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Review of the European species of *Diglyphus* Walker (Hymenoptera: Eulophidae) including the description of a new species

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Abstract

The European species of *Diglyphus* Walker are reviewed. Fifteen species are included. One of these, *D. clematidis* **sp. n.**, is described as new, and one, *D. anadolucus* Doganlar, is recorded as new to Europe. Several of the species have their geographical distribution increased as many new country records are introduced. New host records and compilation of host records from the literature are presented in tables. To facilitate the identification of the species a key and numerous illustrations are included. The identity of one of the species described from Europe, *D. phytomyzae* Ruschka, is unclear. It has not been possible to locate the type material of this species and the original description is not detailed enough to make an unambiguous interpretation possible. Two species, *D. scapus* Yefremova from Iran and *D. sensilis* Yefremova from Turkey, are discussed as they occur in the vicinity of Europe.

Key words: identification key, biological control, new geographic records, new host records, habitus illustrations, clematidis, Clematis

Introduction

Diglyphus Walker (Hymenoptera: Eulophidae) is an economically important group of parasitic wasps. Species of this genus are primary, solitary or gregarious ectoparasitoids on, mainly, leafmining agromyzids (Diptera: Agromyzidae) (Bouček & Askew 1968), and as such they play an important role in the population dynamics of species in that group. Several agromyzids, e.g. *Liriomyza sativae* (Blanchard 1938), *L. huidobrensis* (Blanchard 1926), and a number of *Agromyza* species, are pests of ornamental flowers and other economically important plants, e.g. alfalfa (*Medicago sativa* L.) (Spencer 1973, 1989). Some *Diglyphus* species, especially *D. isaea* (Walker 1838) and *D. begini* (Ashmead 1904), are used for the control of these pests, mainly in greenhouses (Heinz & Parrella 1989; Heinz *et al*. 1993; Minkenberg & Parrella 1990), but also in crops outside greenhouses (Gordh & Hendrickson 1979). Occasionally, some species such as *D. begini, D. chabrias* (Walker 1838), *D. isaea* and *D. minoeus* (Walker 1838) have also been reported on different hosts than Agromyzidae, especially on Lepidoptera: Gracillariidae, Lyonetiidae and Nepticulidae (Noyes 2016).

Diglyphus is a cosmopolitan genus that currently includes 39 species, and 14 of these are recorded from Europe (Noyes 2016). These records include *D. phytomyzae* (Ruschka 1912), but the identity of this species is unclear, as discussed below. The use of *Diglyphus* species in biological control makes accurate identification very important, but currently there is no comprehensive key to the European species of *Diglyphus*. Two keys including European species have been published: Askew (1968) included seven species, but this key only comprises British species, and Efremova & Shrol (1996) included ten species (text in Russian). To facilitate the identification of the European species we present an up-to-date key, and we also include numerous illustrations with the same purpose. Furthermore, we describe a new species reared from *Phytomyza vitalbae* Kaltenbach 1874, mining leaves of *Clematis*, a well-known genus of garden plants and thus of economic importance.

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Compilations of all known host records for *Diglyphus* species from the literature and new records included here are presented in Tables 1 & 2. Table 3 includes details on carefully checked host records from Italy. These specimens were reared from mines collected in the field. The Agromyzidae hosts were identified using Spencer (1973, 1976, 1989), wherever possible by examination of the male genitalia.

Material and methods

Acronyms used for collections are:

AGES	Agentur Gesundheit Ernährungssicherheit, Vienna, Austria
BMNH	the Natural History Museum, London, United Kingdom
HNHM	Hungarian Natural History Museum, Budapest, Hungary
MZLU	Museum of Zoology, Lund University, Sweden
NHMW	the Natural History Museum, Vienna, Austria
PN	private collection of P. Navone, Turin, Italy
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.
ZISP	Zoological Institute, St Petersburg, Russia

A new country record under "Distribution" in species treatments is indicated by an asterisk (*).

Results

Identification. Members of *Diglyphus* belong in the subfamily Eulophinae and are easy to recognize through the following combination of characters: antennal flagellum with two funiculars and three clavomeres (Figs 49–71), and males with unbranched flagellomeres; scutellum with submedian grooves (Figs 1–28); mesoscutum with notauli incomplete or if complete then very narrow and superficial (Figs 1–28); fore wing with at least four setae on submarginal vein and postmarginal vein at least 0.9× as long as stigmal vein.

Species in the genera *Cirrospilus* (Westwood 1832) and *Diaulinopsis* (Crawford 1912) have the same appearance of the antennae (two funiculars and three clavomeres) and scutellum (with submedian grooves) as *Diglyphus* and thus can be confused with this genus. Members of *Diglyphus* have incomplete and inconspicuous notauli, or more or less complete, but then they are superficial and diverging posteriorly. Species in both *Cirrospilus* and *Diaulinopsis* have deep, distinct and complete notauli that converge posteriorly.

Key to the European species of *Diglyphus*

1.	Scape predominantly to completely pale (e.g. Figs 49–51, 67–70) 2
-	Scape predominantly to completely dark (e.g. Figs 52–64) 7
2(1).	Fore femur pale (Figs 1–6, 31, 32, 42) 3
-	Fore femur with at least base dark brown and ±metallic (Figs 40, 41). 6
3(2).	Mesoscutum green, scutellum and axillae purple (Figs 15, 16); hind femur variable, usually dark and metallic in basal ⅔–⅛(e.g. Fig. 42), sometimes totally pale; male: marginal vein not thickened, gaster with a pale spot subbasally (Fig. 16) . . . . . *D. pusztensis* (Erdös & Novicky)
-	Mesoscutum and scutellum with same colour: green, golden-green, bluish, or purple (Figs 1–6); male: gaster and marginal vein variable 4
4(3).	Mesoscutum and scutellum metallic purple or golden-green with purplish reflections (Figs 5, 6); hind femur pale (Figs 5, 6) (very occasionally small males can have basal ½ of hind femur brown); male: marginal vein strongly enlarged, at least 1.2× as wide as width of costal cell at level of base of marginal vein (Fig. 77); male gaster with a pale spot subbasally (Fig. 6); on average a smaller species (0.9–1.4 mm) . . . . . *D. clematidis* sp. n.
-	Mesoscutum and scutellum green, golden-green or bluish; hind femur dark and metallic in basal ½ (Figs 31, 32); male: gaster and marginal vein variable; on average larger species (1.2–2.1 mm). 5
5(4).	Female antenna with first funicular 1.0–1.2× and second funicular 1.0× as long as wide (Figs 1, 49); male: gaster with a pale spot subbasally (Fig. 2), marginal and stigmal veins narrow, marginal vein 0.4× as wide as width of costal cell at level of base of marginal vein (Fig. 2) . . . . . *D. albiscapus* Erdös
-	Female antenna with first funicular 1.6× and second funicular 1.3× as long as wide; male: gaster without a pale spot subbasally

(Fig. 4), marginal and stigmal veins enlarged, marginal vein 0.8× as wide as width of costal cell at level of base of marginal vein (Figs 4, 74) ..... *D. anadolucus* Doganlar

6(2). Hind tibia with basal ⅔ dark (Figs 13, 14, 40) ..... *D. poppoea* Walker

- Hind tibia dark at base only (Figs 17, 18, 41), occasionally completely pale. ..... *D. sabulosus* Erdös

7(1). Fore wing speculum with dense setation (Fig. 73) 8

- Fore wing speculum with sparse setation (e.g. Fig. 72) 9

8(7). Mesoscutum green to blue, contrasting against purple scutellum (Figs 23, 24); setae on pronotum and mesoscutum dark ..... *D. eleanorae* Graham

- Mesoscutum and scutellum with about the same green or blue-green colour (Figs 9, 10) (very occasionally coppery), scutellum sometimes golden and mesoscutum green; setae on pronotum and mesoscutum pale ..... *D. isaea* (Walker)

9(7). Femora pale (Fig. 44) ..... *D. subplanus* (Erdös)

- Femora predominantly dark (e.g. Figs 33, 39, 40) 10

10(9). Tibiae completely pale (Fig. 39) ..... *D. pachyneurus* Graham

- At least hind tibia with a dark ring at base (Fig. 33), usually with all tibiae at least partly dark (e.g. Figs 34, 40) 11

11(10). Hind tibia predominantly pale with a dark ring at base (Fig. 33), dark ring can be weak ..... *D. begini* (Ashmead)

