

# Two new species of the genus *Merodon* Meigen 1803 (Diptera: Syrphidae) from the island of Lesbos (Greece), in the eastern Mediterranean

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**Abstract.** Descriptions are given of two new species of *Merodon* Meigen (Diptera: Syrphidae) from the island of Lesbos (Greece): *Merodon papillus* Vujić, Radenković & Pérez-Bañón **n. sp.** from the *ruficornis* group species and *Merodon sapphous* Vujić, Pérez-Bañón & Radenković **n. sp.** from the *aureus* group. In addition to classical morphological characters, partial sequences of the mitochondrial COI gene are generated for each taxon as DNA 'barcodes'. Main characteristics of the species habitats are reported. The zoogeographical significance of these endemic taxa to the biodiversity of the island is discussed.

**Résumé.** Deux nouvelles espèces du genre *Merodon* Meigen 1803 (Diptera : Syrphidae) de l'île de Lesbos (Grèce), dans la Méditerranée Orientale. La description de deux nouvelles espèces du genre *Merodon* Meigen (Diptera: Syrphidae) de l'île de Lesbos (Grèce) est présentée : *Merodon papillus* Vujić, Radenković & Pérez-Bañón **n. sp.** du groupe *ruficornis* et *Merodon sapphous* Vujić, Pérez-Bañón et Radenković **n. sp.** du groupe *aureus*. Outre les caractéristiques morphologiques classiques, on inclut les séquences partielles des gènes mitochondriaux COI élaborées pour chaque taxon comme ADN "barcodes". Les caractéristiques principales de l'habitat de chaque espèce sont décrites. On discute l'importance zoogéographique de ces taxons endémiques pour la diversité de l'île.

**Keywords:** *Merodon*, Syrphidae, Lesbos island (Greece), new species, biodiversity.

The genus *Merodon* Meigen 1803 (Diptera: Syrphidae), distributed over the Palaearctic and Ethiopian regions, is the second largest genus of Syrphidae in Europe where it is represented by more than 60 species (Speight 2006), and is one of the most widespread syrphid genera in the Mediterranean region (Dirickx 1994). A comprehensive study of the genus has been recently conducted for the Palaearctic region, comprising a revision of 11 monophyletic species groups (Hurkmans 1993).

The genus *Merodon*, belonging to the tribe Eumerini, possesses two very important morphological diagnostic characters: a triangular projection beneath the distal part of the hind femora and wing-vein  $R_{4+5}$  curving deeply into cell  $R_5$ . Among the few things known of the otherwise poorly studied biology of *Merodon* is that all known species have larval development in underground bulbs or rhizomes of monocots such as Liliaceae and

Amaryllidaceae (Hurkmans 1993; Rotheray 1993). This fits well with the known distribution and diversity of the genus in the Mediterranean (Dirickx 1994), where geophytes contribute a significant number of species: 10.1% of the flora of Israel (Shmida & Dafni 1989), 14.8% of the flora of Lesbos (Bazos 2005). This percentage rises to 20.3% within a single phryganic community comprising 133 plant species with conspicuous flowers (Petanidou *et al.* 1995).

Although estimated to be highly diverse in *Merodon* species, the Aegean has not been systematically screened, which holds also true for all Syrphidae of this area (Speight 2006). In a relatively recent study from a 30 ha phrygana site 10 km W of Athens, *Merodon* was the most species-rich genus out of the 21 syrphid genera recorded in the community, where *Merodon* was represented by 12 species (viz. 24% of all syrphid species in the community) (Petanidou 1991a, 1991b). Yet, in this same community, among the 12 *Merodon* species found, three were new to science (Lucas, personal communication), which shows that the area is to a large extent faunistically unexplored.

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With the expectation that its *Merodon* fauna would be equally interesting and probably more diversified, we carried out systematic faunistic research of Syrphidae on Lesvos, an island situated in the north east Aegean, at its nearest point about 9 km from the Turkish coast (fig. 1). Lesvos is a very interesting island from the biogeographical viewpoint (Blondel & Aronson 1999), mainly because it is the biggest of a series of islands located along the Aegean coast of Turkey in the zone where two biodiversities of different origins merge: the Anatolian and the major west Mediterranean. Geophytes are outstandingly well represented on Lesvos, making 14.8% of the local flora, which is the second highest percentage found among 11 medium- to large-sized Aegean islands (range 10.7-15.2%) and six mountainous areas of the Greek mainland (range 9.0-13.9%) studies by Bazos (2005). Preliminary review of the data gathered on the syrphid fauna of Lesvos shows that more than 20 species of *Merodon* occur on the island (unpublished data). The present text is the first in a series in which we present the results of a systematic study of the Syrphidae of Lesvos. Here we describe two *Merodon* species new to science, one from the *aureus* group and another from the *ruficornis* group. A partial sequence of the mitochondrial COI gene was generated for one paratype of each species, for future use in the study of the biodiversity of hoverflies of this island, that employs both morphological and molecular characters.

