Bonn zoological Bulletin 68 (1): 125–146
2019 · Steenis J van et al.
https://doi.org/10.20363/BZB-2019.68.1.125

ISSN 2190–7307
http://www.zoologicalbulletin.de

Research article

urn:lsid:zoobank.org:pub:D11F29FC-D803-44BD-850E-6A0895E268C3

Hoverflies (Diptera: Syrphidae) of Cyprus: results from a collecting trip in October 2017

Jeroen van Steenis[1,*], Menno P. van Zuijen[2], Wouter van Steenis[3], Christodoulos Makris[4], André van Eck[5] & Ximo Mengual[6]

[1]*Naturalis Biodiversity Center, Leiden. Hof der Toekomst 48, NL-3823 HX Amersfoort, The Netherlands*
[2]*Kolkakkerweg 21-2, NL-6708 RK Wageningen, The Netherlands*
[3]*Naturalis Biodiversity Center, Leiden. Vrouwenmantel 18, 3621 TR Breukelen, The Netherlands*
[4]*Ethnikis Antistaseos 21, 3022 Lemessos, Cyprus*
[5]*Korte Hoefstraat 30, 5046 DB Tilburg, The Netherlands*
[6]*Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, D-53113 Bonn, Germany*
***** *Corresponding author: Email: jvansteenis@syrphidaeintrees.com*

[1] urn:lsid:zoobank.org:author:C7F0D01C-B182-4B93-AF73-E4154367B535
[2] urn:lsid:zoobank.org:author:C82093D8-EE58-47DD-B13A-4F47BDF73911
[3] urn:lsid:zoobank.org:author:59753746-8DB9-4954-A22B-6D5D582132A2
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[5] urn:lsid:zoobank.org:author:3F9CD483-BDC2-43C5-9235-CADF874C427D
[6] urn:lsid:zoobank.org:author:A509310D-B567-4830-B8A4-BCB139BB8768

Abstract. In October 2017 an international expedition to Cyprus was made in order to collect hoverflies (Diptera: Syrphi-dae) and to improve knowledge of the local fauna. In twelve days, numerous localities were visited in a wide range of habitats, where Syrphidae were collected by hand net. Malaise and pan traps were placed in some sam-pling localities around the Troodos Mountains. In total, 52 Syrphidae species were collected, 23 of which represent new species records for the island and another three belong to undescribed taxa. Newly obtained DNA data from the genera *Merodon* and *Ceriana* indicate a large interspecific morphological variation within *Merodon* sp. nov. 1 and support the recent split of *C. glaebosa* Van Steenis & Ricarte, 2016 from *C. vespiformis* (Latreille, 1809).

Key words. Hoverfly, Cyprus, faun. nov., DNA, ecology.

INTRODUCTION

Short collecting trips in connection with the International Symposium on Syrphidae in Finland (2007) were followed by expeditions to Serbia (Van Steenis et al. 2015), the Russian Far East (Mutin et al. 2016) and Taiwan in 2016. For 2017, a further expedition was planned to collect hoverflies (Diptera, Syrphidae); a priori the aim was to visit SE Europe and collect Mediterranean species of the genera *Eumerus* Meigen, 1822 and *Merodon* Meigen, 1803. The recent papers on *Eumerus* (Grković et al. 2015), *Pseudodoros* Becker, 1903 (Van Eck & Makris 2016), *Merodon* (Šašić et al. 2016) and the tribe Cerioidini (Van Steenis et al. 2016) plus the contacts already established by André van Eck were decisive in selecting Cyprus as the collecting destination. The collecting trip to Cyprus had the aim of improving the current knowledge of the syrphid fauna of the island, especially to sample the species occurring in autumn. This collecting trip fitted with the current project run by André van Eck to establish the first hoverfly checklist of Cyprus. The results of the present report will be included in the final checklist for Cyprus.

MATERIAL AND METHODS

From October 1st to October 13th 2017 Syrphidae sampling was carried out in the Republic of Cyprus, mainly in the central and western parts of the island.

Syrphidae were collected by hand net from morning to late afternoon, with most specimens collected between 10 am and 4 pm. Before 10 am the sun was still too low and in the mountains it was cold (<20˚C), facts that hindered us from collecting hoverflies, as syrphids needed to warm up before starting to fly or feed. After 4 pm the temperature fell slowly, but with the onset of sunset most Syrphidae ceased flying. On more cloudy days, lower altitudes were visited to make collecting still possible in warm and sunny weather.

Plant names provided in the present work follow the nomenclature from The Plant List (2013).

Received: 23.12.2018
Accepted: 04.06.2019

Corresponding editor: R. Peters
Published: 01.07.2019

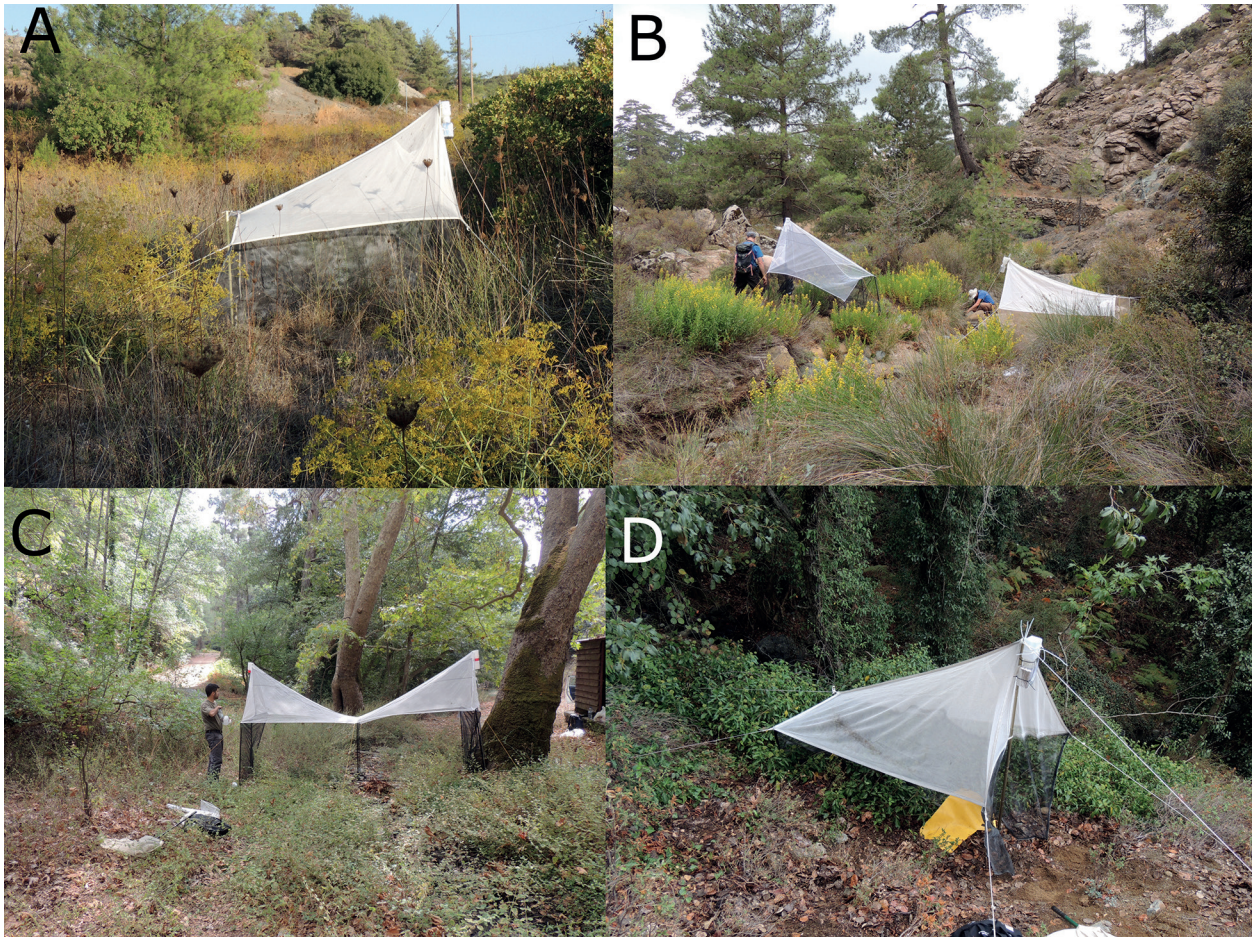

Fig. 1. Malaise trap sites. **A.** Pera Pedi. **B.** Pine forest above Trooditissa picnic site. **C.** Paphos forest, Appides stream. **D.** Trooditissa – Prodromos road E804.

Collecting by Malaise and Pan Traps

In several sampling sites, pan traps and Malaise traps of different fabrics were used. Malaise traps were either home-made or commercial models, both based on Townes' model (Townes 1972) (Fig. 1). One commercial model consisted of two single Malaise traps sewn together along the lowest part, making it twice as long and with two collecting heads (Fig. 1C). All the collecting heads had a capacity of 0.5 to 0.7 L and were filled with at least 90% pure ethanol. The pan traps were of two types in the colours white and yellow. The collecting medium consisted of water with diluted salt as preservative and a detergent to reduce surface tension. After collecting, all specimens were rinsed several times in at least 90% pure ethanol and stored in plastic bags. Finally, the collected specimens were transferred to plastic vials prior to study.

Search for immature stages

We searched for larvae and puparia in aphid colonies, decaying and rotting plant material, live rootstocks and other habitats with decaying organic matter such as open and closed rot holes and sap streams on live trees. Water-filled rot holes in trees were searched for larvae but did not render any specimens.

Several times, bulbs were dug out to check for larvae or larval feeding signs. In the field, no larvae were found in the bulbs. In order to check for the presence of larvae, two plants (its bulbs and most of its tubers) of *Asphodelus aestivus* Brot. and 15 bulbs of *Colchicum troodi* Kotschy (Fig. 2E) and *Prospero autumnale* (L.) Speta (Fig. 2D) were removed for potential rearing of larvae. The bulbs of each species were placed together in plastic containers and covered with a soil and sand mixture. The containers were kept indoors at room temperature and watered several times a week. Each container was covered by an entomological net in order to capture any freshly hatched specimens.

Fig. 2. Flowers. **A.** *Taraxacum cyprium*, Trooditissa picnic site. **B.** *Cachrys crassiloba*, Pera Pedi. **C.** *Foeniculum vulgare*, Gialia River near Agios Sozomenos. **D.** *Prospero autumnale*, Kourio near ancient Kourion stadium. **E.** *Colchicum troodi*, Trooditissa picnic site. **F.** *Crithmum maritimum*, Kavo Gkreko.

Localities visited

A total of 25 different sampling localities were surveyed during the collecting trip:

1a. Saittas to Mesa Potamos (34°52’29.25”N 32°54’53.40”E, 706 m. a.s.l.). Small valley in a *Pinus brutia* Ten. forest with *Alnus orientalis* Decne., *Platanus orientalis* L., *Quercus alnifolia* Poech, *Styrax*

officinalis L. and flowering *Hedera pastuchovii* subsp. *cypria* (McAllister) Hand. Visited on 2.X.2017.

1b. Almyrolivado (34°55'33.38"N 32°53'24.00"E, 1546 m. a.s.l.). Small stream in *Pinus nigra* forest with *Dittrichia viscosa* subsp. *angustifolia* (Bég.) Greuter, *Rubus sanctus* Schreb. and *Epipactis veratrifolia* Boiss. & Hohen. Visited on 2.X.2017.

