

Order Diptera, family Mydidae

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INTRODUCTION

The Mydidae of the United Arab Emirates have been recently reviewed by Deeming (2007) in the first volume of this same book series and a single species, *Rhopalia gyps* Bowden, 1987, had been recorded. Several specimens of then undetermined species had been mentioned in the literature (Howarth, 2006; Deeming, 2007) and new specimens have been collected since that have now been studied and identified by the author. Today, the number of Mydidae species in the UAE can be increased to four species representing three genera. Furthermore, the first Mydidae species from Oman is recorded. These species are dealt with below and diagnosed and illustrated in order to allow correct identification in the future.

Mydidae, with 461 species in 66 genera, is one of the less speciose families of Asiloidea (Diptera: Brachycera). Species are distributed in warmer climates throughout the world and arid as well as Mediterranean-type environments are particularly species-rich. The highest species diversity is found in southern Africa. Although several regional faunas are fairly well known, e.g., North America, Australia, or Chile, there are still many areas where new species will be found and need to be made scientifically known.

MATERIALS AND METHODS

Institutions providing specimens are listed below, together with the abbreviations used in the text when citing depositories, and the people who kindly assisted: BMNH - The Natural History Museum, London, England, UK (E. McAlister); ENHG - Emirates Natural History Group, Al Ain, Abu Dhabi, United Arab Emirates (B. Howarth); NMWC - National Museum Wales, Cardiff, Wales, UK (J. Deeming); UAEIC - United Arab Emirates Invertebrate Collection.

Morphological terminology follows McAlpine (1981) and Dikow (2009).

SYSTEMATIC ACCOUNT

Subfamily *Leptomydinae* Papavero & Wilcox, 1974

Genus *Eremomidas* Semenov, 1896

The genus *Eremomidas* comprises five species primarily known from central Asia (Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan), with a single species in the Afrotropical region (Yemen). This Afrotropical species is here recorded from Oman and the UAE for the first time.

Eremomidas arabicus Bequaert, 1961

Plate 1

Specimens studied: Ad-Dhaid, village Rasheed, 25°17'N 55°53'E, 1♀, 23.ix.2007, leg. J. Batelka & H. Pinda (NMWC); Khor Yfrah, 25°31'N 55°35'E, 1♀, 15.ix.2006, leg. B. Howarth (ENHG). Wadi Bih, 1♀, 24.ix.1979, leg. J. Brown (BMNH). OMAN: Al-Wusta, between Qarn Alam and Haima, 20°45'N 57°05'E, 1♂, 19.ix.1979, leg. R. Whitcombe (BMNH). Ash-Sharqiyah, Wahiba Sands, SE Wasil, 22°26'N 58°45'E, 1♂, 25.x.1990, leg. M. Gallagher & J. Deeming (NMWC).



Plate 1. *Eremomidas arabicus* Bequaert, female, ad-Dhaid. (Photograph by Jan Batelka)

Diagnosis: *E. arabicus* is distinguished from other *Eremomidas* species by the overall white or light grey appearance (Plate 1), the sharply depressed vertex, the absence of long setae on thorax and abdomen, the vestigial proboscis, and M_{1+2} terminating in R_1 . To this day, it is the largest species of Mydidae found in the Arabian Peninsula, with females having a wing length of 17.5–18.2 mm.

Expanded diagnosis based on specimens studied:

Male. Head distinctly wider than thorax (at postpronotal lobes); interocular distance on vertex

smaller than at ventral eye margin; vertex sharply depressed (nearly 90° angle on median eye margin); width of parafacial area (between tentorial pit and median eye margin) less than half the width of facial gibbosity (at same level); densely white pruinose, only ocellar triangle, vertex, and postgenae apruinose and dark brown; facial gibbosity distinct, discernible in lateral view, entirely covered with long, white mystacial setae; frons, vertex, and occiput with white setae; proboscis light brown, vestigial, knob-like; maxillary palpi laterally compressed, light brown, slightly longer than proboscis. Antennae brown; scape and pedicel with white setae dorsally and ventrally, scape longer than pedicel; postpedicel in proximal half cylindrical, distal half symmetrically bulbous, >2.0 times as long as combined length of scape and pedicel; apical 'seta-like' sensory element situated apically in cavity on postpedicel.