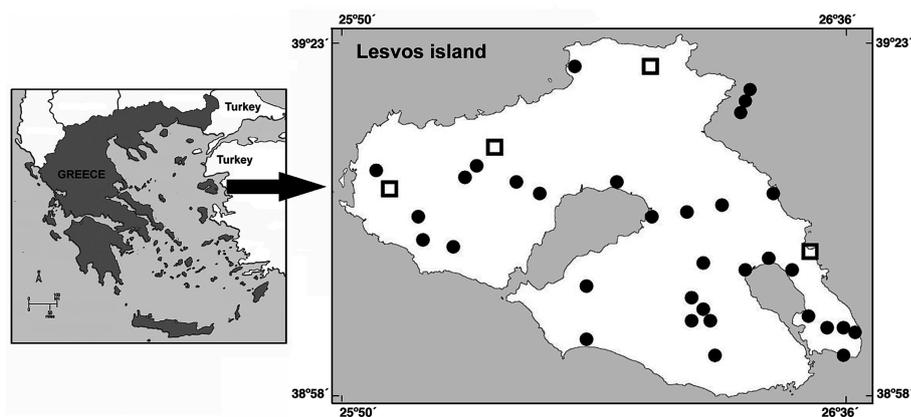
### Material and Methods

#### Habitats and fieldwork

With a size of 1632.8 km<sup>2</sup>, Lesvos is the biggest island in the north Aegean and the third largest in the whole Aegean after

Crete and Evvoia (fig. 1). Such a size has the potential to sustain a high biological diversity, which is enhanced by remarkable habitat diversity. The two major land cover types found on the island are: pine forests occurring in a mosaic of various stages of post-fire regeneration encompassing phrygana (low scrub dominated by bushy chamaephytes such as *Cistus* spp. and *Thymus capitatus* (L.) Hofmanns & Link), maquis (high scrub dominated by evergreen shrubs such as *Quercus coccifera* L., *Pistacia lentiscus* L. and *Olea europaea* L. var. *sylvestris*) and mature pine forests (dominated by *Pinus brutia* Ten. and, to a lesser extent, by *P. nigra* Arnold), together with, small olive groves, many of which are still actively managed while others are abandoned. In addition there are areas of oak woodland (mixed communities of *Quercus cerris* L., *Q. frainetto* Ten., *Q. infectoria* Olivier subsp. *infectoria*, *Q. ithaburensis* subsp. *macrolepis* Kotschy, *Q. pubescens* Willd., and *Q. ilex* L.), a chestnut forest (dominated by *Castanea sativa* Miller), salt marshes, urban developments and a few areas of extensively cultivated lands. The climate is typically mediterranean with hot dry summers and cool wet winters, the wettest precipitation gradient being towards the east (Karras 1973; Kosmas *et al.* 2000). The only exceptions are high altitude areas of the two mountains ranges, especially Mt Olympus (968 m), which have a more continental climate.

Insect collecting was conducted all over the island and in all habitat types during three separate periods (fig. 1). **1.** From March through May 2001 more than 20 sites and habitat types were surveyed on a non-systematic basis and all syrphid specimens were collected by netting. At the same time four Malaise traps were installed in four major vegetation types of the island, viz. phrygana (in Sigri), olive groves (Thermi), mixed high maquis (Sikaminia), and oak forest (Vatousa) (fig. 1). The traps were systematically emptied once a week, basis throughout the three-months period. **2.** The second field campaign was carried out in 2004, during which 38 sites were each systematically surveyed at least three times during the main flowering period (March – June). In addition, supplementary collecting was conducted on a few sites in September that year. The survey comprised collecting by hand net during random and transect walking. **3.** A third field campaign was carried out during the main flowering period of 2005. This involved



**Figure 1**  
Location map of Lesvos island. Sampling sites (□: Malaise traps locations; ●: random and transect walk collection areas).

systematic collecting from 13 olive groves in the eastern part of the island using the same random and transect walk protocols as above. Each olive grove was surveyed once a month, each month from March to July inclusive.

### DNA sequencing

One paratype of each species was used for DNA sequencing. DNA was extracted from two legs, and a fragment of the 3' region of the mitochondrial gene COI was amplified and sequenced according to standard methods (e.g. Ståhls *et al.* 2004) using forward primer C1-J-2183 (alias Jerry) (5'-CAACATTTATTTTGATTTTTTGG-3') and reverse primer TL2-N-3014 (alias Pat) (5'-TCCAATGCACTAATCTGCCATATTA-3') (Simon *et al.* 1994).

### Collections

The studied specimens have been deposited in the following entomological collections:

University of Novi Sad, Department of Biology and Ecology (NS); University of Alicante, Alicante, Spain (CEUA); Finnish Museum of Natural History, Zoological Museum, Helsinki, Finland (ZMH); and The Melissotheque of the Aegean, Department of Geography, University of the Aegean, Greece (MAUA).