1c. Saittas to Fylagra (34°53′01.69″ N 32°55′16.75″ E, 757 m. a.s.l.). Stream valley in *Pinus brutia* forest recovering from fire, with *Platanus orientalis*, *Quercus alnifolia*, *Arbutus andrachne* L., *Tamarix smyrnensis* Bunge and flowering *Dittrichia viscosa* subsp. *angustifolia*. Visited on 2.X.2017.

2. Trooditissa picnic site (34°54′53.05″ N 32°50′32.14″ E, 1340 m. a.s.l.) (Fig. 3A). Rocky stream banks in *Pinus brutia* forest with *Alnus orientalis*, *Platanus orientalis*, *Quercus alnifolia* and flowering *Colchicum troodi*, *Taraxacum cyprium* H. Lindb. and *Hedera pastuchovii* subsp. *cypria*. Visited on 2.X, 4.X.and 9.X.2017.

3. Pera Pedi, abandoned vineyard (34°51′56.8″ N 32°50′55.91″ E, 881 m. a.s.l.). Flower-rich abandoned vineyard next to Pera Pedi - Mandria road with flowering *Foeniculum vulgare* (Fig. 2C), *Dittrichia viscosa* subsp. *angustifolia*, *Cachrys crassiloba* (Boiss.) Meikle, *Polygonum equisetiforme* Sm., *Chondrilla juncea* L. and *Hypericum triquetrifolium* Turra. Visited on 2.X, 4.X. and 12.X.2017. Three Malaise traps were used in this locality (Figs 1A, 3B).

4. Hala Sultan Tekke (34°53′10.37″ N 33°36′30.74″ E, 5 m. a.s.l.) (Fig. 3C). Dry canal at the west side of the Larnaka Salt Lake with abundant flowering *Polygonum equisetiforme*, *Foeniculum vulgare* and *Asparagus horridus* L. Visited on 3.X.2017.

5. Akrotiri marsh (34°37′38.92″ N 32°56′27.78″ E, 5 m. a.s.l.). Open area with extensive reed beds dominated by *Phragmites australis* (Cav.) Steud. and flower-rich meadows, partly grazed by cattle, with *Foeniculum vulgare*, *Dittrichia viscosa* subsp. *angustifolia* and *Polygonum equisetiforme*. Visited on 3.X. and 10.X.2017.

6. Pine forest above Trooditissa picnic site (34°55′05.8″ N 32°50′55.95″ E, 1480 m. a.s.l.). Small open area next to a flowing stream, with flowering *Dittrichia viscosa* subsp. *angustifolia*, *Rubus sanctus* and *Juncus* spp. The dominant species in the surrounding pine forest were *Pinus brutia*, *Pinus nigra* subsp. *pallasiana* (D. Don) Holmboe, *Juniperus foetidissima* Willd., *Cistus creticus* L. and *Genista fasselata* Decne. Visited on 4.X. and 12.X.2017 (Fig. 1B). Two Malaise and several pan traps were placed here.

7. Alassa, north side of Kouris Dam, (34°45′34.34″ N 32°55′53.92″ E, 217 m. a.s.l.). Dry bank of dam with meadows and deep ravines, some of which still contained water, and flowing river with reed beds, *Juncus* spp., *Piptatherum miliaceum* (L.) Coss., *Tamarix* spp., *Mentha longifolia* subsp. *cyprica* (Heinr. Braun) Harley and *Dittrichia viscosa* subsp. *angustifolia*. Visited on 4.X.2017.

8. Gialia River near Agios Sozomenos (35°03′0.41″ N 33°26′27.89″ E, 184 m. a.s.l.). Wide flat dry river bed with *Vitex agnus-castus* L., *Nerium oleander* L., *Tamarix smyrnensis* and abundant flowering *Foeniculum vulgare* and *Dittrichia viscosa* subsp. *angustifolia*. Visited on 5.X.2017.

9. Agios Sozomenos (35°04′01.8″ N 33°26′13.19″ E, 202 m. a.s.l.). Rocky slope at field boundary with *Ziziphus lotus* (L.) Lam. bushes and phrygana with *Thymbra capitata* (L.) Cav., *Noaea mucronata* (Forssk.) Asch. & Schweinf. and several non-flowering bulbous plants. Visited on 5.X.2017.

10. Valley along Karvounas-Kakopetria road (B9) (34°58′28.77″ N 32°54′46.96″ E, 790 m. a.s.l.) (Fig. 4A). River valley with riverine broadleaved forest and a gravel road bordered by *Polygonum equisetiforme* and several non-flowering bulbous plants. The dominant species in the broadleaved forest were *Alnus orientalis*, *Platanus orientalis* and flowering *Hedera pastuchovii* subsp. *cypria*. Visited on 5.X. and 9.X.2017.

11. Paphos forest, Appides stream (34°59′28.6″ N 32°38′49.2″ E, 747 m. a.s.l.) (Fig. 1B). Small stream with *Alnus orientalis, Platanus orientalis* and flowering *Rubus sanctus*, *Colchicum troodi* and *Hedera pastuchovii* subsp. *cypria*. The dominant species in the surrounding montane pine forest were *Pinus brutia*, *Quercus alnifolia*, *Arbutus andrachne* and *Cistus* spp. Visited on 6.X. and 12.X.2017. Two Malaise and several pan traps were placed in this locality.

12. Paphos forest, Livadi Picnic site near Pomos village (35°06′06.2″ N 32°35′37.33″ E, 366 m. a.s.l.). Large open area around small streams, with *Alnus orientalis*, *Platanus orientalis* and flowering *Foeniculum vulgare* and *Dittrichia viscosa* subsp. *angustifolia* in montane forest dominated by *Pinus brutia*, *Quercus alnifolia* and *Cistus* spp. Visited on 6.X.2017.

13. Asomatos, near Limassol Salt Lake (34°37′37.46″ N 32°57′17.67″ E, 2 m. a.s.l.). Forest corridor in Fasouri forest along the north margin of the Akrotiri Salt Lake. Fasouri forest is an old plantation with exotic trees such as *Eucalyptus* spp., *Casuarina cunninghamiana* Miq. and *Acacia saligna* (Labill.) H. Wendl. The north margin of the Akrotiri Salt Lake is covered by large reed beds dominated by *Phragmites australis* and stands of *Tamarix tetragyna* Ehrenb. Along the corridor the dominant species were *Carex* spp., *Juncus* spp., *Dittrichia viscosa* subsp. *angustifolia* and *Lotus* spp. Visited on 7.X.2017.

14. Kourio near ancient Kourion stadium (34°40′15.62″ N 32°52′28.37″ E, 112 m. a.s.l.) (Fig. 3D). Open landscape covered by stands of *Pinus brutia* and *Cupressus sempervirens* L. and maquis with *Juniperus*

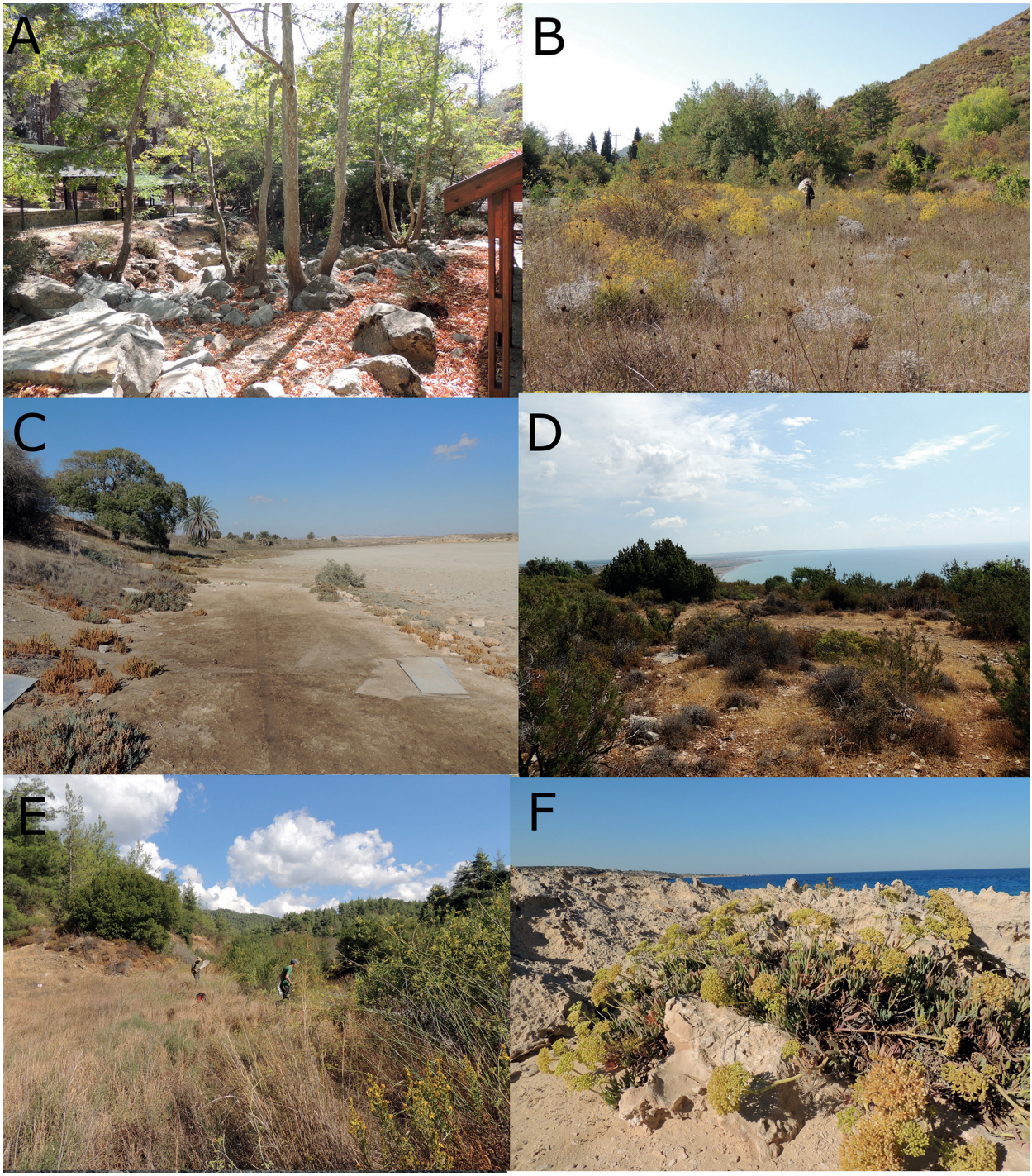

Fig. 3. Adult habitat, collecting sites on Cyprus. **A.** Trooditissa picnic site. **B.** Pera Pedi. **C.** Hala Sultan Tekke. **D.** Kourio near ancient Kourion stadium. **E.** Diarizos River south of Tzelefos Bridge. **F.** Kavo Gkreko.

phoenicea L., *Ceratonia siliqua* L., *Olea europaea* L., *Pistacia lentiscus* L., *Cistus parviflorus* Lam. and *Cistus salviifolius* L. The area is very rich in bulbous plants too. Flowering during our visit were the species *Prospero autumnale* (L.) Speta, *Colchicum troodi*, *Asparagus acutifolius* L. and *Drimia maritima* (L.). Visited on 7.X. and 10.X.2017.

