (i.e. water flowing from base-rich/limestone sediments). However, some species elsewhere in the World are found in damp areas behind sand dunes (dune slacks) such as are present at Wasit.

Nemotelus is typically associated with saltmarsh and salt pans in coastal areas. It was not surprising then, when this genera was also collected from Khor al-Beidah in Umm al-Qaiwain, on February 23rd 2007 (N 25.60897°, E 55.67203°). It is likely that species with narrow habitat ranges will be used in the future as indicator species.

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Fig 5. This species of Stratiomyidae, belonging to the genus *Odontomyia*, is visibly different to *Nemotelus*. Picture: Drew Gardner

Checklist of true flies (Diptera) from the United Arab Emirates

<p>Suborder Nematocera</p> <p>Limoniidae <i>Styringomyia ebejeri</i> Hancock</p> <p>Cecidomyiidae <i>Procontarinia matteiana</i> Kieffer & Cecconi</p> <p>Psychodidae Phlebotominae <i>Phlebotomus (Phlebotomus) bergeroti</i> Parrot <i>Phlebotomus (Paraphlebotomus) alexandri</i> Sinton <i>Sargentomyia (Sintonius) adleri</i> (Theodor) <i>Sargentomyia (Sintonius) clydei</i> (Sinton) <i>Sargentomyia (Sargentomyia) antennata</i> (Newstead)</p> <p>Culicidae* Anophelinae <i>Anopheles culicifacies</i> complex <i>Anopheles dthali</i> Patton <i>Anopheles paltrinieri</i> Shidrawi & Gillies <i>Anopheles serpentii</i> (Theobald) <i>Anopheles stephensi</i> Liston <i>Anopheles turkhudi</i> Liston</p> <p>Culicinae <i>Ochlerotatus caspius</i> Pallas <i>Culex pipiens</i> Linnaeus <i>Culex pusillus</i> Macquart <i>Culex sitiens</i> Wiedemann <i>Culex tritaeniorhynchus</i> Giles <i>Culex quinquefasciatus</i> Say</p> <p>Simuliidae Simuliinae <i>Simulium (Wilhelmia) buettikeri</i> Crosskey & Roberts</p> <p>Ceratopogonidae Leptoconopinae <i>Leptoconops (Holoconops) mellori</i> Clastrier & Boorman <i>Leptoconops (Proleptoconops) bahreinensis</i> Clastrier & Boorman</p> <p>Forcipomyiinae <i>Forcipomyia (Euprojoannisia) psilonota</i> (Kieffer)</p> <p>Dasyheleinae <i>Dasyhelea deemungi</i> Boorman & van Harten <i>Dasyhelea nigrina</i> Clastrier, Rioux & Descous</p> <p>Ceratopogoninae <i>Culicoides azerbajdzhanicus</i> Dzhafarov <i>Culicoides iberiensis</i> Boorman <i>Culicoides imicola</i> Kieffer <i>Culicoides mesghalii</i> Navai <i>Culicoides oxystoma</i> Kieffer <i>Culicoides rarus</i> de Meillon <i>Culicoides wardi</i> Boorman</p> <p>Chironomidae* Chironominae <i>Chironomus calipterus</i> Kieffer <i>Polydipidum (Polydipidum) bifurcatum</i> Cranston</p> <p>Suborder Brachycera</p> <p>Stratiomyidae⁽ⁿ⁾ Stratiomyinae <i>Odontomyia</i> sp.*</p> <p>Nemotelinae <i>Nemotelus</i> sp.*</p>	<p>Tabanidae* Tabaninae <i>Tabanus rupinae</i> Austen <i>Tabanus polygonus</i> Walker</p> <p>Therevidae* <i>Hoplosathe frauenfeldi</i> (Loew)</p> <p>Mydidae⁽ⁿ⁾ *</p> <p>Asilidae* Asilinae <i>Apoclea femoralis</i> (Wiedemann)</p> <p>Stichopogoninae <i>Stichopogon</i> sp.⁽ⁿ⁾ *</p> <p>Laphriinae <i>Lamyra vorax</i> Loew</p> <p>Bombyliidae* Bombyliinae <i>Anastoechus niveus</i> Hermann <i>Bombyella atra</i> (Scopoli) <i>Bombylisoma senegalense</i> (Macquart) <i>Bombylius megacephalus</i> Porchinskii <i>Bombylius niveus</i> Meigen <i>Bombylius pumillus</i> Meigen <i>Systoechus horridus</i> Greathead</p> <p>Cythereinae <i>Cytherea albolineata</i> (Macquart) <i>Cytherea alexandrina</i> (Becker) <i>Cytherea delicata</i> (Becker) <i>Cytherea fenestrata</i> (Loew)</p> <p>Anthracinae* <i>Anthrax dolgovskayae</i> Zaitzev <i>Anthrax eremicus</i> Evenhuis & Greathead <i>Anthrax trifasciatus</i> Meigen <i>Caecantrax arabicus</i> (Macquart) <i>Petrorossia tropicalis</i> Bezzi <i>Petrorossia albifacies</i> (Macquart) <i>Desmatoneura brevipennis</i> (Bezzi) <i>Desmatoneura</i> sp. <i>Spogostylum candidum</i> (Sack) <i>Spogostylum griseipenne</i> Bessi <i>Spogostylum hippolytum</i> (Wiedemann) <i>Spogostylum ocyale</i> (Wiedemann) <i>Pachyantrax circe</i> (Klug) <i>Pachyantrax nomadorum</i> (Greathead) <i>Exoprosopa disrupta tihamae</i> Greathead <i>Exoprosopa grandis</i> (Wiedeman) <i>Exoprosopa (Honolonia) megerlei</i> (Meigen) <i>Exoprosopa (Honolonia) mucorea</i> (Klug) <i>Exoprosopa (Honolonia) olivieri</i> (Macquart) <i>Heteralonia aeaca</i> (Meigen) <i>Heteralonia bagdadensis</i> (Macquart) <i>Heteralonia fallaciosa</i> (Loew) <i>Heteralonia lugubris</i> (Loew) <i>Heteralonia megerli</i> (Meigen) <i>Heteralonia mucorea</i> (Klug)</p>
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<i>Heteralonia olivieri</i> (Macquart)
<i>Heteralonia singularis</i> (Macquart)
<i>Exhyalanthrax afer</i> (Fabricius)
<i>Exhyalanthrax beckerianus</i> (Bezzi)
<i>Villa (Thyridanthrax) decipula</i> (Austen)
<i>Villa (Thyridanthrax) perspicillaris</i> (Loew)
<i>Villa (Exhyalanthrax) beckerianus</i> (Bezzi)
<i>Villa nomadorum</i> (Greathead)
<i>Villa (Veribubo) angusteoculatus</i> (Becker)
<i>Villa (Veribubo) anus</i> (Wiedemann)
<i>Petrorossia albula</i> Zaitzev
<i>Petrorossia albifacies</i> (Macquart)
<i>Petrorossia tropicalis</i> Bessi
Antoniinae
<i>Antonia suavissima</i> Meigen
Empididae
Syrphidae*
Syrphinae
<i>Eupeodes luniger</i> Meigen*
<i>Paragus compeditus</i> Wiedemann
<i>Sphaerophoria</i> sp. ⁽ⁿ⁾ *
Milesiinae
<i>Eristalinus aeneus</i> (Scopoli)*
<i>Eristalinus megacephalus</i> Rossi*
<i>Eristalis (Eristalodes) taeniops</i> Wiedemann*
<i>Eumerus turcomenorum</i> Paramonov
Pipunculidae ⁽ⁿ⁾ * **
Otitidae ⁽ⁿ⁾
Otitinae
<i>Melieria omissa</i> (Meigen)*
<i>Physiphora</i> sp. ** ***
Tephritidae
Dacinae
<i>Bactrocera dorsalis</i> (Hendel)
<i>Dacus ciliatus</i> Loew
<i>Dacus longistylus</i> Wiedemann*
<i>Dacus vertebratus</i> Bezzi
Trypetinae
<i>Carpomya incompleta</i> (Becker)
<i>Carpomya vesuviana</i> Costa
Tephritisinae
<i>Trupanea amoena</i> (Frauenfeld)
<i>Goniurellia tridens</i> (Hendel) ⁽ⁿ⁾ *
<i>Goniurellia</i> sp. ⁽ⁿ⁾ *
Agromyzidae*
Phytomyzinae
<i>Liriomyza trifolii</i> (Burgess)