- Hind tibia predominantly dark (e.g. Figs 34, 40) 12

12(11). Scape with at least basal ⅓ pale (Figs 65, 66) ..... *D. poppoea* Walker

- Scape completely dark (e.g. Figs 54, 56, 61), or with very base pale. 13

13(12). Males. 14

- Females 17

14(13). Fore wing with marginal vein thick, 0.9–1.1× as wide as width of costal cell at level of base of marginal vein (Figs 8, 75). ..... *D. crassinervis* Erdös

- Fore wing with marginal vein slender, 0.5× as wide as width of costal cell at level of base of marginal vein (e.g. Figs 12, 72) 15

15(14). Fore wing with stigmal vein short, 2.5× as long as wide (Fig. 30). ..... *D. propodealis* Szelényi

- Fore wing with stigmal vein long and slender (Fig. 29), 3.4–4.1× as long as wide 16

16(15). Flagellum stout, e.g. first flagellomere 1.5× as wide as width of pedicel, and flagellomeres densely clothed with short setae (Fig. 55); scutellum green (Fig. 22) ..... *D. chabrias* (Walker)

- Flagellum slender, e.g. first flagellomere 1.2× as wide as width of pedicel, and flagellomeres with longer setae that are more sparsely situated (Fig. 62); scutellum purple (Fig. 12) ..... *D. minoeus* (Walker)

17(13). Mesoscutum long (Fig. 21), 0.72–0.86× as long as wide (mean = 0.80, n = 10) ..... *D. chabrias* (Walker)

- Mesoscutum short (Figs 7, 27), 0.63–0.70× as long as wide (mean = 0.66, n = 28) 18

18(17). Scutellum purple (Fig. 11); main setae on mesonotum long and strong: posterior setae on midlobe of mesoscutum reach the transscutal articulation (Fig. 79a), anterior scutellar setae reach the base of posterior scutellar setae (Fig. 79c); mesopleuron and mesosternum violet-black to dark green; antenna with radicle and scape dark ..... *D. minoeus* (Walker)

- Scutellum green to golden-green, sometimes with coppery reflections; main setae on mesonotum slender and short: posterior setae on midlobe of mesoscutum do not reach transscutal articulation (Fig. 79b), anterior scutellar setae reach slightly longer than half the distance between bases of anterior and posterior setae (Fig. 79d); mesopleuron and mesosternum shiny metallic green to blue-green (e.g. Figs 35, 43); antenna with scape and radicle variable 19

19(18). Stigmal vein more slender (as in Fig. 29), 3.5× as long as wide; antenna with radicle and basal ⅙ of scape pale ..... *D. crassinervis* Erdös

- Stigmal vein more stout (Fig. 30), 2.5× as long as wide; antenna with radicle and scape dark ..... *D. propodealis* Szelényi

European species treated

Diglyphus clematidis Navone & Hansson sp. n.

Figs 5, 6, 77, 78

Diagnosis. Scape pale with upper anterior corner infuscate; femora and tibiae white (Figs. 5, 6) (small males can have basal ½ of hind femur brown); mesoscutum and scutellum purple, or golden-green with purplish reflections (Figs 5, 6); scutellar disc strongly transverse, 0.80–0.86× as long as wide (Figs 5, 6); fore wing speculum with a few scattered setae (as in Fig. 72); male: marginal vein very enlarged, at least 1.2× as wide as width of costal cell at level of base of marginal vein (Fig. 77); gaster with a large pale spot subbasally (Fig. 6).

Material. Holotype female with three labels (white, green and red): "Ceriale (SV) fraz. Peagna - 22.08.2015 - sf. 2.09.2015 - Leg. P. Navone"; "Phytomyza vitalbae, Clematis vitalba"; "♀", "Holotypus *Diglyphus clematidis* Navone & Hansson" (in BMNH). Paratypes: 6♀ 7♂ from the same locality and host as holotype; following specimens from the same collecting date as the holotype but emerged: 31.VIII.2015 (1♂), 30.VIII.2015 (2♂), 1.IX.2015 (3♀ 1♂), 2.IX.2015 (1♂), 4.IX.2015 (1♀); two specimens from the same locality and host as holotype but collected 16.VII.1995, emerged 22.VII.1995 (1♂), 28.VII.1995 (1♀); two specimens from the same locality

and host as holotype but collected 21.IX.2015, emerged 1.X.2015 (1♀), 4.X.2015 (1♂); one specimen from the same locality and host as holotype but collected 26.VII.2016, emerged 02.VIII.2016 (1♂). Paratypes are deposited in BMNH (1♀ 2♂), MZLU (1♀ 1♂), PN (remainder of specimens). Each specimen is mounted between two round cover glasses that are glued to a card with a round hole to fit the specimen.

Description. FEMALE. Length 0.9–1.6 mm. Scape pale with upper-anterior corner infuscate, pedicel pale with proximal part infuscate, flagellum light brown to yellowish. Frons below frontal suture metallic green with golden or bluish reflections, with a small yellow spot just below toruli; frons above frontal suture and on vertex metallic purple. Pronotum purple; mesoscutum purple or bluish-purple, anterior part more or less golden-green (Fig. 5); scutellum purple (Fig. 5); dorsellum (and lateral part of metanotum) and propodeum golden-green, metallic olive or bluish-green. Fore and hind coxae dark and metallic, mid coxa metallic with apical ¼ pale; remaining parts of legs white except tarsal claw brown. Fore wing hyaline, veins infuscate (Fig. 5). Gaster brown with metallic reflections, tergite 1 with same colour as propodeum in large specimens (Fig. 5), almost translucent in small specimens.

Frons with raised reticulation, antennal scrobes smooth, vertex and occiput reticulate. Head collapsed in dried specimens. Ratios of antenna: length of scape/pedicel/flagellomere 1/ flagellomere 2/clava (excl. spicule) 2.8/1.2/ 1.2/1.0/2.9; flagellomere 2 subquadrate, width of flagellomeres gradually increasing to clavomere 2, apical segment of the clava (clavomere 3) triangular. Mesosoma: ratio length/width 1.44–1.70; length of mesoscutum 0.14–0.20 mm; notauli incomplete. Pronotum and mesoscutum with raised and fine reticulation, meshes isodiametric and regular; axillae and scutellum with raised and weak reticulation, meshes a little smaller than on mesoscutum and longitudinally elongate. Scutellum (Fig. 5) large and rounded: ratio length/width 0.80–0.86; submedian grooves strongly converging towards the rear and forming a trapezoidal area; ratio distance between grooves (at level of the two hind setae)/width of scutellum: 0.51–0.55. Dorsellum triangular and convex, finely reticulate and shiny. Propodeum convex in the middle but without longitudinal carina; shiny with weak reticulation that is evident everywhere; propodeal callus with 5–7 setae. Fore wing (Fig. 5): ratio length/width 2.0–2.2; speculum closed below, with scattered setae on underside; basal cell open below in the proximal half; costal cell with a complete row of setae on ventral surface and with 6–9 setae on dorsal surface along distal part of the anterior margin; cubital vein strongly curved forwards to join the basal vein. Ratios submarginal/marginal/stigmal/ postmarginal veins: 3.0/2.9/1.0/1.1. Petiole inconspicuous. Shape and length of the elongate gaster very variable in dried and collapsed specimens: ratio length/width 1.4–2.4 (mean = 1.82, n = 7).

MALE. Length 1.0–1.4 mm. Similar to the female, but with the following differences. Mesosoma metallic green with purple, violet or golden reflections. Legs with colour similar to the female but with basal ½ of hind femur infuscate in one of the small males. Marginal, postmarginal and stigmal veins of fore wing and marginal vein of hind wing yellow, very strongly enlarged (Figs 6, 77); marginal vein at least 1.2× as wide as width of costal cell at level of base of marginal vein. Gaster oval: ratio length/width 1.5–2.4 (mean = 1.83, n = 8); with a large pale median spot subbasally, occupying a large area between the second and fourth tergites (Fig. 6).

Etymology. From the host plant *Clematis vitalba* L. (Ranunculaceae) of the agromyzid host.

Distribution. ITALY: Ceriale - Peagna, a locality in the Liguria region located on the sea coast. The first two specimens date back from 1995, 20 years later the remaining specimens were collected at the same locality and from the same host.

Host & biology. Reared from *Phytomyza vitalbae* Kaltenbach 1874 (Diptera: Agromyzidae). Attempts to obtain more specimens from the same host in other locations, nearby or distant from the type locality, or from different hosts in the type locality were without result.

This species is a larval ectoparasitoid. Males are solitary, females solitary or moderately gregarious with 2–4 specimens in the same mine. It prefers shady and relatively cool places along dried up streams. The development period from egg to adult, at about 26–29°C, lasts two weeks. The species shares its host with four other *Diglyphus* species: *D. isaea*, *D. minoeus*, *D. crassinervis* and *D. poppoea* (Table 2). In the type locality and during the summer season *D. clematidis* was the dominant and sometimes exclusive species obtained from *P. vitalbae*.