Thorax. Light brown, predominantly white pruinose, only postpronotal lobes, proepisternum, anterior half of anepimeron, and posterior half of scutellum apruinose; scutum with faint dark grey longitudinal stripes just lateral of median line and laterally with presutural and postsutural spots. Setation. Distinct notopleural, supra-alar, and postalar macrosetae absent; white setae scattered on scutum, but not on faint dark grey spots/stripes, longest laterally dorsal to anepisternum; antepronotum, proepisternum, and postpronotal lobes with long white setae; katatergite and apruinose part of anepimeron with short white setae; scutellum, mesopostnotum, and anatergite asetose. Legs light brown to brown with white setae; pro and mes coxae apruinose, met coxae white pruinose; femora brown, met femora cylindrical as wide as pro and mes femora, met femora without ventral macrosetae; pro and mes tibiae laterally arched, met tibia straight, met tibia without ventral keel; pro and mes tarsomeres of equal length, met proximal tarsomere as long as combined length of 2nd and 3rd tarsomeres; pulvilli well-developed, as long as well-developed claws, much wider than base of claws. Wings. Length 11.2–11.4 mm; hyaline throughout, very few microtrichia scattered on wing, all veins light yellow, all marginal wing cells closed; C terminating at junction with R₁; R₄ either terminating in R₂₊₃ or R₁; R₅ terminating in R₁; stump vein (R₃) present at base of R₄; R₄ and R₅ (forming cell r₄) more or less parallel medially; M₁₊₂ terminating in R₁; CuA₁ and CuA₂ split proximally to m-cu (cell m₃ narrow proximally); alula very large, touching scutellum medially; haltere light yellow.

Abdomen. Predominantly brown, T₂ as wide as T₁, T white pruinose, S predominantly apruinose, scattered white setae; T₁–7 well-developed and visible; T₂ with anterior apruinose stripe; T₁–6 posterior margin yellow; bullae on T₂ light brown and circular; S₁ entirely yellow, S₂–7 posterior margin yellow. Terminalia not studied in detail.

Female. Interocular distance on vertex nearly as wide as width of base of scutellum (nearly 3 times as wide as in male) width of parafacial area (between tentorial pit and median eye margin) more than half the width of facial gibbosity; head setation much shorter, only few mystacial setae; thoracic setation much shorter; pulvilli on all tarsi about half the length of claws, only as wide as base of claws; wing length 17.5–18.2 mm; abdominal pruinosity reduced, only T₁ completely white pruinose, T₂–3 (slightly on T₄) only laterally pruinose, T₅–8 entirely apruinose; tergites proximally brown in varying extent. Genitalia. Ovipositor with acanthophorite plates each with 7 spurs; internal structures not studied.

Remarks: This species was described by Bequaert (1961: 33) from Seivun (= Say'un, Saiwun, 15°56'N 48°47'E) in central Yemen and is here recorded for the first time from Oman and the UAE. The holotype is deposited in the BMNH. This species shows sexual dimorphism particularly in the morphology of the head, the reduction of pulvilli in the female, and reduced setation in the female. Males and females of this species have been photographed at Khor Yfrah, Um al-Quwain, UAE, and the images have been published in Howarth (2006: Figs 1–2).

The placement of this species in *Eremomidas* is somewhat questionable based on comparison

with *Eremomidas bek* Semenov, 1922, from Kazakhstan. In particular, the shape of the aedeagus is different in that it is more or less dorso-ventrally flattened and not laterally compressed as in *Eremomidas* (see illustrations in Richter & Ovtshinnikova, 1996; Richter, 1997), the wing venation is more similar to Syllegomydinae in that M_{1+2} terminates in R_1 and not in C as is found in *Eremomidas* and Leptomydinae, and the proboscis is vestigial as is always found in species of *Syllegomydas* Becker, 1906 (Syllegomydinae). The latter two characters are probably the reason why Deeming (2007) recorded a specimen from Oman (Wahiba Sands, NMWC) as belonging to *Syllegomydas*, which has now been identified as *Eremomidas arabicus*. The correct generic placement of this species and an undescribed one from Sudan, which is very similar in aedeagal and proboscis morphology and wing venation (unpublished data), needs to be established with a phylogenetic analysis of Mydidae genera that is currently in preparation by the author.

Distribution: Yemen, Oman, UAE. This species is therefore distributed in both the Afrotropical and Palaearctic regions.