15. Oreites wind farm (34°43′35.12″ N 32°37′21.13″ E, 370 m. a.s.l.). Hilly area covered with maquis and *Pinus brutia* stands. The dominant species in the maquis

Fig. 4. Habitat of Syrphidae on *Hedera pastuchovii* subsp. *cypria*. **A.** Karvounas-Kakopetria road B9. **B.** Trooditissa-Prodromos road E804.

are *Ceratonia siliqua*, *Olea europaea*, *Quercus coccifera* subsp. *calliprinos* (Webb) Holmboe, *Pistacia lentiscus*, *Pistacia terebinthus* L., *Cistus parviflorus*, *Cistus salviifolius* and flowering *Asparagus acutifolius* and *Drimia maritima*. Visited on 7.X.2017.

16. Mamonia (34°45′41.44″ N 32°38′35.51″ E, 184 m. a.s.l.). Uncultivated field next to Mamonia – Archimandrita road with *Foeniculum vulgare* and *Polygonum equisetiforme*. Visited on 7.X.2017.
17. Kapileio to Limnatis (34°49′0.07″ N 32°57′50.59″ E, 372 m. a.s.l.). Dry stream bed with *Alnus orientalis*, *Arundo donax* L. and flowering *Foeniculum vulgare*, *Dittrichia viscosa* subsp. *angustifolia* and *Polygonum equisetiforme*. Visited on 8.X.2017.
18. Mesa Potamos (34°52′33.09″ N 32°54′48.70″ E, 720 m. a.s.l.). Stream in *Pinus brutia* forest with *Alnus orientalis*, *Platanus orientalis*, *Quercus alnifolia* and flowering *Hedera pastuchovii* subsp. *cypria*. Visited on 8.X.2017.
19. Stream near Trikoukkia monastery on Trooditissa – Prodromos road E804 (34°55′53.18″ N 32°50′22.42″ E, 1352 m. a.s.l.). Stream in *Pinus nigra* forest with *Alnus orientalis*, *Platanus orientalis* and flowering *Hedera pastuchovii* subsp. *cypria*. Visited on 9.X. and 13.X.2017 (Fig. 1D). One Malaise and several pan traps were placed near low growing *Hedera*.
20. Lefkosia, Athalassa National Forest Park (35°07′33.51″ N 33°22′58.94″ E, 170 m. a.s.l.). Open lowland area with forest plantation dominated by *Pinus* spp. Flowering plants were *Foeniculum vulgare* and *Dittrichia viscosa* subsp. *angustifolia*. Visited on 10.X.2017.
21. Diarizos River south of Tzelefos Bridge and north of Arminou Dam (34°53′11.71″ N 32°44′46.54″ E, 460 m. a.s.l.). Flower-rich meadows close to the dam and surrounded by steep slopes with *Alnus orientalis*, *Platanus orientalis*, *Tamarix smyrnensis* and montane forest dominated by *Pinus brutia*, *Quercus coccifera* subsp. *calliprinos, Styrax officinalis* and *Pistacia terebinthus*. Flowering plants were *Foeniculum vulgare*, *Dittrichia viscosa* subsp. *angustifolia* and *Polygonum equisetiforme*. Visited on 11.X.2017 (Fig. 3E).
22. Platys Valley (34°54′50.97″ N 32°46′0.59″ E, 550 m. a.s.l.). Narrow valley with steep slopes along Diarizos River with a narrow gravel road next to the river. The dominant species in the valley were *Alnus orienta-*

lis, *Platanus orientalis*, abundant flowering *Hedera pastuchovii* subsp. *cypria* and sporadically flowering *Colchicum troodi*. The valley was surrounded by montane forest dominated by *Pinus brutia*, *Quercus alnifolia*, *Acer obtusifolium* Sm. and *Cistus* spp. Visited on 11.X.2017.

23. Komititzi picnic site near Mylikouri village (34°56′50.57″ N 32°46′29.18″ E, 655 m. a.s.l.). Open area in *Pinus brutia* forest next to a stream with *Alnus orientalis*, *Platanus orientalis*, flowering *Colchicum troodi* and abundant flowering *Hedera pastuchovii* subsp. *cypria*. Visited on 11.X.2017.
24. Diarizos River near Prastio village (34°47′51.96″ N 32°42′20.46″ E, 320 m. a.s.l.). Broadleaved riverine forest with *Alnus orientalis*, *Platanus orientalis* and meadows with flowering *Foeniculum vulgare*, *Dittrichia viscosa* subsp. *angustifolia*, *Polygonum equisetiforme* and *Rubus sanctus*. Visited on 12.X.2017.
25. Kavo Gkreko (34°57′50.38″ N 34°04′50.24″ E, 9 m. a.s.l.). Rocky coast with sparse vegetation dominated by *Crithmum maritimum* L. (Fig. 2F). Visited on 13.X.2017.

Adult identification

We used available general literature for the identification of the collected specimens to genus and species level (Van Veen 2004; Speight & Sarthou 2017) and the following genus specific literature: *Callicera* Panzer, 1806 (Speight 1991; Smit 2014); *Eumerus* (Sack 1932; Stackelberg 1961; Vujić & Šimić 1998; Grković et al. 2015); *Merodon* (Hurkmans 1993; Radenković et al. 2011; Popović et al. 2015; Vujić et al. 2018); *Paragus* Latreille, 1804 (Sorokina & Cheng 2007); *Pipiza* Fallén, 1810 (Vujić et al. 2013); *Sphaerophoria* Lepeletier & Serville, 1828 (Bankowska 1964) and *Syritta* Lepeletier & Serville, 1828 (Lyneborg & Barkemeyer 2005).

Images

Habitat photos were made by the first author with a Nikon Coolpix P510. The images of the pinned adults were made with a Canon EOS D6 DSLR camera with a Canon MP-E 65 mm 1–5x macro lens mounted on a Cognisys StackShot macro rail. Lighting was provided by a Yongnuo macro ring lite yn-14ex. Several images of the specimens were stacked with Zerene Stacker 1.04 and further edited with GNU Image Manipulation Program (GIMP 2.8.22).

DNA analysis

Several specimens were selected to sequence the Folmer region of the mitochondrial cytochrome c oxidase subunit I (COI), the so-called DNA barcode (Hebert et al. 2003).

One to three legs of either dry pinned, or ethanol-preserved, specimens were used for DNA extraction. Extractions were carried out using the NucleoSpin Tissue DNA Extraction kit (Macherey-Nagel, Düren, Germany) following the manufacturer's instructions; samples were resuspended in 100 µl ultra-pure water. Entire specimens were preserved and labelled as DNA voucher specimens for the purpose of morphological studies and deposited at the Zoological Museum Alexander Koenig [ZFMK], as listed in Appendix I.

The COI sequence fragment was amplified using the forward primer LCO-1490 (5′-GGTCAACAAATCATAAAGATATTG-3′) and the reverse primer 780R (5′-CCAAAAAATCARAATARRTGYTG-3′). PCR amplification protocols for mitochondrial COI were the same as described in Mengual et al. (2008, 2012). Amplified DNA was electrophoresed on 1.5% agarose gels for visual inspection of amplified products. PCR products were enzymatically treated with ExoSap-IT (USB, Cleveland, OH, USA) and then sequenced (using the PCR primers) in both directions. The sequences were edited for base-calling errors and assembled using Geneious R7 (version 7.1.3, Biomatters Ltd.). All new sequences were submitted to GenBank (see Appendix I for accession numbers). The uncorrected pairwise distances (% similarity) among COI sequences of selected *Merodon* and *Ceriana* specimens are shown in Appendices I and II.

RESULTS

DNA sequences

COI sequences were successfully obtained for 11 selected specimens collected on Cyprus in 2017 (Appendix I). The sequence length varied between 658 and 669 bp. In order to compare the COI sequences of two different *Ceriana* species, Jeffrey H. Skevington (Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada) kindly shared with us the COI sequences of nine *Ceriana vespiformis* (Latreille, 1809), which are deposited in BOLD (http://www.boldsystems.org/).

Species list

The species list for the collected material is given in alphabetical order. The main distribution is mentioned for each species, and for some species, this is followed by other information on, for example, threat category and biology. The information on distribution is mainly from Dirickx (1994) and Speight (2017); other references are given for each species separately. Under the section remarks, habitat and habit information is given based on our own observations during the fieldwork in Cyprus. All collected specimens are given with their locality number.

Callicera macquarti Rondani, 1844
(Fig. 5A)

Widespread Mediterranean autumn species (Speight 1991). Recorded from Cyprus (Dirickx 1994).
Remarks. Widespread in the Troodos area (10: 3♂♂ 7♀♀; 11: 2♂♂ 6♀♀; 19: 1♂ 5♀♀). All the females were collected on *Hedera pastuchovii* subsp. *cypria* either feeding on the flowers or flying close to the leaves and flowers. Based on our observations, Speight (2017) and Claussen & Standfuss (2017), *Hedera* seems to be the main food source for the adults. Two males were collected while defending a territory on *Pinus nigra* (Fig. 5A) or on leaves of low shrubs near the base of *Pinus nigra* in full sun, making short flights and most often returning to the same spot. Also collected in a Malaise trap and a white pan trap.

Ceriana glaebosa Van Steenis & Ricarte, 2016
(Fig. 6A)

Endemic species from Cyprus with spring and autumn populations and a dark and light form (Van Steenis et al. 2016).
Remarks. One light form female was collected on *Foeniculum vulgare* (21). The presumed model (Crabronidae: *Cerceris* spp. Fig. 6B) was found in several places (3, 8, 16, 21) where flowering *Foeniculum vulgare* was present. DNA barcode comparison shows a 2.79 to 3.04% difference between *C. glaebosa* and specimens of *C. vespiformis* (Appendix III) supporting the recent split of these species (Van Steenis et al. 2016).

Cheilosia thessala Claussen & Ståhls, 2007
(Fig. 5B)

First published record of this genus and species for Cyprus.
Described from Thessalia, Greece (Claussen & Ståhls 2007).