Diglyphus albiscapus **Erdös**

Figs 1, 2, 31, 49, 78

Diglyphus albiscapus Erdös, 1951:196, lectotype female in HNHM, examined.

Diglyphus albiscapus; Erdös, 1956:21; Kamijo, 1978: 461–462 (includes a thorough redescription based on specimens from Japan); Thuróczy, 1992: 151 (lectotype designation).

Diagnosis. Scape completely pale (Fig. 49), or with upper-anterior corner infuscate (Fig. 50); femora and tibiae white to yellowish-white, except hind femur with basal ⅓–⅔ dark and metallic (Fig. 31); fore wing speculum with a few scattered setae (as in Fig. 72); male gaster with a pale spot subbasally (Fig. 2).

Material. France: 1♀ (BMNH). Hungary: lectotype ♀ (HNHM). Italy: 17♀ 7♂ (PN). Romania: 1♀ (BMNH). Spain: 1♀ (BMNH).

Distribution. Bulgaria (Georgiev & Boyadzhiev 2002), Czech Republic (Bouček & Askew 1968), France*, Hungary (Erdös 1951), Italy*, Japan (Kamijo 1978), Korea (Kamijo 1979), Moldova (Bouček & Askew 1968), Romania*, Russia (Yefremova 2002), Slovakia (Kalina 1989), Spain*.

Diglyphus anadolucus Doganlar

Figs 3, 4, 32, 50, 51, 74, 78

Diglyphus anadolucus Doganlar, 1982:75–78, holotype female in Erzurum, Turkey, not examined.

Diagnosis. Scape pale with upper-anterior corner infuscate (Figs 50, 51); femora and tibiae white, except hind femur with basal ⅓–½ dark and metallic (Figs 3, 4, 32) and very occasionally with mid femur dark at base; fore wing speculum with a few scattered setae (as in Fig. 72); male wings with veins yellow and distinctly enlarged (Fig. 74), marginal vein 0.8× as wide as width of costal cell at level of base of marginal vein; male gaster completely dark and metallic (Fig. 4).

Material. Italy: 32♀ 45♂ (PN). Russia: 1♀ 1♂ (ZISP). Turkey: 1♀ 1♂ paratypes of *D. anadolucus* (BMNH).

Distribution. Italy*, Russia*, Turkey (Doganlar 1982).

Diglyphus begini (Ashmead)

Figs 19, 20, 33, 52, 53, 78

Diaulus begini Ashmead, 1904: 356, female holotype in USNM, not seen.
Solenotus begini; Hills & Taylor, 1951: 760–762.
Diglyphus begini; Peck, 1963: 103.

Diagnosis. Scape dark (Figs 52, 53); legs (Fig. 33): femora dark with apical ¼–⅓ yellowish-white; fore tibia yellowish-white, sometimes with posterior surface infuscate, mid and hind tibiae yellowish-white with a dark ring basally—this ring can occasionally be very weak and is missing in a few specimens; fore wing speculum bare or with a few scattered setae (as in Fig. 72); male gaster completely dark (Fig. 20).

Material. Croatia: 1♀ (BMNH). Denmark: 1♀ (BMNH). Norway: 21♀&♂ (BMNH). Finland: 1♀ (BMNH). France: 2♀ (BMNH). Germany: 1♀ (BMNH). Hungary: 3♀ (BMNH). Russia: 2♀ (ZISP). Sweden: 389♀&♂ (BMNH, MZLU).

The specimens from Sweden, identified as *D. chabrias* in Hansson (1987), were misidentified, instead they are *D. begini*.

Distribution. Croatia*, Czech Republic (Kalina 1989), Denmark*, Finland*, France*, Germany*, Hungary*, Norway (Hågvar *et al.* 1994), Peoples' Republic of China (Zhu & Huang 2001), Russia*, Slovakia (Kalina 1989), Spain (Canary Islands) (Koponen & Askew 2002), Sweden*, Turkey (Gencer 2009), Yemen (Yefremova 2007). This species was originally described from Canada and it is one of the most abundant species in North America (Gordh & Hendrickson 1979). It is also recorded from South America (Brazil, Colombia, Peru) (Noyes 2016).

Diglyphus chabrias (Walker)

Figs 21, 22, 29, 34, 54, 55, 72, 78

Cirrospilus chabrias Walker, 1838:451, lectotype male in BMNH (type no. 5.2589), examined.

Diglyphus chabrias; Walker, 1844: 407–410.
Asecodes chabrias; Dalla Torre, 1898: 46.

Diagnosis. Scape completely dark (Figs 54, 55); legs (Fig. 34): femora dark and metallic with apical ⅕–¼ white; fore tibia with anterior surface white and posterior surface dark and metallic or dark brown, mid and hind tibiae dark and metallic with apical ⅕–¼ white; fore wing speculum with a few scattered setae (Fig. 72); male with antennal flagellomeres densely setose with short hairs (Fig. 55); male gaster completely dark and metallic (Fig. 22).

Material. Denmark: 1♀ 1♂ (BMNH, MZLU). France: 6♀ 2♂ (BMNH). Greece (Crete): 5♀ (BMNH). Hungary: 1♂ (BMNH). Italy: 2♀ (BMNH). Norway: 1♀ (BMNH). Portugal (Madeira): 1♀ 1♂ (BMNH). Russia: 1♀ 3♂ (ZISP). Spain (Canary Islands): 4♂ (BMNH). Sweden: 44♀ 24♂ (BMNH, MZLU). United Kingdom: 58♀ 55♂ (BMNH).

The specimens from Sweden, identified as *D. chabrias* in Hansson (1987), were misidentified, instead they are *D. begini*.

Distribution. Bulgaria (Boyadzhiev 1997), Czech Republic (Kalina 1989), Denmark*, France*, Germany (Bouček & Askew 1968), Greece*, Hungary (Bouček & Askew 1968), Iran (Yefremova *et al.* 2007), Italy*, Netherlands (Gijswijt 2003), Norway (Bouček & Askew 1968), Portugal (Madeira) (Koponen & Askew 2002), Russia (Yefremova 2002), Slovakia (Kalina 1989), Spain (Canary Islands) (Koponen & Askew 2002), Sweden (Bouček & Askew 1968), Turkey (Yefremova *et al.* 2011), United Kingdom (Walker 1838).

***Diglyphus crassinervis* Erdös**
Figs 7, 8, 35, 56, 75, 78, 79

Diglyphus crassinervis Erdös, 1958: 211, lectotype male in HNHM, examined.

Diagnosis. Scape completely dark (Fig. 56); legs (Fig. 35): femora dark and metallic with apical ⅕–¼ white; tibiae dark and metallic with apical ⅕–¼ white; fore wing speculum with a few scattered setae (as in Fig. 72); male with enlarged veins in fore wing (Fig. 75); male gaster completely dark and metallic (Fig. 8).

Material. Egypt: 3♀ (BMNH). France: 2♂ (BMNH). Greece (Crete): 1♀ (BMNH). Italy: 65♀ 55♂ (PN). Russia: 1♂ (ZISP). Spain (Canary Islands): 1♂ (BMNH). Sweden: 2♀ 2♂ (BMNH, MZLU). Switzerland: 1♀ (BMNH). United Kingdom (England): 1♂ (BMNH).

Distribution. Bulgaria (Georgiev & Boyadzhiev 2002), Czech Republic (Kalina 1989), Egypt*, France (Bouček & Askew 1968), Germany (Ulrich 1999), Greece*, Hungary (Erdös 1958), Iran (Hesami *et al*. 2006), Iraq (Al-Azawi 1971), Israel (Bouček & Askew 1968), Italy (Rizzo & Massa 2002), Jordan (Al-Ghabeish & Allawi 2001), Moldova (Bouček 1965), Morocco (Bouček & Askew 1968), Peoples' Republic of China (Zhang *et al.* 2007), Portugal (Godinho & Mexia 2000), Russia*, Slovakia (Kalina 1989), Spain (Canary Islands) (Báez & Askew 1999), Sweden (Hedqvist 2003), Switzerland*, Turkey (Bulut & Gocmen 2000), United Kingdom (Askew 1965), Yemen (Yefremova 2007).

***Diglyphus eleanorae* Graham**
Figs 23, 24, 36, 57, 58, 78

Diglyphus eleanorae Graham, 1981: 13, holotype female in BMNH, examined.