Subfamily *Rhopaliinae* Papavero & Wilcox, 1974

Genus *Perissocerus* Gerstaecker, 1868

The genus *Perissocerus* comprises seven species distributed primarily in the Palaearctic region (northern Africa: Western Sahara, Algeria, Tunisia, Libya; central Asia: Kazakhstan, Turkmenistan, Uzbekistan) with two species found in the Afrotropical region (Ethiopia, Yemen).

Perissocerus arabicus Bequaert, 1961

Specimens examined: Rhas Ganada, 24°45'N 54°53'E, 1♀, 6.xi.1992, leg. B. Tigar (BMNH).

Diagnosis: *P. arabicus* is a small Mydidae species that is entirely covered with white setae and can therefore be distinguished from other Mydidae in the Arabian Peninsula very easily. The vestigial proboscis and the characteristic shape of the postpedicel in the antennae distinguishes it from species of *Rhopalia*.

Expanded diagnosis based on specimens studied:

Female. Head distinctly wider than thorax (at postpronotal lobes); interocular distance on vertex greater than at ventral eye margin; vertex not depressed; width of parafacial area (between tentorial pit and median eye margin) about half the width of facial gibbosity (at same level); lateral face, lateral frons, and occiput grey pruinose; facial gibbosity, ocellar triangle, most of frons, and vertex apruinose and black; facial gibbosity distinct, well-developed and distinct in lateral view, entirely covered with long, white mystacial setae; facial gibbosity, frons, vertex, and postgenae with long white setae; occiput with short white setae; proboscis light brown, vestigial, knob-like; maxillary palpi vestigial, light brown with long white setae. Antennae brown; antennae elevated above eye margin in lateral view on distinct protuberance; scape and pedicel with yellow setae dorsally and ventrally, scape more than 2 times as long as pedicel; postpedicel in proximal 1/3 cylindrical, distal 2/3 bulbous, expanded ventrally, >3.0 times as long as combined length of scape and pedicel; apical 'seta-like' sensory element situated apically in cavity on postpedicel.

Thorax. Brown to black, predominantly apruinose, only antepnotum, katatergite, anatergite, and mesopostnotum grey pruinose; scutum predominantly black, postpronotal lobes and lateral scutum brown. Setation. Distinct notopleural, supra-alar, and postalar macrosetae absent; long, dense, white setae scattered on scutum, postsutural dorsocentral setae directed anteriorly; postpronotal lobes, proepimeron, lateral proepisternum, and anepimeron with long white setae; scutellum brown with white discal scutellar setae. Legs light brown with white

setae; coxae partly brown, apruinose; femora brown, met femora only slightly expanded distally, no ventral macrosetae; pro and mes tibiae laterally arched, met tibia straight, met tibia without ventral keel; pro and mes proximal tarsomeres as long as 2nd tarsomere, met proximal tarsomere longer than 2nd tarsomere; pulvilli reduced, vestigial, less than 1/4 of length of well-developed claws, only as wide as base of claws. Wings. Length 8.2 mm; hyaline throughout, very few microtrichia scattered on wing, veins light brown, R_2 , R_4 , R_5 , and M_{1+2} predominantly white, marginal wing cells closed except for cells r_4 and r_5 which are open; C terminating at junction with R_5 ; R_4 terminating in R_1 ; R_5 terminating in C; stump vein (R_3) absent at base of R_4 ; R_4 and R_5 (forming cell r_4) more or less parallel to each other, not particularly constricting cell; M_{1+2} terminating in C; CuA_1 and CuA_2 split proximally to m-cu (cell m_3 narrow proximally); alula well-developed, but not touching scutellum medially; haltere light yellow.

Abdomen. Predominantly brown, T2 as wide as T1, T and S apruinose, T1 with long white setae throughout, T2–4 with long white setae laterally; T2–7 with posterior margin yellow; bullae on T2 brown and transversely elongate; S brown with white setae. Genitalia. Ovipositor with acanthophorite plates each with 9 spurs; internal structures not studied.

Due to the preservation of the specimen the exact shape of the postpedicel can not be determined.

Remarks: This species was described by Bequaert (1961: 33) from Al Huseini (near Lahy = Lahij, 13°03'N 44°53'E) in south-western Yemen and is here recorded for the first time from the UAE. The holotype is deposited in the BMNH. An image of a male specimen from Dubailand, Dubai, UAE (24°59'N 55°19'E, 2.x.2006, D. Gardner) has been published in Howarth (2006: Fig. 3).