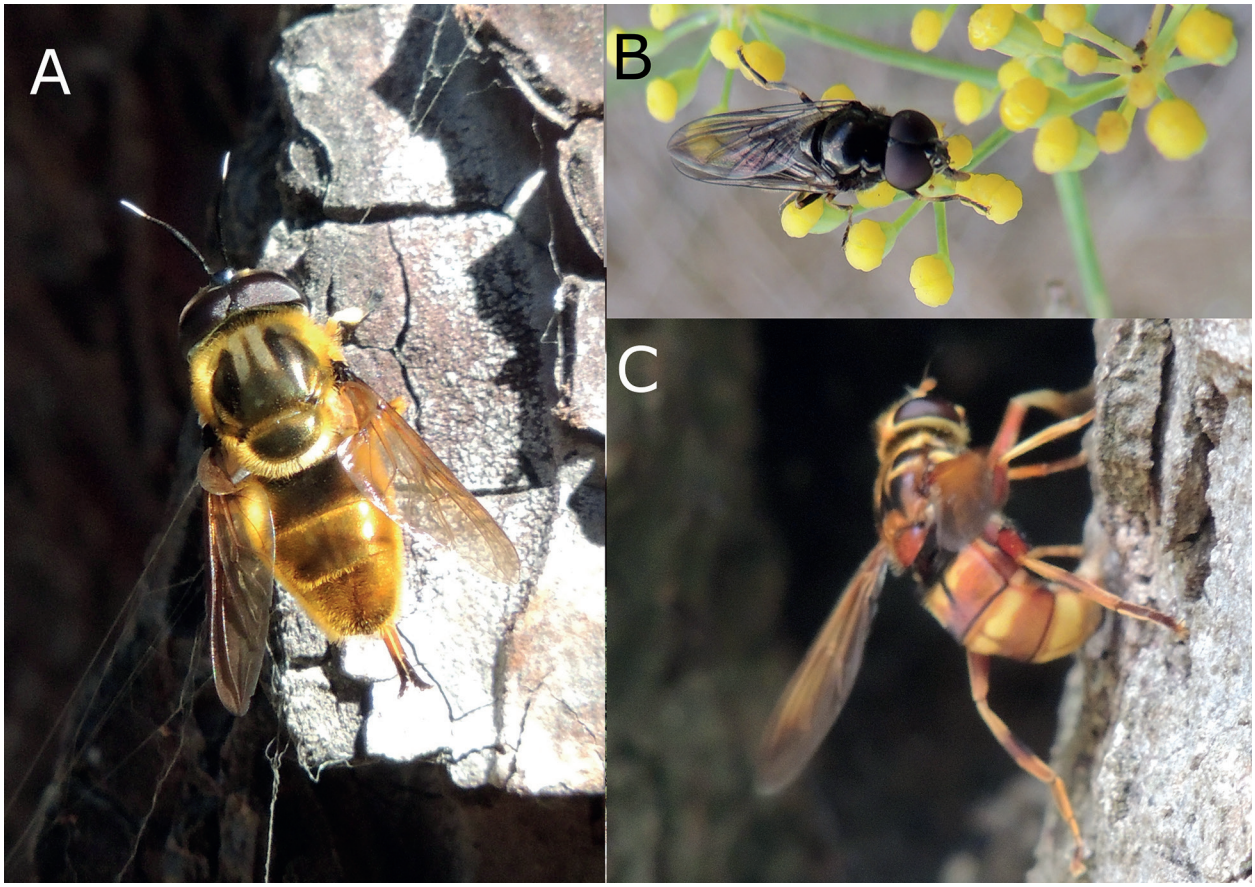

Fig. 5. Adults in their natural habitat. A. *Callicera macquarti* ♂, on *Pinus* spp. defending a territory, Paphos forest, Appides stream. **B.** *Cheilosia thessala* ♂, feeding on *Foeniculum vulgare*, Diarizos River south of Tzelefos Bridge. **C.** *Milesia crabroniformis* ♀, egg-laying behaviour near entrance of rot hole in *Acer* spp., Paphos forest, Appides stream.

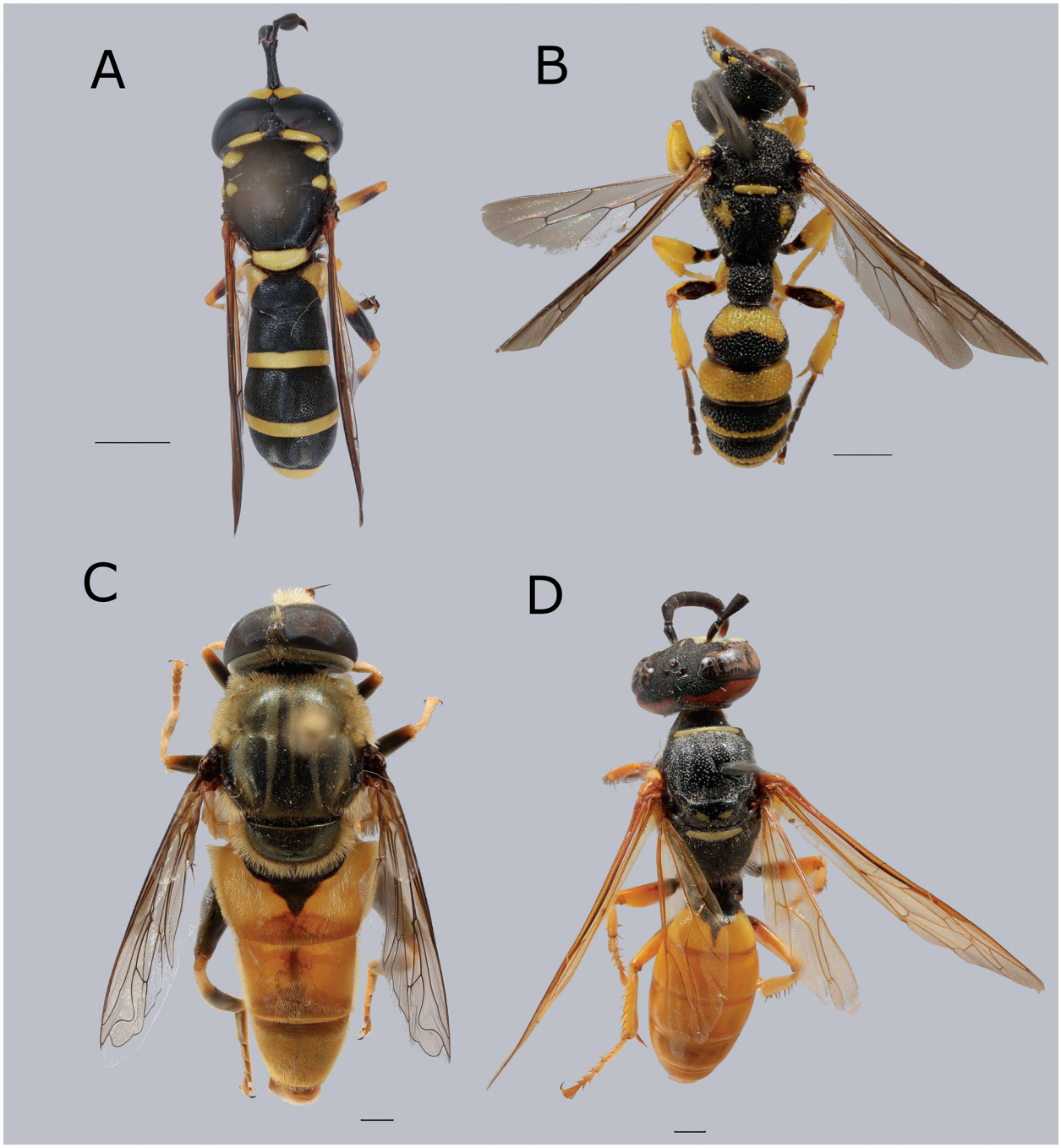

Fig. 6. Adult Syrphidae and their models, dorsal view. **A.** *Ceriana glaebosa* ♂. **B.** *Cerceris* spp. ♀ (model of *C. glaebosa*). **C.** *Merodon pruni* ♂. **D.** *Philanthus* spp. ♀ (model of *M. pruni*). Scale bar = 1.0 mm.

Remarks. Collected in autumn 2016 in Cyprus for the first time (pers. comm. Van Eck) based on specimens collected on *Hedera* in the Troodos mountains. During this trip, collected in low numbers throughout the Troodos mountains (2: 2♂♂ 1♀; 3: 1♀; 10: 6♂♂ 7♀♀; 22: 1♂; 24: 1♀) mostly on *Hedera pastuchovii* subsp. *cypria*, and very abundantly at Tzelefos Bridge (21: 46♂♂ 14♀♀) visiting flowers of *Foeniculum vulgare* (Fig. 5B).

Chrysotoxum intermedium Meigen, 1822

Widespread Mediterranean species, recorded previously from Cyprus (Dirickx 1994).

Remarks. The only *Chrysotoxum* species found in Cyprus so far. Collected in a Malaise trap and by hand net while visiting flowers on *Cachrys crassiloba* and *Foeniculum vulgare* (3: 6♀♀; 17: 1♀♀).

Didea fasciata Macquart, 1834

First published record of this genus and species for Cyprus.
Widespread European species. Dirickx (1994) did not give records from Greece or Turkey.
Remarks. Several males and some females were collected on *Hedera pastuchovii* subsp. *cypria* (2: 17♂♂ 3♀♀; 11: 3♂♂; 19: 2♂♂).

Episyrphus balteatus (De Geer, 1776)

Very common and widespread species. Dirickx (1994) gave records from Cyprus.
Remarks. Found in most habitats (2: 3♀♀; 3: 2♀♀; 7: 1♀♀; 10: 2♀♀; 11: 6♀♀; 12: 2♀♀; 14: 2♀♀; 17: 1♀; 19: 1♀; 21: 1♂ 3♀♀; 23: 1♀; 24: 2♀♀). Flower visiting observed on *Hedera pastuchovii* subsp. *cypria*, *Foeniculum vulgare*, *Dittrichia viscosa* subsp. *angustifolia* and *Cachrys crassiloba*.

Eristalinus aeneus (Scopoli, 1763)

Very common and widespread species, especially in coastal areas. Dirickx (1994) mentioned records from Cyprus.
Remarks. Collected in several coastal areas (4: 6♂♂ 9♀♀; 7: 1♂; 8: 1♂; 17: 1♂ 1♀; 25: 1♂ 1♀) at Hala Sultan Tekke in great numbers on *Polygonum equisetiforme*; furthermore found on *Foeniculum vulgare* and *Crithmum maritimum*.

Eristalinus megacephalus (Rossi, 1794)

First published record of this species for Cyprus.
Widespread Mediterranean species (see Dirickx 1994).
Remarks. Found at the coastal Akrotiri marsh on *Dittrichia viscosa* subsp. *angustifolia* and at Tzelefos Bridge on *Foeniculum vulgare* (5: 2♂♂ 1♀; 21: 1♂).

Eristalinus taeniops (Wiedemann, 1818)

Widespread Mediterranean species. Georghiou (1977) recorded it from Cyprus.
Remarks. In Troodos mountains mainly found flower visiting on *Hedera pastuchovii* subsp. *cypria* (7: 1♂; 10: 4♂♂ 2♀♀; 22: 1♂).

Eristalis similis (Fallén, 1817)

First published record of this species for Cyprus.
Widespread Mediterranean species, also migratory far into Northern Europe (Bartsch et al. 2009).
Remarks. One male specimen was collected visiting flowers of *Hedera pastuchovii* subsp. *cypria* (10).

Eristalis tenax (Linnaeus, 1758)

Very common and widespread species. Dirickx (1994) mentioned records from Cyprus.
Remarks. Several specimens found feeding on *Hedera pastuchovii* subsp. *cypria* (3: 1♀; 19: 5♀♀; 21: 1♀).

Eumerus amoenus Loew, 1848

Widespread Mediterranean species. Claussen & Lucas (1988) and Vujić & Šimić (1998) gave records from Cyprus.
Remarks. Widespread and abundantly found species in Cyprus (2: 15♂♂ 5♀♀; 3: 3♀♀; 4: 1♂; 6: 1♂; 8: 4♀♀; 11: 4♂♂ 9♀♀; 14: 1♂; 18: 2♂♂; 21: 1♂ 1♀; 22: 13♂♂ 4♀♀; 24: 1♀). Most often seen flying low over bare ground or through low vegetation and often close to *Colchicum* flowers. Also found higher in the vegetation and feeding on *Foeniculum vulgare* and *Hedera pastuchovii* subsp. *cypria* or basking on leaves of large bushes.

One male hatched from collected tubers of *Asphodelus aestivus*. The hatched male was seen flying close to the bulbs on 18.ii.2018. This is a new host plant for this hoverfly species and the second time that *A. aestivus* is recorded as a host plant for hoverfly immatures (Ricarte et al. 2008). Other species of *Asphodelus* L. have been reported as host plants for other *Eumerus* species (Ricarte et al. 2017). Efflatoun (1922) reared this hoverfly species from *Allium* (Alliaceae), potato tubers, water melon, grapes, rotten paw-paw and damaged rhizomes of *Iris germanica* L. (Iridaceae). Furthermore, Assem & Nasr (1967) reported it as injurious to onion.