Diagnosis. Scape completely dark (Figs 57, 58); legs (Fig. 36): femora dark and metallic with apical ¼–½ white; fore tibia with anterior surface white and posterior surface dark and metallic or dark brown, mid and hind tibiae dark and metallic with apical ⅕–¼ white; fore wing speculum with dense setation (as in Fig. 73); pronotum and mesoscutum with dark setae; scutellum purple (Figs 23, 24); male gaster completely dark (Fig. 24).

Material. Portugal (Madeira): 28♀ 17♂ (BMNH).

Distribution. Portugal (Madeira) (Graham 1981), Spain (Canary Islands) (Báez & Askew 1999).

Diglyphus isaea (Walker)

Figs 9, 10, 37, 59, 60, 73, 78

Cirrospilus isaea Walker, 1838: 385–386, lectotype male in BMNH (type no. 5.2591), examined.
Cirrospilus lycophron Walker, 1838: 449, lectotype male in BMNH (type no. 5.2607), examined. Synonymized by Bouček & Askew (1968: 70).
Cirrospilus medidas Walker, 1838: 386, lectotype male in BMNH (type no. 5.2592), examined. Synonymized by Bouček & Askew (1968: 70).
Entedon gracilis Goureau, 1851: 159, type material not examined. Synonymized by Graham (1963: 179).
Diglyphus bisannulatus Förster, 1861: 38, type material not examined. Synonymized by Bouček & Askew (1968: 70).
Diglyphus ornatus Förster, 1861: 38, type material not examined. Synonymized by Bouček & Askew (1968: 70).
Diglyphus clavicornis Walker, 1872: 126, lectotype male in BMNH (type no. 5.1341), examined. Synonymized by Bouček & Askew (1968: 70).
Elachistus phytomyzae Rondani, 1877: 173, type material not examined. Synonymized by Bouček (1974: 262).
Solenotus viridis Thomson, 1878: 237, lectotype female in MZLU. Synonymized by Hansson (1991: 33).
Diglyphus isaea; Graham, 1959: 178.

Diagnosis. Scape completely dark (Figs 59, 60); legs (Fig. 37): femora dark and metallic with apical ¼–½ white; fore tibia with anterior surface white and posterior surface dark and metallic or dark brown, mid and hind tibiae dark and metallic with apical ⅛–¼ white, males frequently with median part of tibiae pale (Fig. 78), but males with tibiae predominantly dark, as in females, also occur; fore wing speculum with dense setation (Fig. 73); pronotum and mesoscutum with white setae; scutellum green to golden (Figs 9, 10), occasionally reddish; male gaster completely dark (Fig. 10).

Material. Italy: 109♀ 81♂ (PN). Romania: 3♀ 5♂ (BMNH). Sweden: 297♀ 118♂ (BMNH, MZLU).

Distribution. Throughout the Holarctic region, also recorded from Brazil, India, New Zealand, Pakistan, South Africa (Noyes 2016).

Remarks. *Diglyphus isaea* probably represents the best known species among target parasitoids of leafmining Agromyzidae. However, this species has occasionally been reported also from leafmining Gracillariidae and Nepticulidae (Lepidoptera) (Navone & Vidano 1983; Schauff *et al.* 1998; Gonzáles Tirado *et al.* 1996; Conti *et al.* 2001; Elekçioğlu & Uygun 2006). Moreover, females of *D. isaea* are attracted to larvae of *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) and show predatory behavior vis-a-vis this host under laboratory conditions (Payer *et al.* 2015). Some of the reports on Lepidoptera may represent misidentification of the host. For instance, the record of Vidano & Navone (1983) during a heavy infestation of *Stigmella malella* (Stainton) (Lepidoptera: Nepticulidae) probably should be attributed to contemporary but occasional presence of *Phytomyza heringiana* Hendel (Diptera: Agromyzidae) mining leaves on apple trees. Nevertheless, the repeated reports on *Phyllocnistis citrella* Stainton (Lepidoptera: Gracillariidae) seem less questionable because Agromyzidae leaf miners are unknown on *Citrus* spp. (Rutaceae) in Europe and in the Mediterranean basin. Among the specimens examined for this work, four females and two males emerged from *P. citrella* on *Citrus limon* (L.) Osbeck in Southern Italy (Legit: L. De Marzo) and they are morphologically indistinguishable from the specimens obtained on agromyzids.

However, the large distribution and wide host spectrum of *D. isaea* possibly indicate that this actually is a group of morphologically very similar species. Sha *et al.* (2007) analyzed specimens of *D. isaea* from China, using the nuclear gene ITS1, and found that there were at least four different species in the material. Even though it is somewhat doubtful what species they analyzed—their specimens had a shiny violet scutellum, which is a character found in neither the type of *D. isaea* nor in other European material of this species—their investigation shows that further studies are needed to determine if the current concept of *D. isaea* refers to one or multiple species.

Diglyphus minoeus (Walker)

Figs 11, 12, 38, 61, 62, 78, 79

Cirrospilus minoeus Walker, 1838: 385, lectotype male in BMNH (type no. 5.2608), examined.
Cirrospilus abron Walker, 1838: 385, lectotype male in BMNH (type no. 5.2609), examined. Synonymized by Bouček & Askew (1968: 70).
Eulophus amelon Walker, 1839: 179, lectotype male in BMNH (type no. 5.2610), examined. Synonymized by Bouček & Askew (1968: 70).

Cirrospilus deldon Walker, 1839: 294, type material not located (not present in BMNH June 2016). Synonymized by Bouček & Askew (1968: 70).

Cirrospilus myron Walker, 1839: 294, lectotype male in BMNH (type no. 5.2611), examined. Synonymized by Bouček & Askew (1968: 70).

Cirrospilus smilis Walker, 1839: 317, type material not located (not present in BMNH June 2016). Synonymized by Bouček & Askew (1968: 70).

Diglyphus minoeus; Graham, 1959: 178.

Diagnosis. Scape completely dark (Figs 61, 62); legs (Fig. 38): femora dark and metallic with apical ⅕–¼ white; tibiae dark and metallic with apical ⅕–¼ white; fore wing speculum with a few scattered setae (as in Fig. 72); scutellum purple (Figs 11, 12); male gaster completely dark and metallic (Fig. 12).

Material. Greece (Crete): 1♀ (BMNH). France: 2♀ (BMNH). Ireland: 2♂ (BMNH). Italy: 93♀ 85♂ (PN). Portugal (Madeira): 1♀ 1♂ (BMNH). Romania: 1♀ (BMNH). Spain: 1♀ (BMNH). Sweden: 69♀ 46♂ (BMNH, MZLU). United Kingdom: 4♀ (BMNH).

Distribution. Austria (Stolz & Bluemel 1998), Bulgaria (Boyadzhiev 1997), Croatia (Bouček 1977), Czech Republic (Kalina 1989), France*, Germany (Vidal 1993), Greece*, Hungary (Szelényi 1981), Iran (Yefremova *et al.* 2007), Ireland*, Italy (Bouček & Askew 1968), Japan (Kamijo 1978), Korea (Kamijo 1979), Moldova (Bouček 1961), Netherlands (Gijswijt 2003), Norway (Hågvar *et al.* 1998), Pakistan (Bouček 1977), Peoples' Republic of China (Zhang *et al.* 2007), Portugal*, Romania*, Russia (Yefremova 2002), Slovakia (Kalina 1989), Spain*, Sweden (Hansson 1987), Switzerland (Vidal 1997), Turkey (Yefremova *et al.* 2011), Turkmenistan (Durdyev *et al.* 1992), United Kingdom (Walker 1838), Yemen (Yefremova 2007).

***Diglyphus pachyneurus* Graham**

Figs 25, 26, 39, 63, 64, 76, 78

Diglyphus pachyneurus Graham, 1963: 176, holotype male in Oxford, not examined.

Diagnosis. Scape completely dark (Figs 63, 64); legs (Fig. 39): femora dark and metallic with apical ¼–⅓ white; tibiae white; fore wing speculum with a few scattered setae (as in Fig. 72); male wings with yellow veins that are distinctly enlarged (Fig. 76); male gaster completely dark and metallic (Fig. 26).

Material. Denmark: 1♀ (BMNH). France: 5♀ (BMNH). Iraq: 5♀ 2♂ (BMNH). Sweden: 6♀ 3♂ (BMNH).

Distribution. Croatia (Bouček 1977), Denmark*, France*, Germany (Vidal 2001), Italy (Bouček & Askew 1968), Moldova (Bouček 1965), Montenegro (Bouček 1977), Netherlands (Gijswijt 2003), Iraq*, Peoples' Republic of China (Sha *et al.* 2007), Russia (Yefremova 2002), Sweden (Graham 1963), Turkey (Gencer 2009), United Kingdom (Graham 1963), Yemen (Yefremova 2007).