## Results

### *Merodon ruficornis* group of species

Medium-sized species with mid coxa hairy posteriorly; anterior anepisternum with area bare of hairs below postpronotum; only tergite II with clear reddish lateral spots; male with projections or spikes on hind legs: on trochanter, tibia, and ventral margin of femur; posterior lobe of surstylus curved and dorsally aligned (*ruficornis* group, Radenković *et al.* 2002).

This group of species has a predominately eastern Mediterranean distribution, without any representatives on the Iberian Peninsula (Marcos-García *et al.* in press). It is at its most diverse on the Balkan Peninsula and in Turkey (plus the Caucasus), both with 7 species (Vujić, unpublished data). On the island of Lesbos only two species belonging to this group were found: *M. loewi* Goot, 1964 and the following undescribed taxon.

### *Merodon papillus* Vujić, Radenković & Pérez-Bañón n. sp.

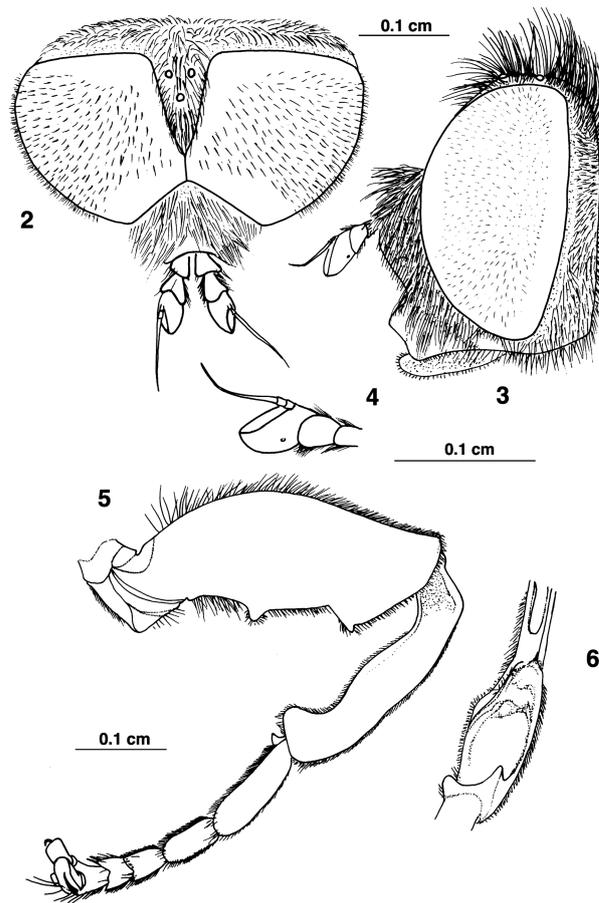
**Material examined. Holotype.** Greece (Lesbos island): 1 male, Vatousa, coll. 14-IV-2001, S. Rojo & C. Pérez-Bañón (NS). **Paratypes.** Greece (Lesbos island): 1 male, 2.45 km W Vatousa (39°13'51"N; 28°1'23"E), 200 m, coll. 20.IV/28.IV.2001, Malaise trap (CEUA); 1 male, 2.45 km W Vatousa (39°13'51"N; 28°1'23"E), 200 m, coll. 20.IV/28.IV.2001, Malaise trap (ZMH, DNA voucher specimen ZMH\_S407); 1 male, 2.45 km W Vatousa (39°13'51"N; 28°1'23"E), 200 m, coll. 5.V/12.V.2001 Malaise trap (CEUA); 1 males, 5.7 km

NW Madamados (39°21'19"N; 26°17'52"E), 600 m, coll. 24.IV/2.V.2001, Malaise trap (MAUA); 1 males, 5.7 km NW Madamados (39°21'19"N; 26°17'52"E), 600 m, coll. 24.IV/12.V.2001, Malaise trap (CEUA); 1 male, 5.7 km NW Madamados (39°21'19"N; 26°17'52"E), 600 m, coll. 24.IV.2001, S. Rojo & C. Pérez-Bañón (DNA voucher specimen, ZMH\_S398); 1 male, Filia (39°15'40"N, 26°9'00"E), coll. 20-IV-2001, S. Rojo & C. Pérez-Bañón (NS); 1 female, 2.2 km SE Mystegna (39°12'15"N, 26°29'07"E), 20 m, coll. 9.IV.2004, H. Dahm (NS); 1 female, Achladeri (39°10'5"N, 26°17'40"E), coll. 30.IV.2005, M. Apostolopoulos (MAUA); 1 female, 5.7 km NW Madamados (39°21'19"N; 26°17'52"E), 600 m, coll. 17.V/23.V.2001, Malaise trap (CEUA).