Eumerus argyropus Loew, 1848
(Figs 7C, 7D)

First published record of this species for Cyprus.
Mediterranean species (Vujić & Šimić 1998; Krpač et al. 2011; Claussen & Standfuss 2017).
Remarks. Most abundantly found along Appides stream in Troodos Mountains flying through the vegetation, sometimes close to *Colchicum* flowers (2: 2♂ 1♀; 3: 1♂; 11: 4♂♂ 11♀♀).

Eumerus basalis Loew, 1848

First published record of this species for Cyprus.
Widespread Mediterranean species (Vujić & Šimić 1998).
Remarks. Widespread and common species throughout Cyprus (3: 34♂♂ 8♀♀; 8: 1♀; 10: 2♂♂ 1♀; 16: 27♂♂ 6♀♀; 17: 4♂♂ 2♀♀; 21: 6♂♂ 1♀; 22: 1♂). Found high-

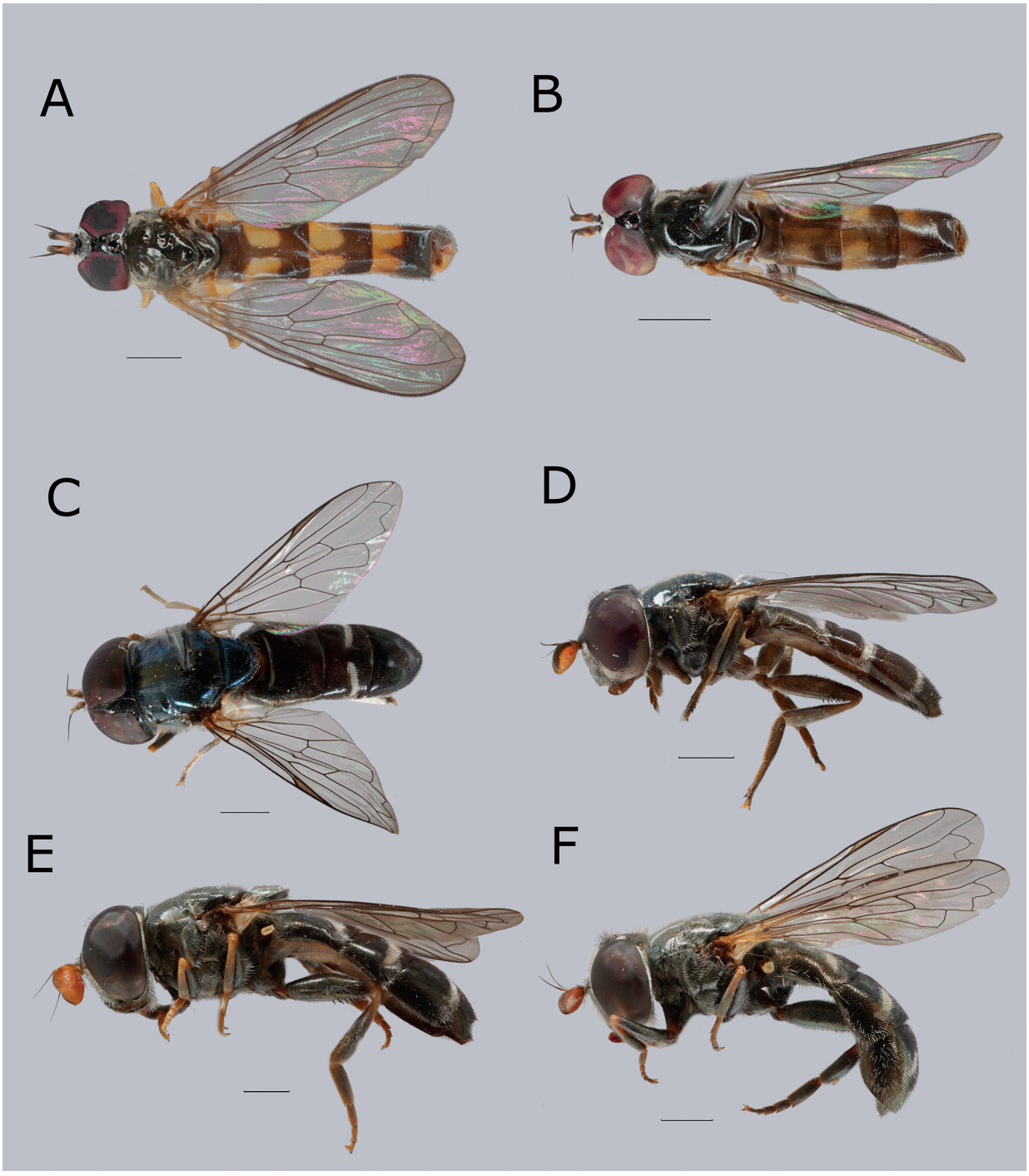

Fig. 7. Adult; A–C, dorsal view; D–F lateral view. **A.** *Pelecocera* (*Chamaesyrphus*) sp. nov. ♂. **B.** *Pelecocera* (*Chamaesyrphus*) *pruinosomaculata* ♀. **C.** *Eumerus argyropus* ♂. **D.** *Eumerus argyropus* ♀. **E.** *Eumerus lucidus* ♀. **F.** *Eumerus rusticus* ♀. Scale bar = 1.0 mm.

er in the vegetation than *E. amoenus* and found flower visiting on *Polygonum equisetiforme*, *Foeniculum vulgare*, *Cachrys crassiloba*, *Colchicum troodi* and on *Hedera pastuchovii* subsp. *cypria*.

Eumerus lucidus Loew, 1848
(Fig. 7E)

First published record of this species for Cyprus.

Described from Rhodos (Greece) and further known from mainland Greece (Ssymank 2013; Claussen & Standfuss 2017).
Remarks. Identity confirmed by Ante Vujić. Found at Trooditissa picnic site and Appides stream on *Hedera pastuchovii* subsp. *cypria* (2: 4♀♀; 11: 2♀♀). Habitat and characters for identification similar to *E. argyropus*.

Eumerus pusillus Loew, 1848

First published record of this species for Cyprus.
Widespread Mediterranean species (Claussen & Lucas 1988). Ricarte et al. (2008) reared larvae from decayed bulbs of *Drimia maritima*.
Remarks. Identity confirmed by Ante Vujić. Found in the same habitat as *E. basalis*, flower visiting on *Foeniculum vulgare*, *Cachrys crassiloba* and *Hedera pastuchovii* subsp. *cypria* (3: 2♀♀; 12: 7♂♂ 1♀; 16: 7♂♂ 1♀; 17: 17♂♂ 5♀♀; 18: 1♀; 21: 33♂♂ 4♀♀; 22: 7♂♂ 1♀; 24: 5♂♂ 1♀).

Eumerus aff. *rusticus* Sack, 1932
(Fig. 7F)

First published record of this species for Cyprus.
Described on the basis of one male and one female from "Asia Minor" most likely collected in Turkey (Sack 1932), and also reported from Romania and Turkmenistan (Stackelberg 1961; Brădescu 1991).
Remarks. The identification is based on females only, and therefore not entirely reliable. Based on Sack (1931) and Stackelberg (1961) these specimens belong to *E. rusticus*. The specimens were collected at Hala Sultan Tekke on *Polygonum equisetiforme*, at Mylikouri flying near *Colchicum* and at Agios Sozomenos on *Foeniculum vulgare* (4: 2♀♀; 8: 1♀; 22: 2♀♀).

Eumerus torsicus Grković & Vujić, 2015
(Figs 8A, 8B)

Described from some Greece islands and Cyprus (Grković et al. 2015).
Remarks. Identity confirmed by Ante Vujić. Found in the same habitat as *E. argyropus* and flying around *Colchicum* (2: 4♂♂ 2♀♀; 11: 2♀♀; 24: 1♂).

Eumerus vestitus Bezzi, 1912
(Fig. 8C)

Eastern Mediterranean species. Dirickx (1994) provided records from Cyprus (as *E. efflatouni* Curran, 1938). Smit et al. (2017) mentioned *E. efflatouni* as junior synonym of *E. vestitus*.
Remarks. Found at Hala Sultan Tekke and Agios Sozomenos (4: 2♂♂; 8: 2♀♀) flower visiting on *Foeniculum vulgare*.

Eupeodes corollae (Fabricius, 1794)

Very common and widespread species. Dirickx (1994) provided records from Cyprus.
Remarks. Widespread on Cyprus (2: 2♂♂ 7♀♀; 3: 4♂♂ 10♀♀; 5: 4♀♀; 6: 1♂ 4♀♀; 7: 1♂; 8: 4♂♂ 10♀♀; 10: 5♀♀; 11: 3♂♂ 4♀♀; 12: 2♀♀; 14: 1♀; 16: 1♀; 17: 4♂♂ 1♀; 19: 5♂♂ 3♀♀; 21: 3♂♂ 5♀♀; 22: 1♀; 24: 1♀), flower visiting on *Hedera pastuchovii* subsp. *cypria*, *Foeniculum vulgare*, *Cachrys crassiloba* and *Dittrichia viscosa* subsp. *angustifolia*.

Eupeodes nuba (Wiedemann, 1830)

Mediterranean species. Dirickx (1994) gave records from Cyprus.
Remarks. One male was found at Tzelefos Bridge (21) on *Foeniculum vulgare*.

Ferdinandea aurea Rondani, 1844
(Fig 8D)

First published record of this genus and species for Cyprus.
Mediterranean species with a flight period from late summer into winter, and larvae in *Quercus* species, possibly in water-filled holes (Ricarte et al. 2010).
Remarks. In Troodos Mountains collected on *Hedera pastuchovii* subsp. *cypria* and *Taraxacum cyprium* (2: 3♀♀; 6: 2♀♀; 10: 3♂♂; 19: 6♂♂ 2♀♀).

Heringia heringi (Zetterstedt, 1843)

First published record of this genus and species for Cyprus.
Widespread European species but rare in the Mediterranean region (Claussen & Lucas 1988).
Remarks. One female found flower visiting on *Foeniculum vulgare* at Tzelefos Bridge (21) and one female collected in a Malaise trap at Pera Pedi (3).

Ischiodon aegyptius (Wiedemann, 1830)
(Fig 8E)

First published record of this genus and species for Cyprus.
Mediterranean species (Dirickx 1994) and widespread in the African continent (Mengual 2018).
Remarks. Found on *Foeniculum vulgare* (8: 6♂♂ 5♀♀).

Melanostoma mellinum (Linnaeus, 1758)

Widespread species. Dirickx (1994) gave records from Cyprus.
Remarks. Only collected in a Malaise trap at Pera Pedi (3: 2♀♀).