Remarks. Bouček & Askew (1968) referred to the biology of *D. pachyneurus* as "found on sand-dunes in Britain". The specimens from Denmark and Sweden examined here are all from areas with sand-dunes so this appears to be the favoured habitat for this species.

***Diglyphus poppoea* Walker**

Figs 13, 14, 40, 65, 66, 78

Diglyphus poppoea Walker, 1848: 145, 235, lectotype male in BMNH (type no. 5.2590), examined.

Diagnosis. Scape white with apical ¼–⅔ dark (Figs 65, 66); legs (Fig. 40): femora dark with ¼–⅓ white; fore tibia with anterior surface yellowish-brown, posterior surface brown, mid tibia varying from white with very base dark to dark with apical ¼ white, hind tibia dark with apical ¼–⅓ white; fore wing speculum with a few scattered setae (as in Fig. 72); male gaster usually completely dark (Fig. 14), but small males can have base of gaster translucent.

Material. France: 4♀ (BMNH). Greece: 1♀ (BMNH). Italy: 29♀ 18♂ (PN). Romania: 2♀ (BMNH). Sweden: 10♀ 1♂ (BMNH, MZLU). United Kingdom: 2♀ (BMNH).

Distribution. Czech Republic (Kalina 1989), Finland (Herting 1978), Germany (Vidal 1993), Greece*, Hungary (Erdös 1956), Italy (Rizzo & Massa 2002), Moldova (Bouček 1965), Morocco (Vidal 1997), Netherlands

(Gijswijt 2003), Portugal (Godinho & Mexia 1996), Romania*, Russia (Yefremova 2002), Spain (Canary Islands) (Koponen & Askew 2002), Sweden (Hansson 1987), Switzerland (Vidal 1997), Turkey (Yefremova *et al.* 2011), United Kingdom (Bouček & Graham 1978), Yemen (Yefremova 2007).

***Diglyphus propodealis* Szelényi**
Figs 27, 30, 43, 78

Diglyphus propodealis Szelényi, 1978: 219–220, holotype female in HNHM, examined.

Diagnosis. Scape completely dark (Fig. 43); legs (Fig. 43): femora dark with apical ⅕–¼ white; fore tibia completely dark, mid and hind tibiae dark with apical ⅕–¼ white; fore wing speculum with a few scattered setae (as in Fig. 72); stigmal vein 2.5× as long as wide (Fig. 30); male gaster completely dark and metallic.

Material. Hungary: paratype ♂ (HNHM).

Distribution. Hungary (Szelényi 1978).

***Diglyphus pusztensis* (Erdös & Novicky)**
Figs 15, 16, 42, 67, 68, 78

Cycloscapus pusztensis Erdös & Novicky, *in* Erdös, 1951: 181, lectotype female in HNHM, examined.
Ceranisus pusztensis; Erdös, 1956: 9.
Diglyphus pusztensis; Bouček, 1959:171.
Diglyphus tibiscanus Erdös, 1958: 211, synonymized by Graham (1963: 179).
Diglyphus fulvipes Erdös, 1961: 474, synonymized by Graham (1963: 179).
Diglyphus pusztensis; Thuróczy, 1992: 166, lectotype designation.

Diagnosis. Scape white (Figs 67, 68); legs (Fig. 42): fore and mid femora white to yellowish-white, hind femur white to yellowish-white with ⅕–⅔ dark (three females from Italy, reared from *Cerodontha incisa* (Meigen) on *Phalaris arundinacea* L. (Poaceae), have hind femur completely yellowish-white); tibiae white to yellowish-white; scutellum purple (Figs 15, 16); fore wing speculum with a few scattered setae (as in Fig. 72); male gaster with a pale spot subbasally (Fig. 16).

Material. Italy: 8♀ 1♂ (PN). Romania: 4♀ 1♂ (BMNH). Sweden: 24♀ 1♂ (BMNH, MZLU). United Kingdom: 6♀ 8♂ (BMNH).

Distribution. Azerbaijan (Bouček & Askew 1968), Croatia (Bouček 1977), Czech Republic (Kalina 1989), Germany (Vidal 2001), Hungary (Erdös 1951), Italy (Burgio *et al.* 2007), Japan (Kamijo 1978), Poland (Bouček & Askew 1968), Romania*, Russia (Yefremova 2002), Slovakia (Kalina 1989), Sweden (Hedqvist 2003), Turkey (Gencer 2009), United Kingdom (Askew 1964), Yemen (Yefremova 2007).

***Diglyphus sabulosus* Erdös**
Figs 17, 18, 41, 69, 70, 78

Diglyphus sabulosus Erdös, 1951:197, lectotype female in HNHM, examined.
Diglyphus sabulosus; Thuróczy, 1992: 167, lectotype designation.

Diagnosis. Scape white with apical ⅓–½ dark brown (Figs 69, 70); legs (Fig. 41): fore femur with basal ½ dark brown and metallic and apical ½ yellowish-white, mid femur with basal ½–⅔ dark brown and metallic and apical ⅓–½ yellowish-white, hind femur with basal ⅔ dark brown and metallic and apical ⅓ yellowish-white; fore tibia lightly infuscate, mid tibia yellowish-white, hind tibia yellowish-white with a dark brown ring close to base but occasionally completely pale; fore wing speculum bare or with a few scattered setae (as in Fig. 72); male gaster completely dark and metallic (Fig. 18).

Material. France: 3♀ (BMNH). Italy: 7♀ 25♂ (PN). Romania: 19♀ 3♂ (BMNH). Russia: 2♀ (ZISP). Spain: 1♀ (BMNH). Sweden: 7♀, of which 5♀ are reared from *Agromyza rondensis* Strobl 1900 on *Elytrigia repens* Desv. ex Nevski 1933 (Poaceae) (BMNH, MZLU).

Distribution. Czech Republic (Bouček & Askew 1968), Hungary (Erdös 1951), Italy*, Romania (Bouček & Askew 1968), Russia*, Slovakia (Kalina 1989), Sweden (Hedqvist 2003), Turkey (Yefremova *et al.* 2011), Ukraine (Bouček & Askew 1968).

Remarks. The male paralectotype of *D. sabulosus* we have examined (in HNHM) belongs to *D. pusztensis*. The specimens collected in Sweden and Italy show a marked preference for Agromyzidae mining Poaceae.

Diglyphus subplanus **(Erdös)**

Figs 28, 44, 71, 78

Danuviella subplana Erdös, 1958: 212, holotype female in HNHM, examined.
Diglyphus subplanus; Burks, 2012: 28.

Diagnosis. Scape completely dark (Fig. 71); femora and tibiae white (Fig. 44); mesoscutum green to golden-green and scutellum predominantly purple (Fig. 28); fore wing speculum with a few scattered setae (as in Fig. 72).

Material. Germany: 1♀ 1♂ (BMNH). Sweden: 3♀ (BMNH, MZLU).

Distribution. Bulgaria (Georgiev & Boyadzhiev 2002), Germany (Haeselbarth 1985), Hungary (Erdös 1958), Italy (Bouček & Askew 1968), Moldova (Bouček 1961), Russia (Yefremova 2002), Sweden (Hedqvist 2003).