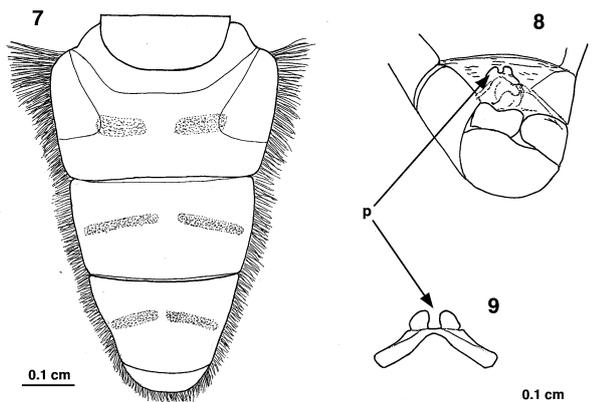
### Description

#### Male (figs 2–12)

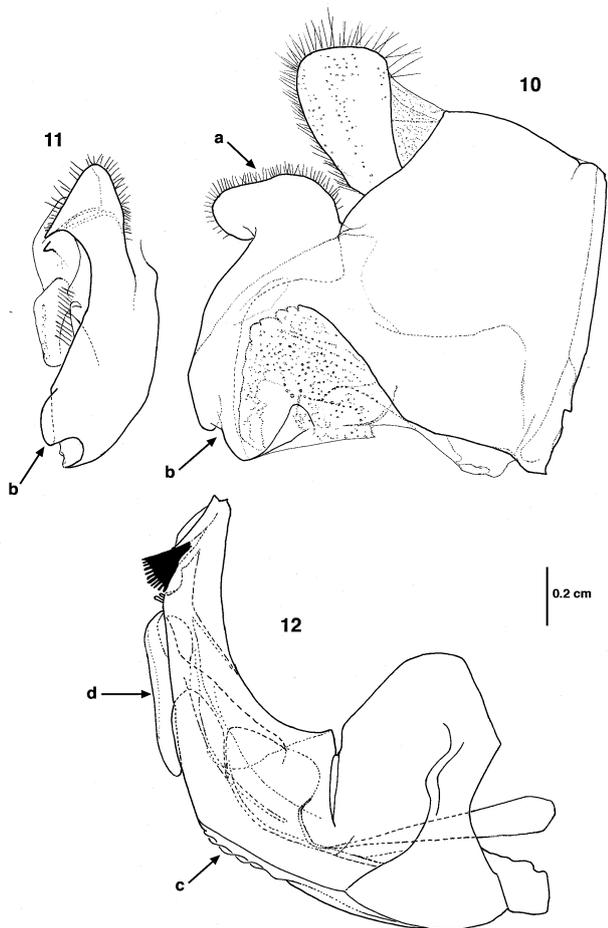
**Head** (figs 2–4). Antenna brown; scape and pedicel dark brown; basoflagellomere light brown, between 1.2 and 1.5 longer than wide, with dorsal margin concave and apex acute; arista light brown basally, dark brown towards apex, 1.45 times as long as basoflagellomere (fig. 4). Face and frons shining black, covered with whitish-yellow hairs and silver-white dusting. Oral margin



**Figures 2–6**  
*Merodon papillus* n. sp., male 2, head, dorsal view; 3, head, lateral view; 4, antenna; 5, hind leg, lateral view; 6. sinuous depression of hind tibia, ventral view.



**Figures 7–9**  
*Merodon papillus* n. sp., male. 7, abdomen, dorsal view; 8, base of abdomen, ventral view; 9, two wart-like prominences in the middle of the posterior margin (p) of sternite IV.

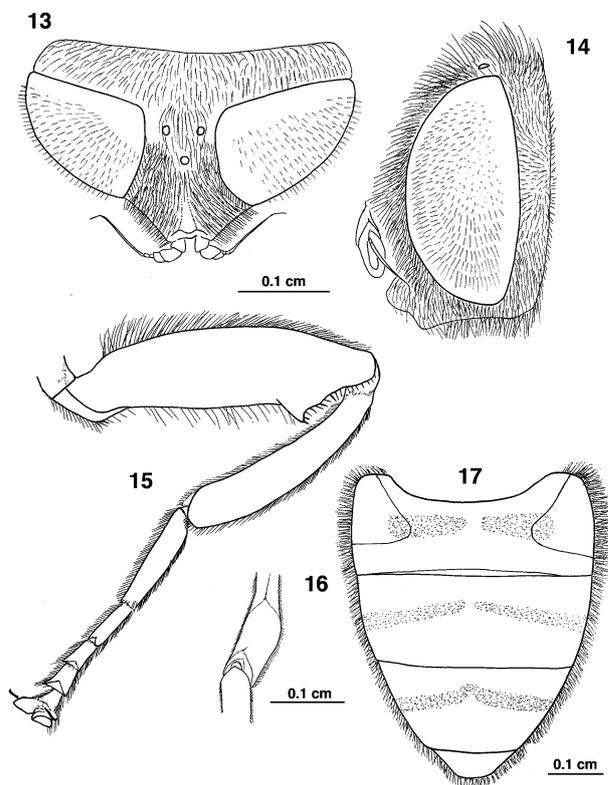


**Figures 10–12**  
*Merodon papillus* n. sp., male genitalia. 10, epandrium, lateral view; 11, left surstylus, anterior view; 12, hypandrium, lateral view (a: posterior surstylar lobe; b: anterior surstylar lobe; c: folded thecal ridge; d: lateral sclerite of aedeagus).

bare with black lustre. Vertical triangle isosceles, 2–2.5 times longer than eye contiguity, shiny black with long yellow hairs and a few black ones intermingled on the ocellar triangle. Eye contiguity about 12 ommatidia long. Ocellar triangle isosceles. Eye hairs whitish, about as long as scape. Occiput covered with dense whitish dusting and yellowish hairs.