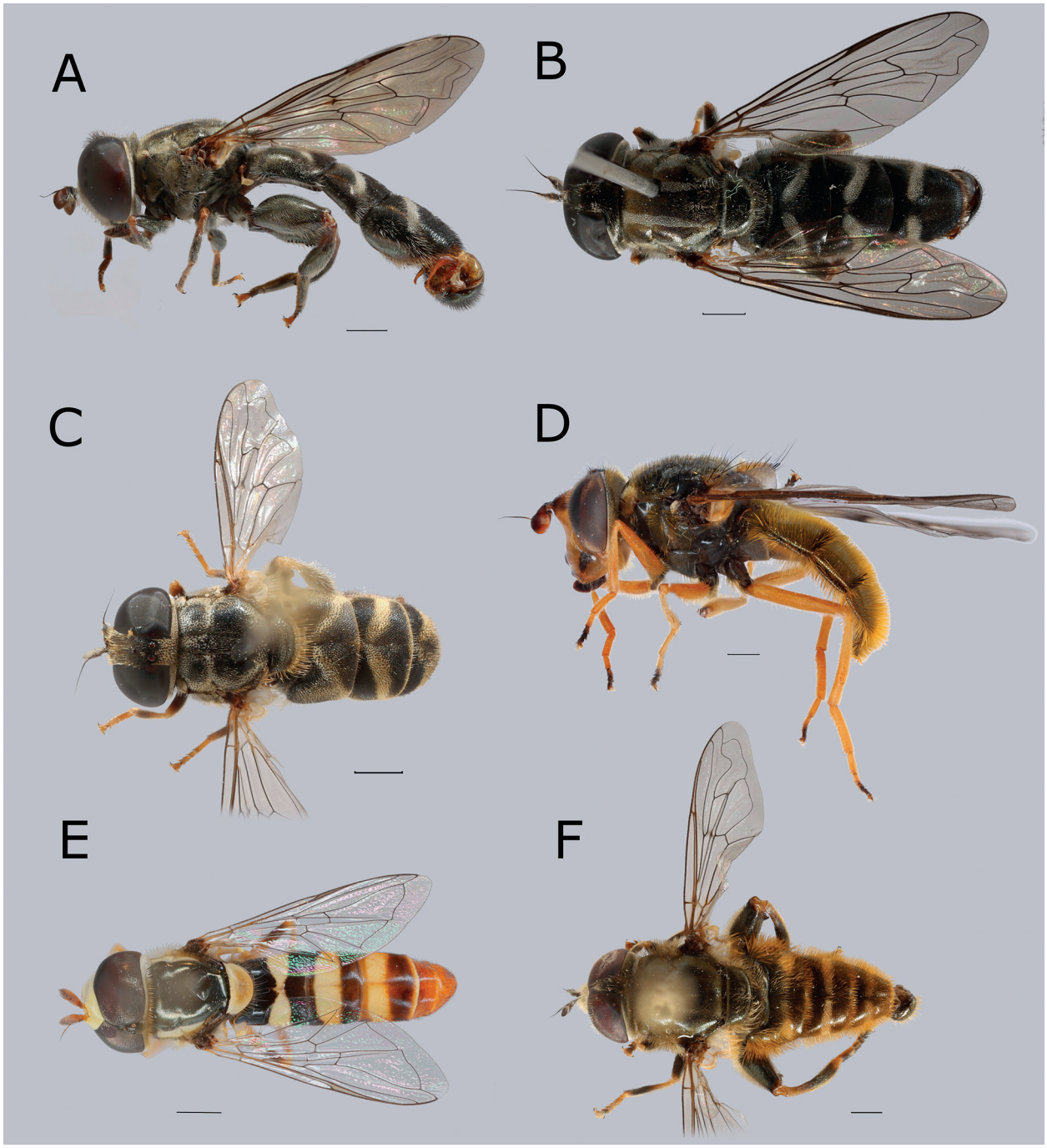

Fig. 8. Adult; A, D lateral view; B, C, E, F dorsal view. **A.** *Eumerus torsicus* ♂. **B.** *Eumerus torsicus* ♀. **C.** *Eumerus vestitus* ♀. **D.** *Ferdinandea aurea* ♀. **E.** *Ischiodon aegyptius* ♀. **F.** *Merodon* sp. nov. 2 (*natans* group) ♂. Scale bar = 1.0 mm.

Merodon avidus (Rossi, 1790)

Widespread central and eastern Mediterranean species. Popović et al. (2015) gave records from Cyprus.
Remarks. Two male specimens were collected in a small grassy meadow in a riverine forest (24) and one male in a Malaise trap at Pera Pedi (3).

Merodon neofasciatus Ståhls & Vujić, 2018
(Figs 9C, 9D)

First published record of this species for Cyprus.
East Mediterranean species from the *M. geniculatus* group (Vujić et al. 2018).

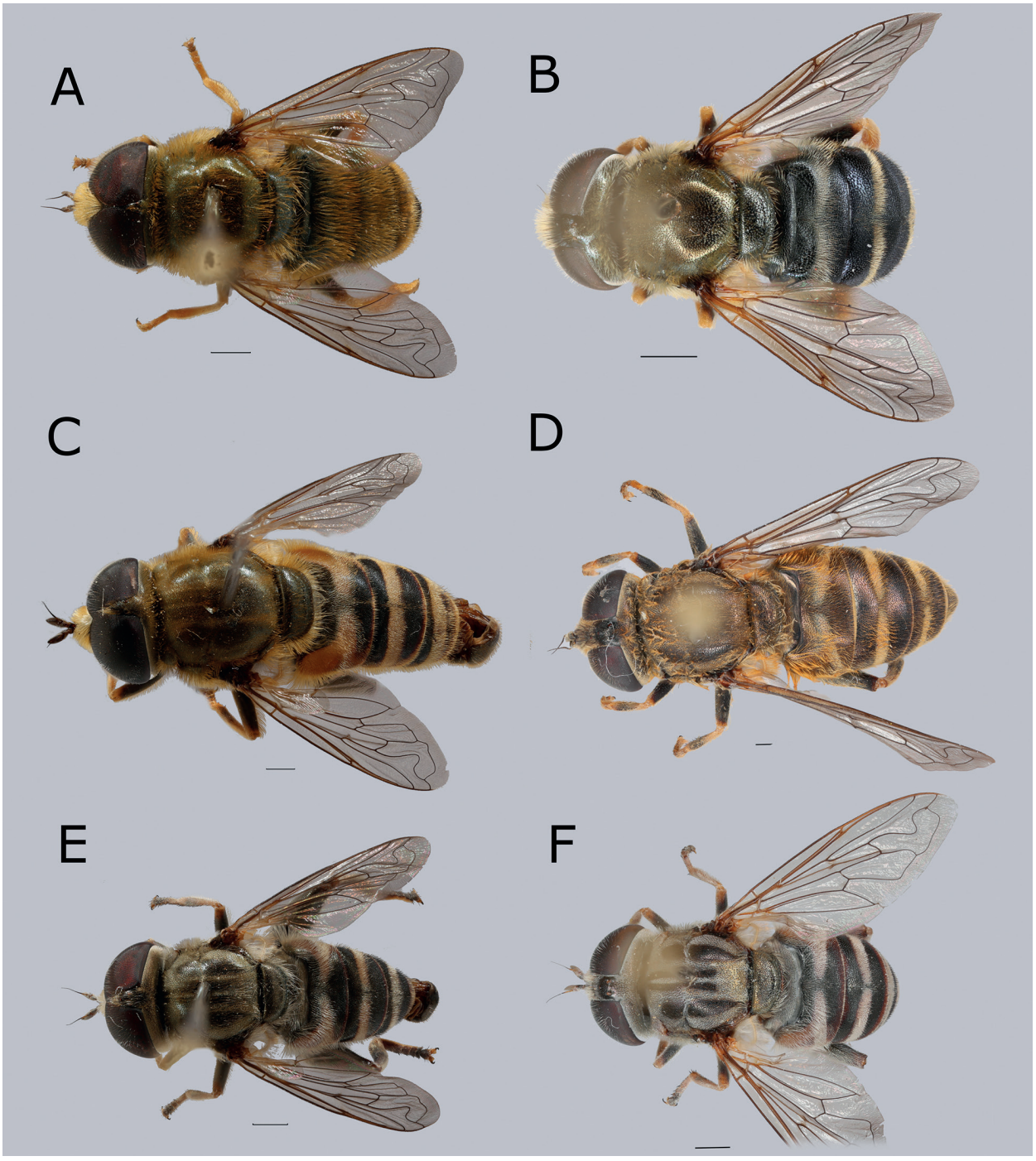

Fig. 9. Adult; dorsal view. **A.** *Merodon* aff *bessarabicus* ♂. **B.** *Merodon* aff *bessarabicus* ♀. **C.** *Merodon neofasciatus* ♂. **D.** *Merodon neofasciatus* ♀. **E.** *Merodon pulveris* ♂. **F.** *Merodon pulveris* ♀. Scale bar = 1.0 mm.

Remarks. Identity confirmed by Ante Vujić. Widespread but scarce in Cyprus (5: 8♂♂ 3♀♀; 11: 1♀: 14: 2♀♀; 25: 3♂♂ 2♀♀). Found flower visiting on *Dittrichia viscosa* subsp. *angustifolia* at Akrotiri marsh and *Crithmum maritimum* at Kavo Gkreko.

Merodon pruni (Rossi, 1790)
(Fig 6C)

Widespread Mediterranean species (Claussen & Lucas 1988). Dirickx (1994) gave records from Cyprus.

Remarks. Found flower visiting on *Foeniculum vulgare*, *Cachrys crassiloba* and *Crithmum maritimum* (3: 10♂♂ 7♀♀; 8: 1♀; 16: 1♂ 2♀♀; 17: 5♂♂ 8♀♀; 21: 2♂♂ 3♀♀; 24: 1♀; 25: 2♂♂ 1♀). Found together with the presumed wasp model (Crabronidae: *Philanthus* spp., Fig. 6D), with which the resemblance of the white-yellow abdominal colour and the irregular flight pattern, is especially striking in flight.

Merodon pulveris Vujić & Radenković, 2011
(Figs 9E, 9F)

First published record of this species for Cyprus.
Described from Lesvos, Greece and Turkey (Radenković et al. 2011).
Remarks. Identity confirmed by Ante Vujić. Widespread in the lower parts of Cyprus (3: 1♂ 3♀♀; 11: 1♀; 14: 23♂♂ 11♀♀; 16: 1♀; 17: 2♀♀; 21: 3♀♀). Found flower visiting on *Foeniculum vulgare* and *Prospero autumnale*. Also seen flying low over bare ground and around leaves of *Prospero autumnale* and other bulbous plants.

Merodon aff *bessarabicus*
(Figs 9A, 9B)

First published record of this species for Cyprus.
Remarks. Identity confirmed by Ante Vujić. Yellow-coloured species found throughout the Troodos mountains (11: 23♂♂ 11♀♀; 12: 1♂; 14: 1♂; 15: 1♂ 1♀) and seen flying around *Colchicum*. Morphologically this species is rather variable concerning pile coloration on the scutum and scutellum and the shape of the plate-like structure on the metatrochanter. However, the three selected morphologically distinct specimens share the same COI haplotype (Appendix II) and have no differences in the male genitalia, which indicate a broad intraspecific morphological variation.

Merodon aff *natans*
(Fig. 8F)

First published record of this species for Cyprus.
Remarks. Identity confirmed by Ante Vujić. Collected at Kourion Stadium (14: 2♂♂).

Milesia crabroniformis (Fabricius, 1775)
(Fig. 5C)

First published record of this genus and species for Cyprus.
Widespread in the Mediterranean region (Dirickx 1994).
Remarks. The female specimen was collected while seen flying around the ruins of a wooden building with several old logs (11). One additional female was seen flying through this same wooden building and later with egg-laying behaviour at a *Platanus orientalis* tree with a large hole near its base. This specimen was not collected but was photographed (Fig. 5C).

Myathropa florea (Linnaeus, 1758)

Very common and widespread species. Dirickx (1994) gave records from Cyprus.
Remarks. Found on flowers of *Hedera pastuchovii* subsp. *cypria* and *Foeniculum vulgare* (2: 1♂ 1♀; 10: 19♂♂ 18♀♀; 19: 1♀; 21: 2♂♂; 22: 2♂♂).