European species not treated

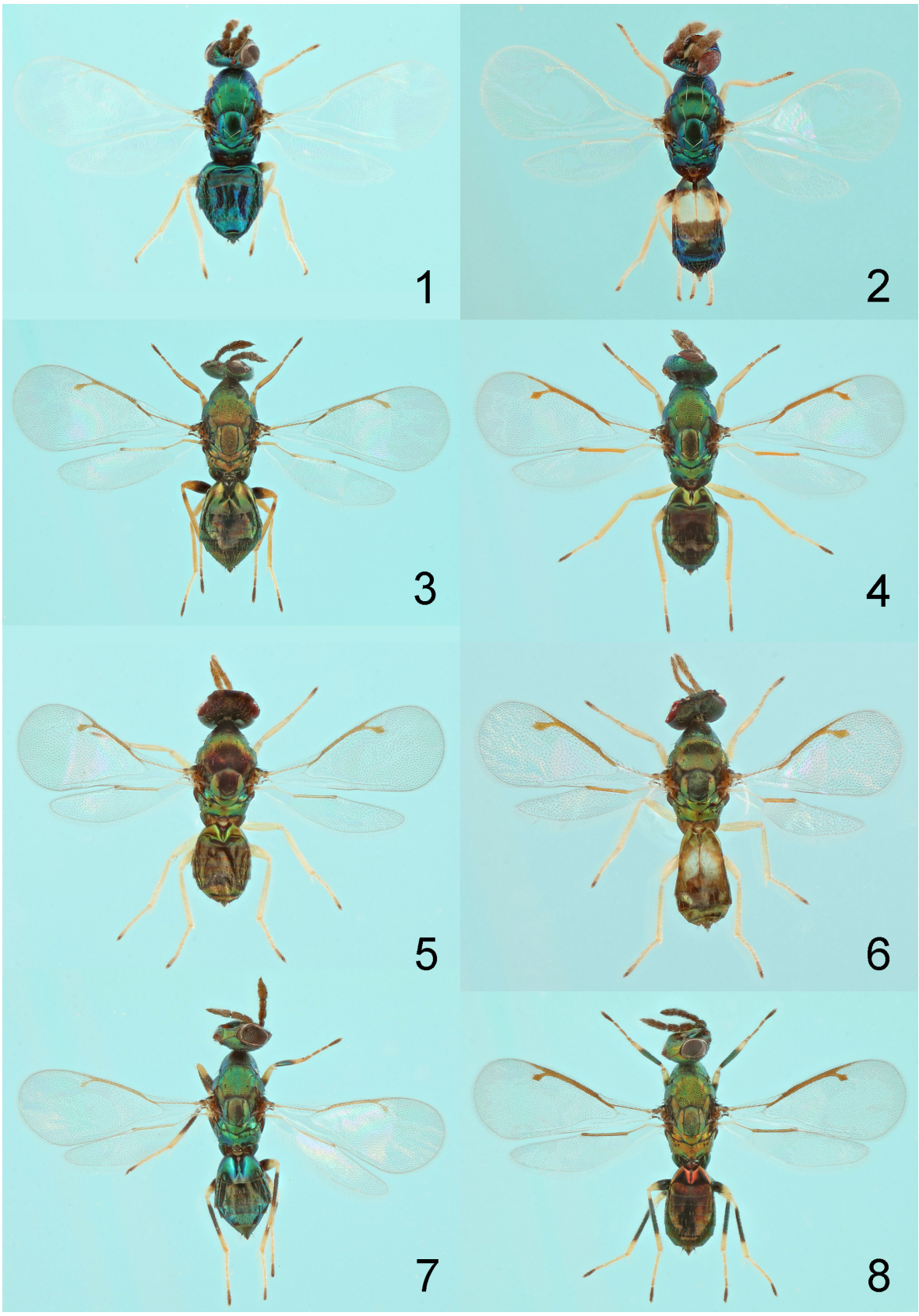
Diglyphus phytomyzae **(Ruschka)**

Solenotus phytomyzae Ruschka, 1912: 245, type material not located.
Diglyphus phytomyzae; Bouček & Askew 1968: 71.
Diglyphus phytomyzae; Bouček 1977: 262. Junior secondary homonym. Name preoccupied by *D. phytomyzae* (Rondani), now a synonym of *D. isaea* (Walker). No formal action was taken by Bouček because *D. phytomyzae* (Ruschka) was believed to be a synonym of *D. minoeus* (Walker).

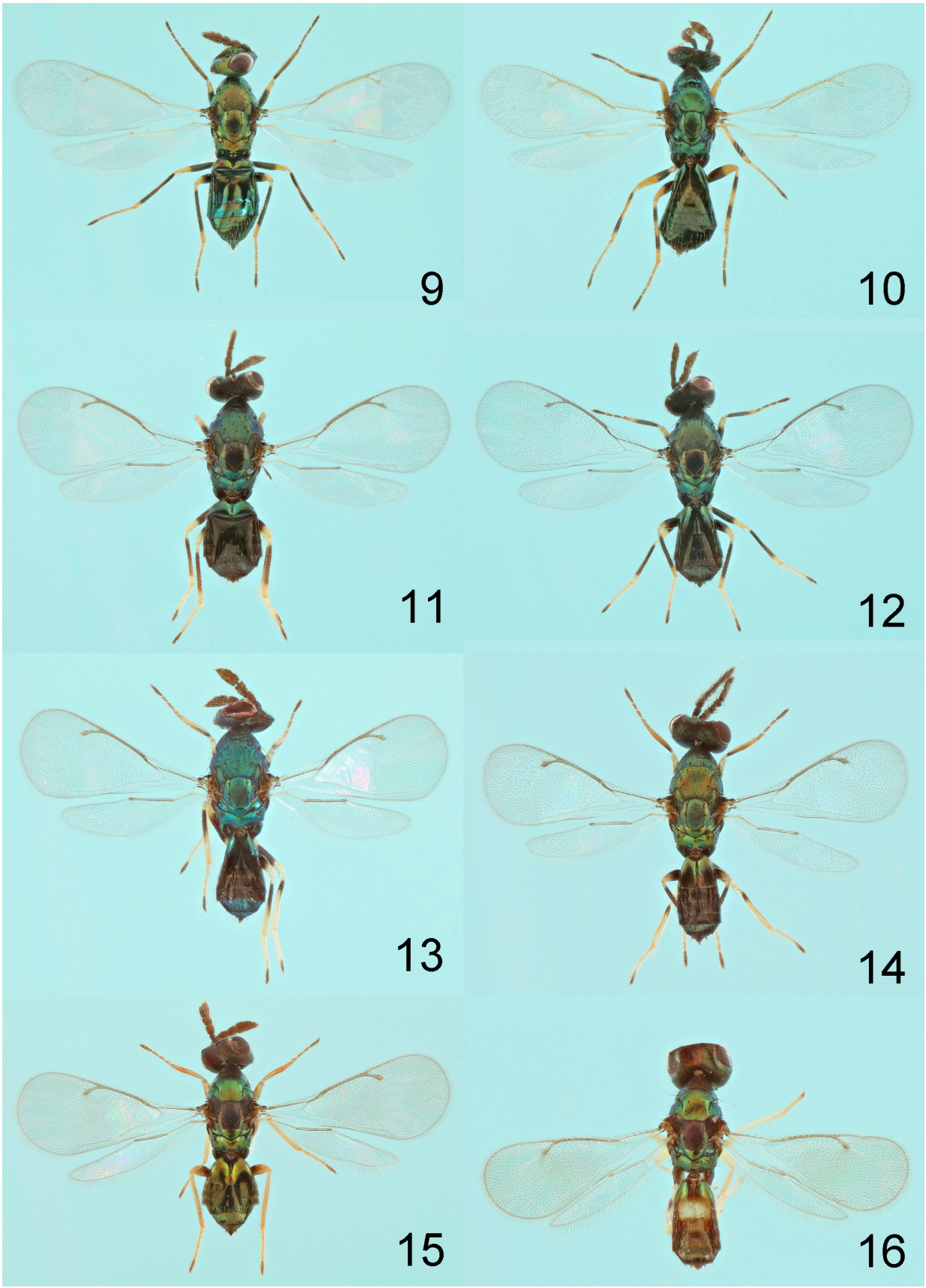
Distribution. Austria (Ruschka 1912), Italy (Fulmek 1962).

Remarks. The type material of this species has not been possible to locate. Franz Ruschkas' collection is currently in Agentur Gesundheit Ernährungssicherheit (AGES) in Vienna, Austria, although several type specimens from his collection have been deposited in the Natural History Museum in Vienna (NHMW). However, according to Andreas Kahrer at AGES the type material of *S. phytomyzae* cannot be found at AGES, and the material has not been deposited in NHMW (Dominique Zimmermann in letter). Therefore we will try to interpret the species from the original description, which is fairly detailed regarding the colour.