**Thorax, wings, legs** (figs 5, 6). Scutum and scutellum dark gold with metallic reflections, covered in erect yellow hairs. Posterior anepisternum, anepimeron and dorsal part of katepisternum with long yellow hairs. Wing pale greyish, short microtrichose, with dark veins except for pale basal parts and most parts of C, Sc, R<sub>1</sub>. Dorsal and ventral calypters pale yellow. Haltere yellow. Legs black except light brown joints between femur and tibia, and tarsus ventrally. Hind trochanter with a small blunt process (fig. 5). Hind femur with wart-like ventral process medially in the basal 1/3 of its length (fig. 5). Hind tibia with sinuous depression ventrally, one small apico-posterior spike and a pointed apical process anteriorly (figs 5–6). Legs with yellow hairs, except for short black hairs on anterior and dorsal surface of fore- and middle femora and on posterior surface of hind femur.

**Abdomen** (figs 7–9). black with bronze reflections, slightly tapering, as long as mesonotum. Tergites II–IV black with more or less distinct white transverse bands of dusting interrupted in the middle; tergite II with orange antero-lateral spots; hairs on tergites mainly erect and yellow, but tergites III and IV postero-



**Figures 13–17**  
*Merodon papillus* n. sp., female. 13, head, dorsal view; 14, head, lateral view; 15, hind leg, lateral view; 16, sinuous depression of hind tibia, ventral view; 17, abdomen, dorsal view.

medially also with some black hairs (fig. 7). Sternites blackish-brown, covered in long pale yellow hairs; sternite IV with two wart-like prominences in the middle of the posterior margin (figs 8–9 p).

**Male terminalia** (figs 10–12). Posterior surstylar lobe rounded, pointed anteriorly (fig. 10:a); margin of surstylus convex (fig. 10); anterior surstylar lobe small with indistinct prominences (fig. 11:b); cercus almost rectangular, without prominence (fig. 10). Hypandrium with folded thecal ridge (fig. 12:c). Lateral sclerite of aedeagus long, narrow, hammer-like in ventral view (fig. 12:d).

**Female** (figs 13–17). Similar to the male except in normal sexual dimorphism. Frons with many black hairs on central stripe. Legs black except for femoro-tibial joints and ventral side of tarsi in some specimens. Hind leg without distinct prominence; hind tibia short (about 3/4 the length of hind femur) (figs 15–16). Abdomen pale haired, except for black hairs intermingled in the middle of the posterior part of tergite II and anterior to and posterior to white bands of dusting on tergites III and IV plus a few black hairs on tergite V (fig. 17).

**Length.** Body 10–12.5 mm; wing 7–8.5 mm.

**Diagnosis.** The male differs from all other species of the *ruficornis* group in the two wart-like prominences present on the middle of the posterior margin of sternite IV (figs 8-9 p), in the thick hind femur with a wart-like process medially in the basal 1/3 of its ventral surface and in the hind tibia with a sinuous depression ventrally, a small apical spike posteriorly, and a pointed apical process anteriorly (figs 5, 6). Female similar to *M. planiceps* Loew, 1862 with dark legs and lateral dust stripes on frons, that are as broad as the shining central stripe; differing from *M. planiceps* in: central shining stripe on frons black haired; hind femur thicker, hind tibia very short, about 3/4 of length of hind femur (about 4/5 of length of hind femur in *M. planiceps*) (fig. 15).

**Etymology.** The epithet is derived from the Latin word *papilla* and relates to the two characteristic wart-like prominences in the middle of the posterior margin of sternite IV in the male.

**DNA voucher specimen.** The DNA voucher specimen (male) is deposited in the DNA voucher specimen collection of Zoological Museum, Helsinki, Finland, and is labeled: "Greece, Lesvos, 2.45 km W Vatousa (39°13'51"N; 28°1'23"E), 200 m, coll. 20.IV/28.IV.2001, Malaise trap, leg. S. Rojo & C. Pérez-Bañón", "DNA voucher specimen ZMH\_S407, G. Ståhls, Helsinki, Finland". The sequence is submitted to GenBank under the accession number DQ377943.