<i>Ophiomyza</i> sp.
Limosininae
<i>Telomerina</i> sp.
Drosophilidae*
Drosophilinae
<i>Drosophila</i> sp.
Muscidae*
Muscinae
<i>Musca crassirostris</i> Stein in Becker
<i>Musca domestica domestica</i> Linnaeus
<i>Musca domestica calleva</i> Walker
Musca lucidula (Loew) ⁽ⁿ⁾ * ** ***
<i>Musca sorbens</i> Wiedemann
Phaoninae
<i>Helina sexmaculata</i> (Preyssler) ⁽ⁿ⁾ * **
Stomoxyinae
<i>Stomoxyx calcitrans</i> Linnaeus
Calliphoridae
Calliphorinae
<i>Lucilia sericata</i> Meigen*
Chrysomyiinae
<i>Chrysomya albiceps</i> Wiedemann*
<i>Chrysoma bezziana</i> Villeneuve
<i>Chrysomya regalis</i> Robineau-Desvoidy*
Rhiniidae
Rhiniinae
<i>Rhyncomya nigripes</i> (?) Seguy ⁽ⁿ⁾ ** ***
<i>Villeneuviella</i> sp.
Sarcophagidae
Miltogramminae ⁽ⁿ⁾ * **
Paramacronychiinae
<i>Wohlfahrtia nuba</i> (Wiedemann) *
<i>Wohlfahrtia villeneuvei</i> Salem ⁽ⁿ⁾ ** ***
Sarcophagini
<i>Sarcophaga ruficornis</i> (Fabricius)*
Scenopinidae ⁽ⁿ⁾
Proratinae
<i>Prorates</i> sp.*
Hippoboscidae
Hippoboscinae
<i>Hippobosca longipennis</i> Fabricius
Ephydriidae ⁽ⁿ⁾
Ephydrinae
<i>Ephydria</i> sp. * ** ***
Tethinidae ⁽ⁿ⁾ * ** ***

* Representatives of these species/genera/families are held in the private collection of the author, and some also in the collection of the joint Al Ain and Abu Dhabi Emirates Natural History Group collection, of which the author is the custodian.

** Determined by Nigel Wyatt, Diptera curator, NHM, London

*** Donated to the NHM, London

(n) This indicates new records. Where several species within a new family are also new records, these have then not been additionally marked as the symbol at the uppermost hierarchy of a new record suffices.

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