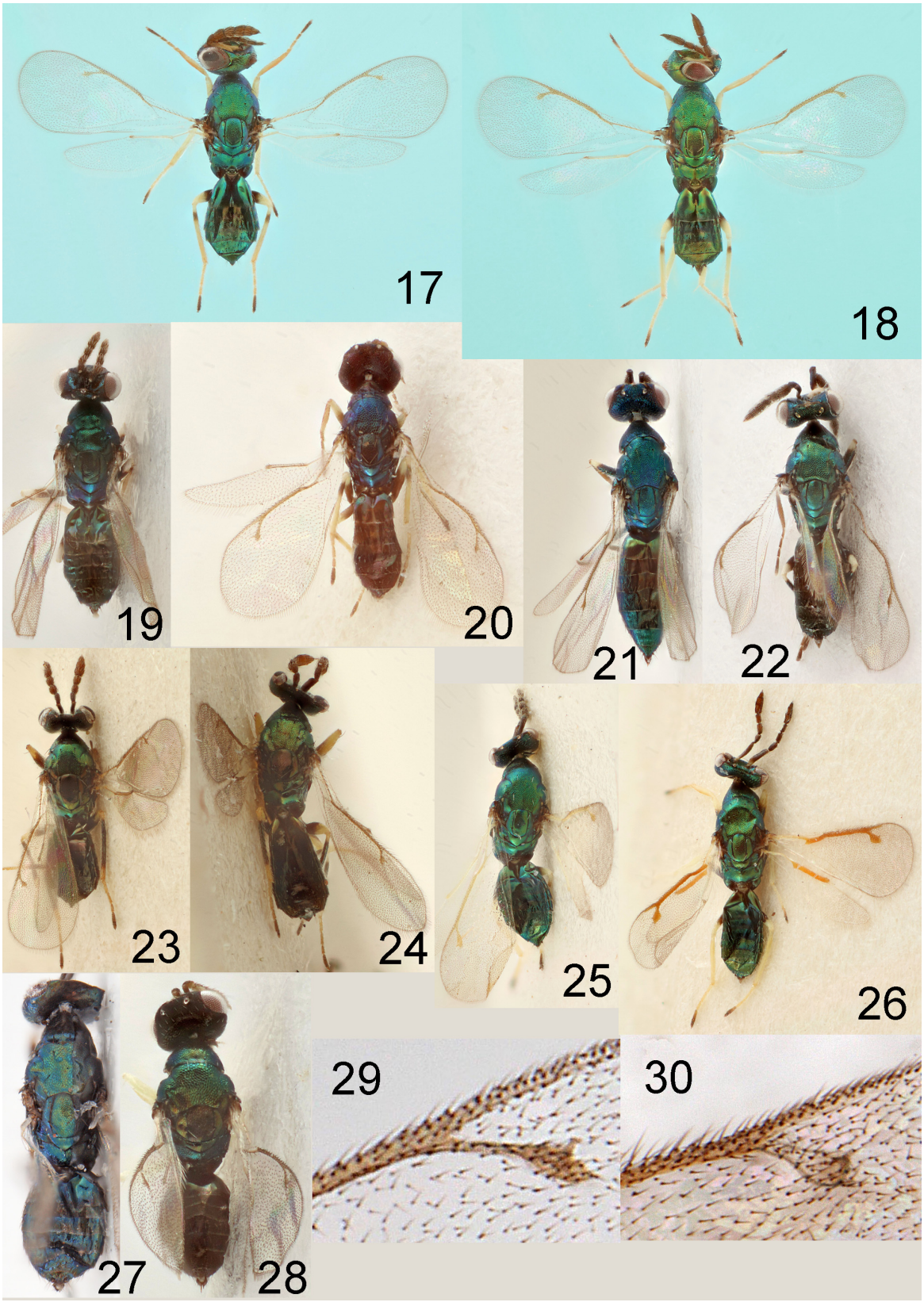
The description of the female strongly indicates a similarity with *D. minoeus,* as was also noted by Bouček (1974). However, the description of the male, or rather of large male specimens, does not agree with males of *D. minoeus* - at least not in the material we have seen. According to the description large males have pale tibiae with a pale brown ring close to the base of fore tibia, whereas males of *D. minoeus* have all tibiae dark and metallic with apical ⅕–¼ white (as in Fig. 38). According to the description of *D. phytomyzae* small males have all tibiae dark and metallic with apical ⅕–¼ white, as in males of *D. minoeus*. Either there are two different species of males, one of which might be *D. minoeus* and the other possibly *D. begini*, or this is a distinct species not possible to diagnose from the description. Because of this uncertainty we refrain from take any formal action regarding this species.



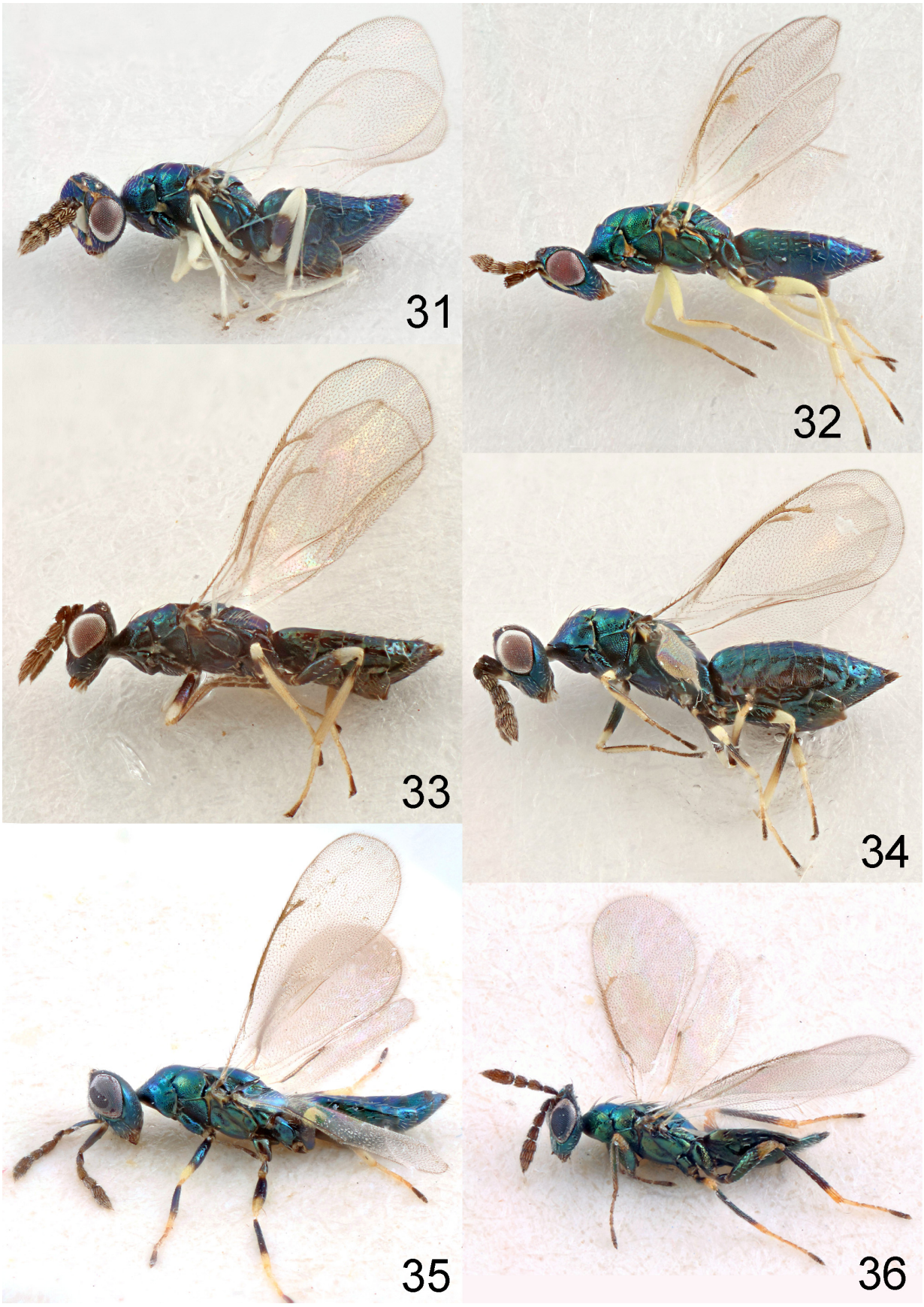
FIGURES 1–8. *Diglyphus* spp., length of body, habitus in dorsal view: 1, *D. albiscapus* Erdös female, 1.5 mm; 2, *D. albiscapus* male, 1.5 mm; 3, *D. anadolucus* Doganlar female, 2.0 mm; 4, *D. anadolucus* male, 1.7 mm; 5, *D. clematidis* **sp. nov**. female holotype, 1.3 mm; 6, *D. clematidis* male paratype, 1.2 mm; 7, *D. crassinervis* Erdös female, 1.5 mm; 8, *D. crassinervis* male, 1.8 mm.