### *Merodon aureus* group of species

Species from *aureus* group share the following diagnostic morphological features: small (8–13.3 mm) species with hairy posterior part of mid coxa and hairy posterior anepisternum below humeral callus; short rounded abdomen; distinct spike on hind trochanter in male; male genitalia (practically identical in all the species of the *aureus* group): anterior lobe of surstylus undeveloped, ventral margin straight (fig. 24:b); posterior surstylar lobe with parallel margins, rounded on the apex (fig. 24:a), cercus slender, without clear prominences; hypandrium narrow, elongate and sickle-

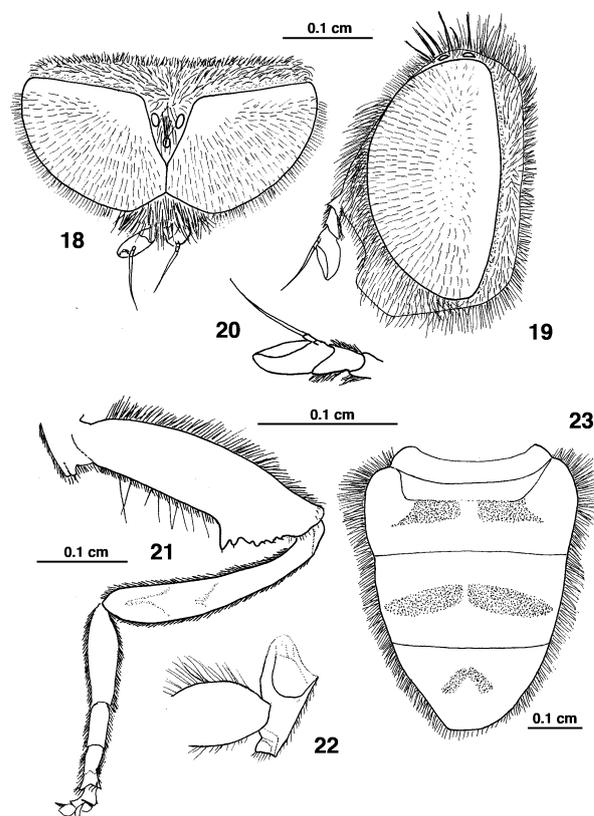
shaped (fig. 26); lateral sclerite of aedeagus reduced (Vujić *et al.*, in prep.).

In recent literature (Simić & Vujić 1996; Van de Weyer & Dils 2002) for central and southern-eastern Europe two names appear that cover specimens with these morphological characters namely: *M. aeneus* Meigen, 1822 and *M. cinereus* (Fabricius, 1794). In the Biosystematic Database of World Diptera (BDWD), Thompson (2005) cites *M. aureus* as senior synonym of *M. aeneus*, and we accept this synonymy (Vujić *et al.*, in prep.).

On the island of Lesvos only one species with the above listed morphological characters occurs. Comparison of this with other Palaearctic species confirms the initial suspicion that it is an undescribed taxon.

### *Merodon sapphous* Vujić, Pérez-Bañón & Radenković n. sp.

**Material examined. Holotype.** Greece (Lesvos island): 1 male, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 26.IX.2004, C. Pérez-Bañón (NS). **Paratypes.** Greece (Lesvos island): 1 female, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E),



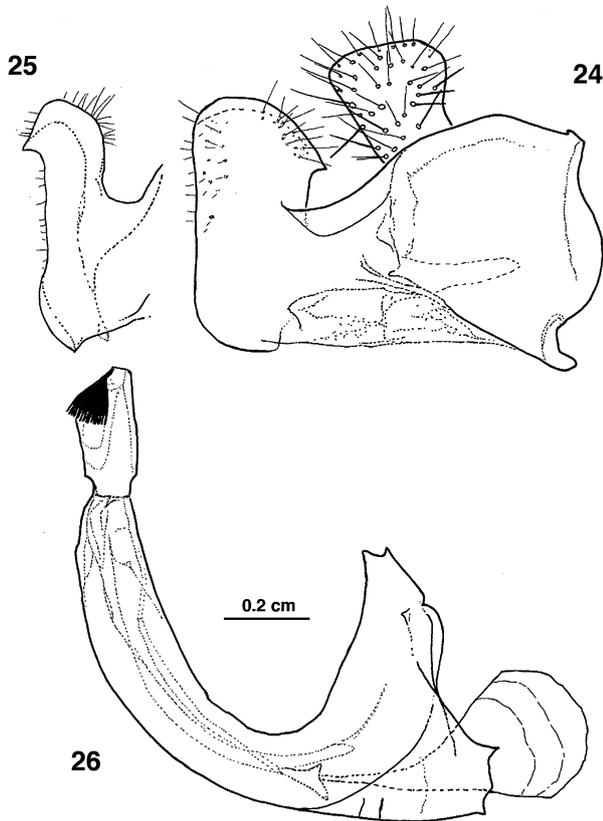
**Figures 18–23**  
*Merodon sapphous* n. sp., male. 18, head dorsal view; 19, head, lateral view; 20, antenna; 21, hind leg, lateral view; 22, hind trochanter, ventral view; 23, abdomen, dorsal view.