Distribution: Yemen, UAE.

Genus *Rhopalia* Macquart, 1838

The genus *Rhopalia* comprises 13 species distributed in the southern Palaearctic Region (northern Africa: Algeria, Egypt, Morocco, and Tunisia as well as Afghanistan, Iran, Saudi Arabia, Syria, and the United Arab Emirates). Two species are here recorded from the UAE of which one has been collected for the first time only very recently. The three most recent publications on this genus were published by Séguy (1941), Bequaert (1961), and Lyneborg (1970). Although these studies provide help in identification of species, correct determination of all species seems at present not possible. This is partly due to the fact that male and female specimens of the same species might be morphologically (and particularly in colouration) quite different.

Rhopalia gyps Bowden, 1987

Specimen studied: Wadi Madaiq, 1♀, 29.iii–1.iv.2006, leg. A. van Harten (NMWC).

Diagnosis: *R. gyps* is a medium-sized Mydidae species of brown colouration. It is most easily distinguished from other Mydidae on the Arabian Peninsula by the well-developed proboscis, the presence of vein CuA_1+M_3 that reaches the posterior wing margin, and the colouration along the wing veins M_{1+2} , M_3 , and CuA_1 . For other features see Bowden (1987) and the image in Deeming (2007).

Remarks: This species was described by Bowden (1987: 153) from the Tuwayq Hills in central Saudi Arabia and was first recorded in the UAE and illustrated by Deeming (2007).

Distribution: Saudi Arabia, UAE.

Rhopalia olivieri Macquart, 1838

Plates 2–3

Specimens studied: S of Ra's al-Khaymah, 1♂, 1♀, 5–6.iv.2008, leg. K. Mahmood (NMWC, UAEIC).

Diagnosis: *R. olivieri* is a relatively small Mydidae species that is black and yellow in colouration (Plates 2–3) and can therefore be distinguished from other Mydidae in the Arabian Peninsula very easily. The well-developed proboscis distinguishes it from species of *Perissocerus* while the absence of colouration along the wing veins, in particular on veins M_{1+2} and CuA_1 , and the absence of CuA_1+M_3 reaching the posterior wing margin distinguish it from *Rhopalia gyps*.

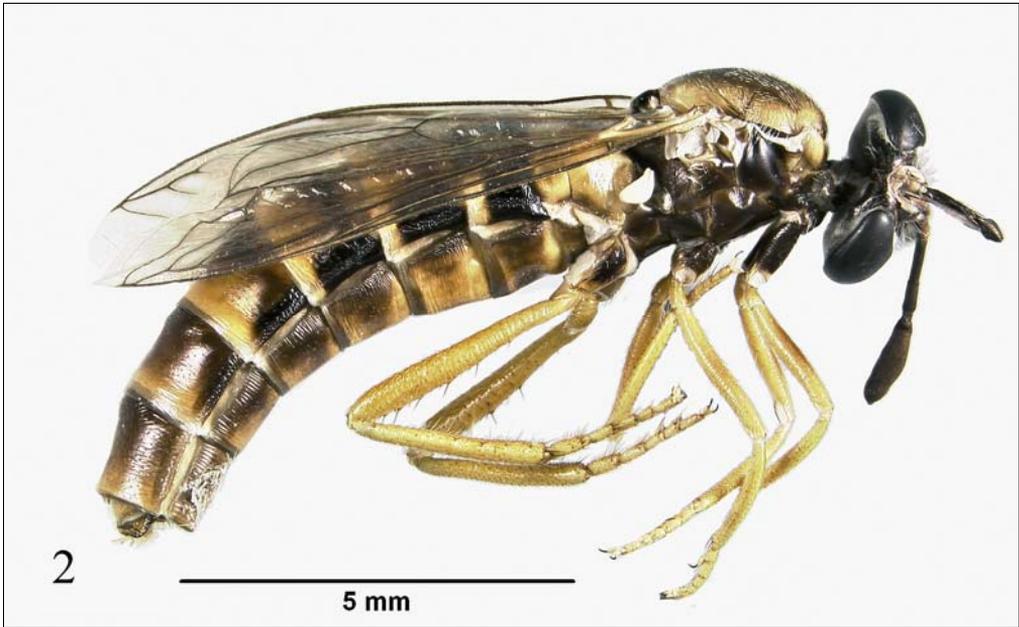
Expanded diagnosis based on specimens studied:

Male. Head distinctly wider than thorax (at postpronotal lobes); interocular distance on vertex greater than at ventral eye margin; vertex only slightly depressed; width of parafacial area (between tentorial pit and median eye margin) less than half the width of facial gibbosity (at same level); lateral face and occiput grey pruinose; facial gibbosity, ocellar triangle, frons, and vertex apruinose and dark brown; facial gibbosity distinct, well-developed and distinct in lateral view, entirely covered with long, white mystacial setae; facial gibbosity, frons, vertex, and postgenae with long white setae; occiput with short white setae; proboscis brown, well-developed, protruding well beyond apex of pedicel; maxillary palpi vestigial, cylindrical, light brown. Antennae brown; antennae elevated above eye margin in lateral view on distinct protuberance; scape and pedicel with yellow setae dorsally and ventrally, scape about 3 times as long as pedicel; postpedicel in proximal half cylindrical, distal half bulbous, expanded ventrally, >7.0 times as long as combined length of scape and pedicel; apical 'seta-like' sensory element situated apically in cavity on postpedicel.

Thorax. Dark brown to black, predominantly apruinose, only anteppronotum, proepimeron, katatergite, anatergite, and mesopostnotum grey pruinose; scutum predominantly black, postpronotal lobes and lateral scutum yellow. Setation. Distinct notopleural, supra-alar, and postalar macrosetae absent; long white setae scattered on scutum, postsutural dorsocentral setae directed anteriorly; proepimeron, lateral proepisternum, and anepimeron with long white setae; scutellum brown, laterally black, few white discal scutellar setae. Legs yellow with yellow setae; coxae partly brown, apruinose; femora yellow, met femora bulbous apically, evenly expanded, two rows of ventral macrosetae; pro and mes tibiae laterally arched, met tibia straight, met tibia without ventral keel; all proximal tarsomeres as long as 2nd tarsomeres; pulvilli well-developed, about 3/4 of length of well-developed claws, much wider than base of claws. Wings. Length 7.7 mm; posterior half hyaline (most of cell r_5 and posterior to CuA_1), anterior half brown stained; very few microtrichia scattered on wing, veins brown, M_{1+2} apically white, marginal wing cells closed except for cells r_4 and r_5 which are open; C terminating at junction with R_5 ; R_4 terminating in R_1 ; R_5 terminating in C; stump vein (R_3) absent at base of R_4 ; R_4 and R_5 (forming cell r_4) approaching each other at 2/3 of length, therefore constricting cell r_4 ; M_{1+2} terminating in C; CuA_1 and CuA_2 split proximally to m-cu (cell m_3 narrow proximally); alula well-developed, but not touching scutellum medially; haltere light yellow.

Abdomen. Predominantly yellow, T2 as wide as T1, T and S apruinose, scattered white to yellow setae, longest on T1; T1–7 well-developed and visible; T2–7 laterally brown; bullae on T2 brown and transversely elongate. Terminalia not studied in detail.

Female. Scutum predominantly brown, setation much shorter; met femora less bulbous and expanded; proximal met tarsomere longer than 2nd tarsomere, pulvilli on all tarsi about half the length of claws, only as wide as base of claws; wing length 8.4 mm; abdomen brown and yellow, T1 brown medially and yellow laterally; T2 proximally yellow, brown distally; T3–8 and S2–8 brown proximally and yellow distally, distal colouration less yellow on posterior T, only T2–5 brown laterally. Genitalia. Ovipositor with acanthophorite plates each with 8 spurs; internal structures not studied.



Plates 2–3. *Rhopalia olivieri* Macquart, S of Ra's al-Khaymah. 2: Female; 3: Male. (Photographs © James Turner / NMWC)

Remarks: The holotype of this species is deposited in the Muséum national d'Histoire naturelle (MNHN, Paris, France), but has not been studied. As mentioned above, the species identification is not entirely certain as there is no recent revision of this genus. In the key to species provided by Séguéy (1941) it will run to *Rhopalia olivieri*, but *Rhopalia oldroydi* Lyneborg, 1970, which was described from central Afghanistan, does match the species in many details as well. Having studied specimens indistinguishable from the ones above

collected in Israel (manuscript in preparation), which is not too far from the type locality in Egypt, makes me believe that *Rhopalia olivieri* is also present in the Arabian Peninsula.
Distribution: Egypt, UAE.

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