Neoascia podagrica (Fabricius, 1775)

Widespread West-Palaearctic species, previously recorded from Cyprus (Claussen & Lucas 1988; Dirickx 1994).
Remarks. One male was collected on *Hedera pastuchovii* subsp. *cypria* close to a river (10), together with many *Riponnensia morini*.

Neocnemodon spec.

First published record of this genus for Cyprus.
Remarks. Only one ♀ collected in a Malaise trap above the Trooditissa picnic site (6). The females of this genus are at the moment not identifiable. Recent insights (Vujić et al. 2013) showed that *Heringia* and *Neocnemodon* are separate genera.

Paragus (*Paragus*) *bicolor* (Fabricius, 1794)

Widespread species in Europe and northern Africa. Dirickx (1994) gave records from Cyprus.
Remarks. Widespread and common species on Cyprus (3: 66♂♂ 29♀♀; 4: 2♂♂; 8: 2♂♂; 21: 7♂♂ 2♀♀). Flower visiting on *Cachrys crassiloba*, *Foeniculum vulgare* and *Polygonum equisetiforme*.

Paragus (*Paragus*) *compeditus* Wiedemann, 1830
(Fig. 10A)

First published record of this species for Cyprus.
Southeastern Mediterranean species (Dirickx 1994).
Remarks. Widespread species; however, not found at higher elevations (4: 5♂♂ 4♀♀; 5: 23♂♂ 4♀♀; 8: 16♂♂ 16♀♀; 13: 1♀; 17: 1♀; 20: 1♀; 21: 3♂♂). Flower visiting on *Cachrys crassiloba*, *Foeniculum vulgare* and *Polygonum equisetiforme*.

Paragus (*Paragus*) *quadrifasciatus* Meigen, 1822
(Fig. 10B)

Widespread Mediterranean species, extending its range to Northern Europe and reaching the Netherlands (Reemer et al. 2009). Dirickx (1994) gave records from Cyprus.
Remarks. Widespread and common species on Cyprus (1: 1♂; 3: 6♂♂ 10♀♀; 10: 1♂; 16: 1♂ 1♀; 17: 4♂♂:

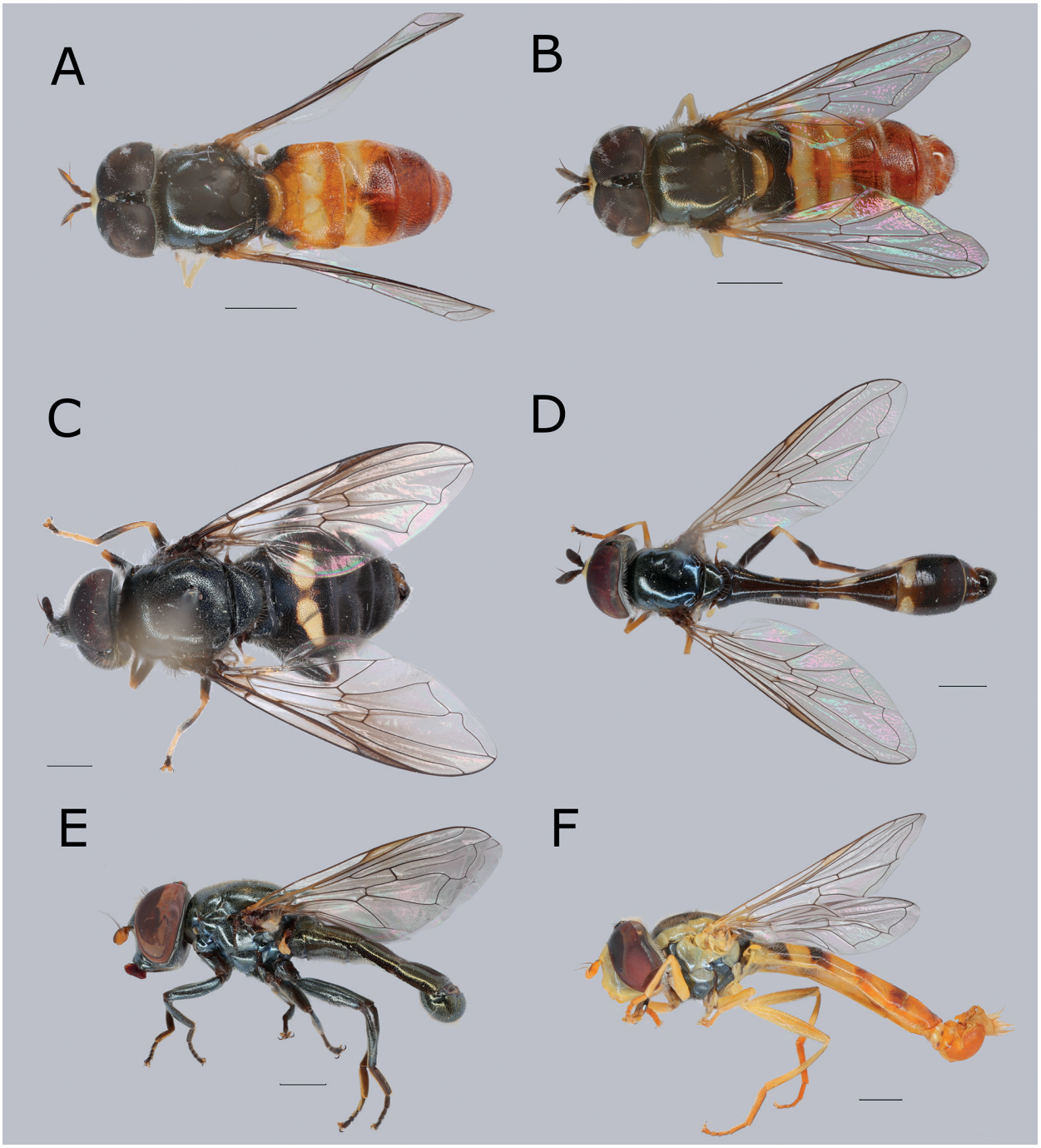

Fig. 10. Adult; A–D, dorsal view; E, F lateral view. **A.** *Paragus compeditus* ♂. **B.** *Paragus quadrifasciatus* ♂. **C.** *Pipiza noctiluca*, ♂. D. *Pseudodoros nigricollis* ♂. **E.** *Riponnensia morini* ♂. **F.** *Sphaerophoria bengalensis* ♂. Scale bar = 1.0 mm.

21: 16♂♂; 22: 1♂; 24: 1♂). Flower visiting on *Cachrys crassiloba*, *Foeniculum vulgare* and *Polygonum equisetiforme*.

Paragus (*Pandasyopthalmus*) *haemorrhous* (Meigen, 1822)

Widespread in Europe, Afrotropical Region and European parts of Russia. Dirickx (1994) gave records from Cyprus.

Remarks. Collected on flowers of *Foeniculum vulgare* and *Dittrichia viscosa* subsp. *angustifolia* (5: 1♂; 21: 2♂♂).

Paragus (*Pandasyopthalmus*) *tibialis* (Fallén, 1817)

Widespread in Europe, North of Africa, Turkey and Israel. Dirickx (1994) gave records from Cyprus.
Remarks. More widespread and more common than the previous species (4: 4♂♂; 5: 2♂♂; 8: 3♂♂), flower visiting on *Dittrichia viscosa* subsp. *angustifolia*, *Foeniculum vulgare* and *Polygonum equisetiforme*.

Pelecocera (*Chamaesyrphus*) *pruinosomaculata* (Strobl, 1906)
(Fig. 7B)

First published record of this genus and species for Cyprus.
Dirickx (1994) recorded it only from the Iberian Peninsula, and showed his doubts about its occurrence in Israel. Claussen & Standfuss (2017) recorded the species from mainland Greece. As there might be several undescribed *Pelecocera* (*Chamaesyrphus*) species in the Mediterranean region (Claussen & Lucas 1988; Claussen & Standfuss 2017), the true identity of the Israeli records remain uncertain.
Remarks. One male was collected on *Polygonum equisetiforme* flowers in partly shaded conditions close to several *Hedera pastuchovii* subsp. *cypria* plants standing on either side of a small stream. On these *Hedera* plants one male of *Pelecocera* (*Chamaesyrphus*) sp. nov. was collected, indicating that both species can be found in flight closely together. One additional male of *P. (C.) pruinosomaculata* was collected in a Malaise trap in an abandoned vineyard (3).

Pelecocera (*Chamaesyrphus*) sp. nov.
(Fig. 7A)

First published record of this species for Cyprus.
So far known only from the Troodos Mountains in Cyprus (pers. obs. A. van Eck).
Remarks. All specimens were collected at or on *Hedera pastuchovii* subsp. *cypria* (10: 1♀; 19: 28♂♂ 13♀♀; 22: 1♂), where most specimens were seen flying close to the flowers, and also feeding on them. The species was most often seen flying in fully sunlit places, occasionally in partially shaded places at a height of 1 to 4 metres above ground level. One Malaise trap placed over a low-growing *Hedera pastuchovii* subsp. *cypria* bush (Fig. 1D) contained 24 specimens and a yellow pan trap close by the Malaise trap contained a single specimen. This species will be described in a forthcoming work (A. van Eck in prep.). It is considered that this species has a strong connection to the *Hedera* flowers and possibly this is the main food source of the adults and possibly also a favourable mate-location place.

Pipiza noctiluca (Linnaeus, 1758)
(Fig. 10C)

First published record of this genus and species for Cyprus.
Common and widespread species in Europe (Vujić et al. 2013).
Remarks. Specimens were collected visiting flowers of *Hedera pastuchovii* subsp. *cypria* and seen flying low through vegetation; also collected in a Malaise trap (2: 1♀; 3: 1♂ 3♀♀; 10: 8♀♀; 11: 1♂).

Pseudodoros nigricollis Becker, 1903
(Fig. 10D)

Recently recorded from one locality at the west coast of Cyprus (Van Eck & Makris 2016).
Remarks. Now also recorded in a second locality, in the south near Akrotiri Salt Lake (13: 14♂♂ 1♀). Found resting or flying slowly through *Phragmites australis* (Cav.) Trin. ex Steud. leaves; one male caught by a yellow crab spider on *Dittrichia viscosa* subsp. *angustifolia*.

Riponnensia morini Vujić, 1999
(Fig. 10E)

First published record of this species for Cyprus.
Threatened and with a restricted range on the Balkans, and possibly extinct at the type locality (Vujić et al. 2001), but recently recorded from FYR Macedonia (Krpač et al. 2011) and Greece (Claussen & Standfuss 2017). Up to now recorded only in spring.
Remarks. All specimens have been collected on *Hedera pastuchovii* subsp. *cypria* along a bridge over a small river (10: 90♂♂ 5♀♀), most specimens were seen in half shade. This is the first time the genusname *Riponnensia* is published for Cyprus, although one species of this genus was mentioned from Cyprus by Dirickx (1994) under the name *Orthonevra longicornis* , which was transferred to the genus *Riponnensia* by Maibach et al. (1994).

Scaeva pyrastri (Linnaeus, 1758)

Very common and widespread species. Dirickx (1994) provided records from Cyprus.
Remarks. Found on *Hedera pastuchovii* subsp. *cypria* (2: 2♀♀; 6: 1♀; 19: 2♂♂ 2♀♀).

Sphaerophoria bengalensis Macquart, 1842
(Fig. 10F)

First published record of this species for Cyprus.