760 m, coll. 26.IX.2004, C. Pérez-Bañón (MAUA); 1 female, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 26.IX.2004, C. Pérez-Bañón, MAUA-0013038 (ZMH, DNA voucher specimen ZMH\_S462); 1 female, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 8.X.2004, C. Pérez-Bañón (CEUA); 1 female, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 14.X.2004, C. Pérez-Bañón (CEUA); 2 females, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 14.X.2004, C. Pérez-Bañón (NS).

### Description

#### Male (figs 18–26)

**Head** (figs 18, 19); Antenna reddish-brown; basoflagellomere pale reddish, between 1.3 and 1.5 longer than pedicel, dorsal margin concave between the arista and the apex, apex acute; arista reddish-brown basally, dark-brown towards apex, as long as pedicel and basoflagellomere together (fig. 20). Face and frons shining black, covered with long whitish-yellow hairs. Oral margin bare and black lustrous. Vertical triangle isosceles, 1.8 times longer than eye contiguity, shining black and covered in long yellow hairs with some black hairs intermingled on the ocellar triangle. Eye contiguity about 15 ommatidia long. Ocellar triangle isosceles. Eye hairs long, whitish over the entire surface, except for a few darker hairs at the upper angle. Occiput covered with dense whitish dusting and yellowish hairs.

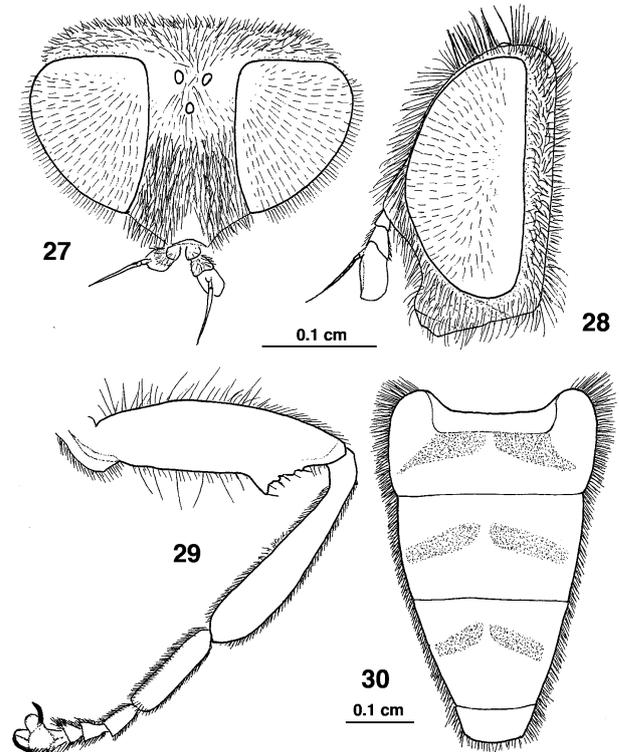


Figures 24–26

*Merodon sapphous* n. sp., male genitalia. 24, eandrium, lateral view; 25, left surstylus, anterior view; 26, hypandrium, lateral view (a: posterior surstylar lobe; b: anterior surstylar lobe).

**Thorax, wings, legs** (figs 21, 22); Scutum and scutellum dark green with metallic reflections, covered in long, dense, erect whitish-yellow hairs; mesonotum with three weak longitudinal stripes of golden dusting. Posterior anepisternum, anepimeron and dorsal part of katepisternum with whitish-yellow long hairs. Wing pale greyish, with veins brown except on basal parts and on the greater part of the length of veins C, Sc, R<sub>1</sub>, which are paler. Dorsal and ventral calypters pale yellow. Haltere with pale brown pedicel and dark brown capitulum. Femora black with apical part pale; fore and mid femur covered posteriorly with long pale yellow hairs and both dorsally and anteriorly with short black hairs. Hind femur with long pale yellow hairs anterodorsally plus a few anteroventrally, and some black hairs on the triangular projection and intermingled dorso-apically (fig. 21). All tibiae and tarsi yellow; covered in yellow hairs with some black one intermingled. Hind trochanter with an inner spike ending in two angular points (figs 21, 22).

**Abdomen** (fig. 23). Oval, slightly longer than mesonotum; black with blue metallic reflections laterally, especially anterolaterally on tergite II. Tergites II – IV black with distinct white transverse bands of dusting interrupted in the middle (fig. 23). Abdominal hairs white except over the centre of tergite II (posterior to bands of dusting), where they are black. The entire surface of tergite III (except over central bands of dusting), and the anterior part of tergite IV (anterior to dust spots) and few intermingled more posteriorly. Sternites shining black, covered with long pale yellow hairs.



Figures 27–30

*Merodon sapphous* n. sp., female. 27, head, dorsal view; 28, head, lateral view; 29, hind leg, lateral view; 30, abdomen, dorsal view.

**Male terminalia** (figs 24–26). Similar to all other species of the *aureus* group. Anterior lobe of the surstylus is undeveloped with straight ventral margin (fig. 24:b); posterior surstylar lobe is rounded at apex with long hairs and parallel margins (fig. 24:a). Cercus elongate, without prominences. Hypandrium narrow, elongate and sickle-shaped; lateral sclerite of aedeagus reduced (fig. 26).

**Female** (figs 27–30). Similar to the male except for normal sexual dimorphism and in the following characteristics: frons shining and covered by whitish-yellowish hairs. Vertex with black hairs anterior to and at the level of ocellar triangle. Hind trochanter without spike (fig. 29). 4<sup>th</sup> tarsomere of fore and middle leg and apical two tarsomeres of hind leg darkened. Abdomen shining black, with a pair of white bands of dusting on each of tergites II-IV (fig. 30). On tergite II these bands are subparallel to the anterior margin of the tergite, whereas on tergites III and IV these bands are oblique.

**Variability.** Eyes – colour of hairs varies from all pale to dark haired upper fifth; frons and occiput – black hairs present only around ocellar triangle in some specimens, but also on the occiput in others; hind femur – with only a few black hairs on apical third in some specimens, but in others with almost completely black haired apically.

**Length.** Body 7.5–9 mm; wing 5–6 mm.

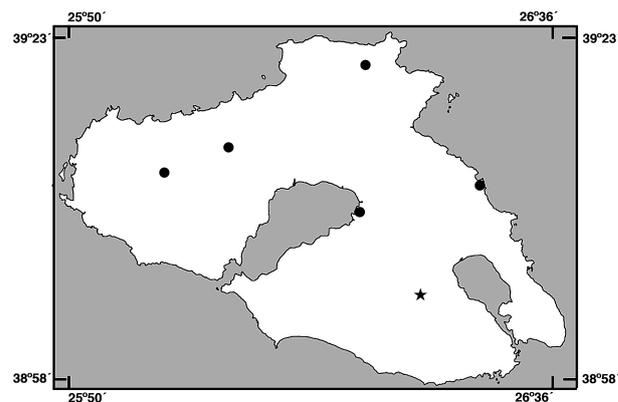
**Diagnosis.** Eyes completely pale haired (except upper fifth in some females); mesonotum completely pale haired, in male with golden dusting, tergites II-IV with clear dust bands (figs 23, 30); male with black hairs on the central parts of tergites II-IV, except on dust bands; female abdomen with shorter hairs, and black hairs also present on tergite V; tibiae yellow; tarsi yellow except the apical dark tarsomere(s) in the female. *M. sapphous* n. sp. is very similar to Iberian *M. quercetorum* Marcos-García, Vujić et Mengual (Marcos-García *et al.* in press), from which it differs by its entirely pale haired mesonotum (always some black hairs present above wing base in *M. quercetorum*) and strongly developed bands of dusting on tergites II-IV (only traces of these bands on tergite IV in *M. quercetorum*).

**Etymology.** The new species has been found on Lesvos, the island of the poet Sappho (6<sup>th</sup> century BC) who's fame has endured from Antiquity through to today. The new species is named after her.

**DNA voucher specimen.** The DNA voucher specimen (female) is deposited in the DNA voucher specimen collection of Zoological Museum, Helsinki, Finland, and is labelled: "Greece, Lesvos, 3.8 km SSE Agiassos (39°3'17"N; 26°23'50"E), 760 m, coll. 26-IX-2004, C. Pérez-Bañón, MAUA-0013038", "DNA voucher specimen ZMH\_S462, G. Ståhls, Helsinki, Finland". The sequence is submitted to GenBank under the accession number DQ377942.

## Discussion

Based on the distribution of the two new species on Lesvos we infer that *Merodon papillus* n. sp. has a wide range of habitats (oak forest, mixed high scrub, open phrygana, olive groves) and sites on the island (fig. 31). On one site or another adults can be found throughout the main flowering season, from April through to early May. Therefore, we would expect this species to be resident also on adjacent islands or/and



**Figure 31**  
Distribution map of *Merodon papillus* (●) and *Merodon sapphous* (★) on Lesvos island.

the nearby coast of Turkey.

By contrast, *Merodon sapphous* n. sp. belongs to the *aureus* group of species for which an extremely high number of localised endemic species are now known to exist around the Mediterranean Basin (Vujić *et al.* in prep.). The population discovered on Lesvos appears to have a very narrow distribution range from both the geographical (only on Olympus mountain, above Agiassos, within the only chestnut forest on the island) and the temporal points of view (caught only in late September). Indeed, our data show that this species has a very restricted period of adult activity, in late summer, since it was not found in earlier collecting carried out within the same and adjacent sites on Mt Olympus (Kyriakopoulos 2004). All these rather specialized characteristics suggest this species may be endemic to Lesvos, which would accord with the specific epithet selected for this new species, i.e. stemming from the poet Sappho, who lived, on Lesvos.

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