Ghorpadé (2009) synonymized *S. turkmenica* Bankowska, 1964 under *S. bengalensis*. In the Palaearctic Region, Speight (2017) reported this species from parts of European and Asiatic Russia, the Caucasus (Armenia, Azerbaijan), Iran, Arabian Peninsula (Oman), Kazakhstan, and Turkmenistan. The species was originally found in the Oriental Region along the Himalayas to West Bengal.
Remarks. Several specimens were collected at Agios Sozomenos while flower visiting on *Foeniculum vulgare*. Also collected at Hala Sultan Tekke and in a Malaise trap in Pera Pedi (3: 1♂; 4: 1♂; 8: 6♂♂).

Sphaerophoria rueppelli Wiedemann, 1830

Widespread European species. Dirickx (1994) provided records from Cyprus.
Remarks. Common on Cyprus (4: 5♂♂ 2♀♀; 5: 10♂♂ 3♀♀; 7: 2♂♂; 8: 1♂ 8♀♀; 9: 1♂; 17: 1♀; 21: 4♂♂ 1♀). Found flower visiting on *Polygonum equisetiforme*, *Foeniculum vulgare* and *Dittrichia viscosa* subsp. *angustifolia*.

Sphaerophoria scripta (Linnaeus, 1758)

Very common and widespread species. Dirickx (1994) gave records from Cyprus.
Remarks. Found flower visiting on *Foeniculum vulgare*, *Cachrys crassiloba* and *Dittrichia viscosa* subsp. *angustifolia* (3: 4♂♂; 5: 3♂♂; 8: 1♀).

Syritta flaviventris Macquart, 1842

Widespread Mediterranean species. Dirickx (1994) gave records from Cyprus.
Remarks. Flower visiting on *Polygonum equisetiforme* and *Dittrichia viscosa* subsp. *angustifolia* (4: 16♂♂ 4♀♀; 5: 30♂♂ 10♀♀; 13: 2♂♂ 1♀).

Syritta pipiens (Linnaeus, 1758)

Very common and widespread species. Dirickx (1994) gave records from Cyprus.
Remarks. Very common species (1: 11♂♂ 3♀♀; 2: 1♂; 3: 21♂♂ 3♀♀; 4: 20♂♂ 8♀♀; 5: 8♂♂ 2♀♀; 6: 6♂♂ 10♀♀; 7: 1♂; 8: 5♂♂ 3♀♀; 10: 5♂♂ 2♀♀; 12: 1♂ 1♀; 13: 2♂♂; 14: 1♂; 17: 10♂♂ 4♀♀; 20: 1♂; 21: 10♂♂ 2♀♀; 22: 2♂♂ 2♀♀; 24: 1♀), flower visiting on *Polygonum equisetiforme*, *Foeniculum vulgare*, *Cachrys crassiloba*, *Dittrichia viscosa* subsp. *angustifolia* and *Hedera pastuchovii* subsp. *cypria*.

DISCUSSION

Little information is known about the flower fly fauna of Cyprus. In his work on the syrphid fauna of the Mediterranean countries, Dirickx (1994) provided bibliographic references for 36 species recorded from Cyprus. But neither comprehensive species lists nor articles about collecting trips on Cyprus have been published until now. Based on literature studies, recent field trips and some collection work, *circa* 70 species are recorded from Cyprus (van Eck unpub.). Our collecting trip resulted with more than half (52) of the known fauna for this island, adding nine new genera and 23 new species records to the island's list. The genera *Eumerus* and *Merodon* are well represented with eight and six species, respectively. These genera are very species-rich in the Mediterranean region (e.g. Hurkmans 1993; Grković et al. 2017). Although the genus *Merodon* is relatively well studied in the Eastern Mediterranean region (Hurkmans 1993; Radenković et al. 2011; Popović et al. 2015; Vujić et al. 2018), two undescribed species have been found on this trip, which, however, were already known to occur on Cyprus (A. Vujić pers. comm.). Within the genus *Eumerus*, some of the listed species differ from mainland specimens in several characters and some collected females could not be identified. It is likely that some of the Cypriot *Eumerus* taxa will turn out to be different from the mainland species and name changes are to be expected (A. Vujić pers. comm.).

The species' composition differs between autumn and spring, and the number of species is most likely lower in autumn than in spring according to current evidence (van Eck unpub.). Based on our experience and fieldwork, more species are likely to occur in Cyprus and several of those taxa might be endemics, as *Ceriana glaebosa* (Van Steenis et al. 2016), due to the geographical landscape and the relative isolation of the island. The present results prompt us to continue our fieldwork and collecting trips to improve the knowledge on biology, ecology and taxonomy of Syrphidae and to persist with work on local hoverfly faunas.

Acknowledgments. The Department of Environment (ref. no's 02.15.001.003 and 04.05.002.005.006) and the Department of Forests (ref. no. 2.15.05.3) of the Ministry of Agriculture, Rural Development and Environment of the Republic of Cyprus (Nicosia, Cyprus) kindly permitted us to collect in Cyprus. Mr Michael Makris (the Paphos Divisional Forests Officer) kindly informed us about suitable collecting places when we met each other out in the field. We thank Claudia Etzbauer (ZFMK, Germany) for her support to obtain molecular data. Ante Vujić (Novi Sad) helped with identification of some species of the genera *Eumerus* and *Merodon*, Jeffrey Skevington (Ottawa) gave permission to use DNA barcodes of *Ceriana vespiformis* produced by his laboratory and Eddie John (Cowbridge, UK) checked the English text. The Dutch Uyttenboogaart-Eliasen

foundation under number SUB.2017.05.08 provided financial support for the first author.

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Appendix I. DNA voucher specimens collected on Cyprus 2017, with GenBank accession numbers for the COI sequences.

Lab code	Genus	species	Author and year	Sex	Label information	ZFMK ID N°	GenBank Accession N°
D358	*Ceriana*	*glaebosa*	van Steenis & Ricarte, 2016	♀	CYPRUS: Paphos, south of Kelefos bridge, north of Arminou Reservoir, 34°53′11.71″ N 32°44′46.54″ E, 460 m. 11.x.2017. Leg.: M.P.v. Zuijen	ZFMK-DIP-00027877	MK959046
D359	*Pipiza*	*noctiluca*	(Linnaeus, 1758)	♀	CYPRUS: Limassol, Pera Pedi, old vineyard, 34°51′56.8″ N 32°50′55.91″ E, 881 m., Malaise, 02–07.x.2017. Leg.: X. Mengual	ZFMK-DIP-00027949	MK959047
D360	*Pelecocera* (*Chamaesyrphus*)	sp. n.		♂	CYPRUS: Limassol, Platres, along road E804, 34°55′54.35″ N 32°50′19.64″ E, 1352 m., on *Hedera helix*. 09.x.2017. Leg.: X. Mengual	ZFMK-DIP-00027873	MK959048
D361	*Pelecocera* (*Chamaesyrphus*)	*pruinosomaculata*	(Strobl, 1906)	♂	CYPRUS: Limassol, Pera Pedi, old vineyard, 34°51′56.8″ N 32°50′55.91″ E, 881 m., Malaise, 08–12.x.2017. Leg.: X. Mengual	ZFMK-DIP-00027919	MK959049
D362	*Merodon*	aff *bessarabicus*		♂	CYPRUS: Paphos, Paphos Forest, Appides stream, 34°59′28.6″ N 32°38′49.2″ E, 747 m., 12.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028057	MK959050
D363	*Merodon*	aff *natans*		♂	CYPRUS: Limassol, Platres, Trooditissa Picnic Site, 34°54′53.05″ N 32°50′32.14″ E, 1340 m. 04.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028063	MK959051
D364	*Merodon*	*neofasciatus*	Ståhls & Vujić, 2018	♂	CYPRUS: Limassol, Akrotiri Marsh, 34°37′38.92″ N 32°56′27.78″ E, 5 m. 03.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028066	MK959052
D365	*Merodon*	*pulveris*	Vujić & Radenković, 2011	♂	CYPRUS: Limassol, Episkopi, Ancient Kourion stadium, 34°40′15.62″ N 32°52′28.37″ E, 112 m. 07.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028075	MK959053
D366	*Merodon*	aff *bessarabicus*		♂	CYPRUS: Paphos, Paphos Forest, Appides stream, 34°59′28.6″ N 32°38′49.2″ E, 747 m. 06.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028060	MK959054
D367	*Merodon*	aff *natans*		♂	CYPRUS: Limassol, Episkopi, Ancient Kourion stadium, 34°40′15.62″ N 32°52′28.37″ E, 112 m. 07.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028064	MK959055
D368	*Merodon*	aff *bessarabicus*		♂	CYPRUS: Paphos, Fasoula, Orietes Wind Farm, 34°43′35.12″ N 32°37′21.13″ E, 370 m. 07.x.2017. Leg.: X. Mengual	ZFMK-DIP-00028062	MK959056

Appendix II. COI uncorrected pairwise distances (% similarity) between selected *Merodon* specimens.

	M. sp. n. 1 D362	*M.* sp. n. 1 D366	*M.* sp. n. 1 D368	*M.* sp. n. 2 D363	*M.* sp. n. 2 D367	*M. neofasciatus* D364	*M. pulveris* D365
M. aff *bessarabicus* [D362]		100	100	88.906	88.906	88.982	89.21
M. aff *bessarabicus* [D366]	100		100	88.906	88.906	88.982	89.21
M. aff *bessarabicus* [D368]	100	100		88.906	88.906	88.982	89.21
M. aff *natans* [D363]	88.906	88.906	88.906		99.848	91.261	93.465
M. aff *natans* [D367]	88.906	88.906	88.906	99.848		91.261	93.465
M. neofasciatus [D364]	88.982	88.982	88.982	91.261	91.261		90.198
M. pulveris [D365]	89.21	89.21	89.21	93.465	93.465	90.198	

Appendix III. COI uncorrected pairwise distances (% similarity) between selected *Ceriana* specimens, with GenBank accession numbers.

	C. vespiformis [SYRAU217-15]	*C. vespiformis* [SYRAU218-15]	*C. vespiformis* [SYRAU216-15]	*C. vespiformis* [SYRAU213-15]	*C. vespiformis* [CNCDB225-11]	*C. vespiformis* [SYCNC169-16]	*C. vespiformis* [CNCDB224-11]	*C. vespiformis* [CNCDB223-11]	*C. vespiformis* [CNCDB226-11]	*C. glaebosa* [ZFMK-DIP-00027877]	GenBank Accession N°
C. vespiformis SYRAU217-15]		100	100	100	100	100	100	98.858	99.734	96.799	MK972431
C. vespiformis [SYRAU218-15]	100		100	100	100	100	100	98.858	99.734	96.799	MK972430
C. vespiformis [SYRAU216-15]	100	100		100	100	100	100	98.858	99.734	96.799	MK972429
C. vespiformis [SYRAU213-15]	100	100	100		100	100	100	98.858	99.734	96.799	MK972435
C. vespiformis [CNCDB225-11]	100	100	100	100		100	100	98.858	99.734	96.799	MK972433
C. vespiformis [SYCNC169-16]	100	100	100	100	100		100	98.839	99.729	97.214	MK972432
C. vespiformis [CNCDB224-11]	100	100	100	100	100	100		98.93	99.842	97.306	MK972428
C. vespiformis [CNCDB223-11]	98.858	98.858	98.858	98.858	98.858	98.839	98.93		99.011	95.96	MK972427
C. vespiformis [CNCDB226-11]	99.734	99.734	99.734	99.734	99.734	99.729	99.842	99.011		96.684	MK972434
C. glaebosa [ZFMK-DIP-00027877]	96.799	96.799	96.799	96.799	96.799	97.214	97.306	95.96	96.684		MK959046