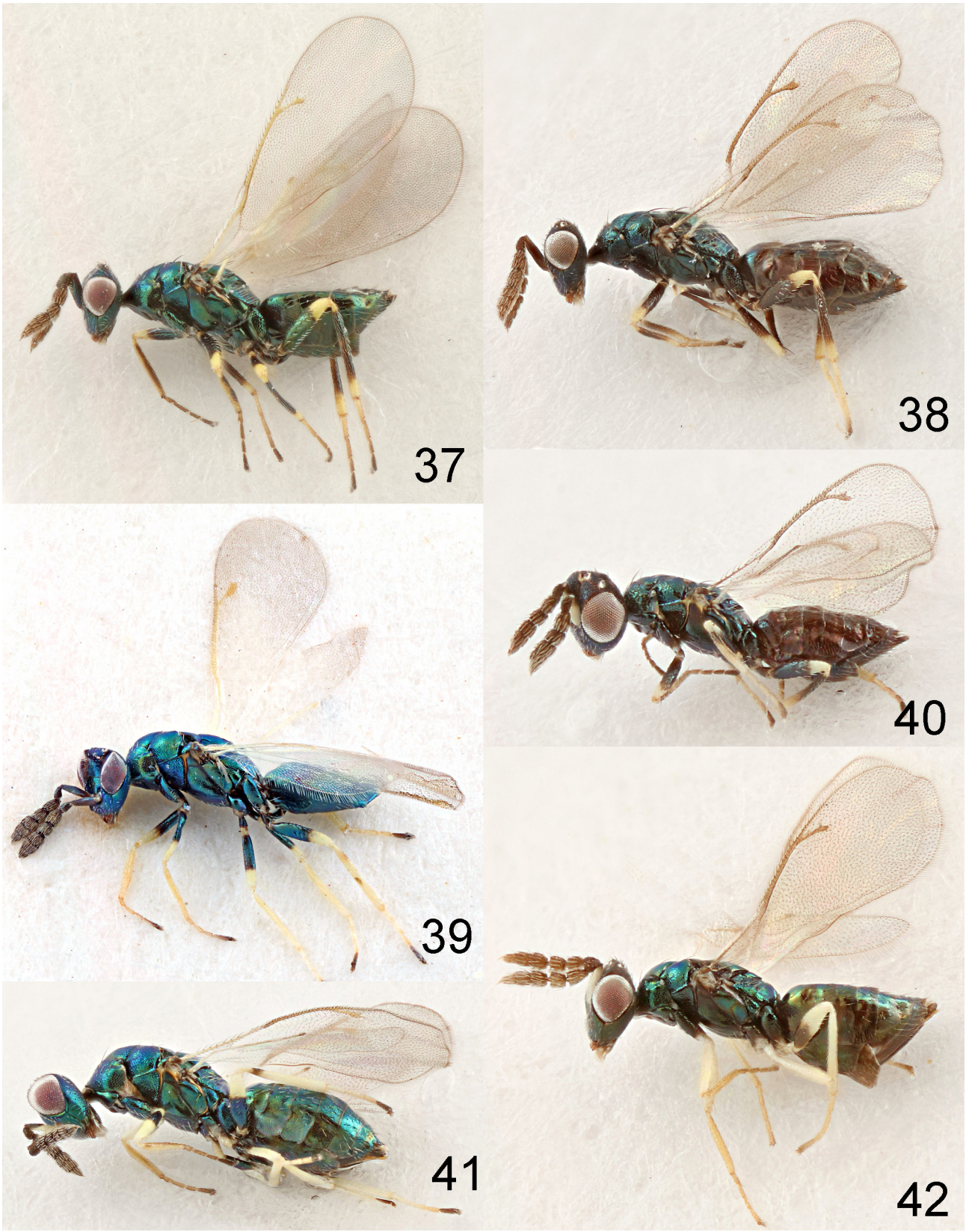
FIGURES 9–16. *Diglyphus* spp., length of body, habitus in dorsal view: 9, *D. isaea* (Walker) female, 1.7 mm; 10, *D. isaea* male, 1.3 mm; 11, *D. minoeus* (Walker) female, 1.7 mm; 12, *D. minoeus* male, 1.7 mm; 13, *D. poppoea* Walker female, 1.4 mm; 14, *D. poppoea* male, 1.3 mm; 15, *D. pusztensis* (Erdös & Novicky) female, 1.4 mm; 16, *D. pusztensis* male, 1.2 mm.



FIGURES 17–30. 17–28, *Diglyphus* spp., length of body, habitus in dorsal view: 17, *D. sabulosus* Erdös female, 1.6 mm; 18, *D. sabulosus* male, 1.5 mm; 19, *D. begini* (Ashmead) female, 1.7 mm; 20, *D. begini* male, 1.1 mm; 21, *D. chabrias* (Walker) female, 2.1 mm; 22, *D. chabrias* male, 1.6 mm; 23, *D. eleanorae* Graham female, 1.6 mm; 24, *D. eleanorae* male, 1.5 mm; 25, *D. pachyneurus* Graham female, 1.9 mm; 26, *D. pachyneurus* male, 1.6 mm; 27, *D. propodealis* Szelényi female holotype, 1.5 mm; 28, *D. subplanus* (Erdös) female, 1.3 mm. 29 & 30. Stigmal vein: 29, *D. chabrias*; 30, *D. propodealis*.

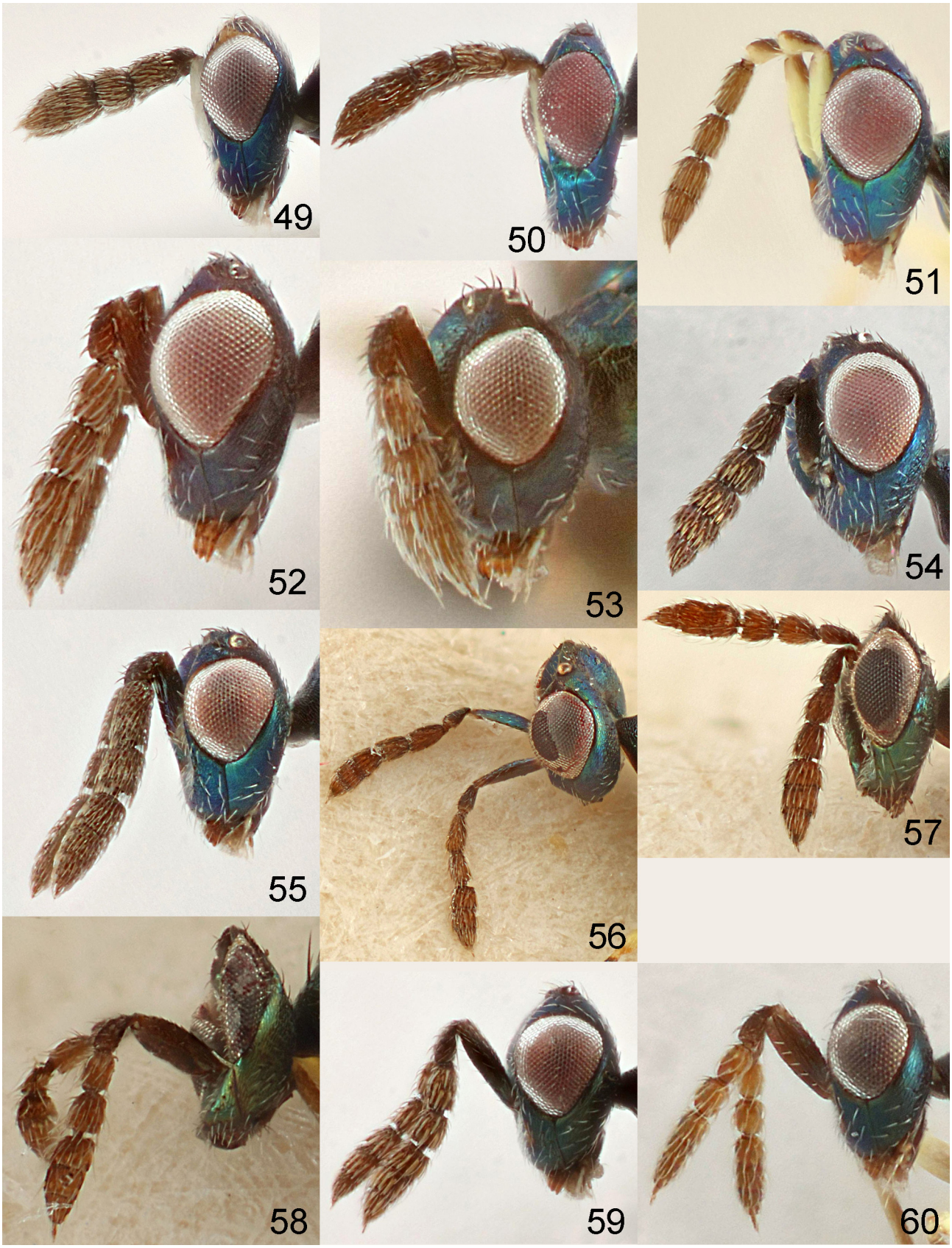


FIGURES 31–36. *Diglyphus* spp., length of body, female habitus in lateral view: 31, *D. albiscapus* Erdös, 1.5 mm; 32, *D. anadolucus* Doganlar, 1.7 mm; 33, *D. begini* (Ashmead), 1.7 mm; 34, *D. chabrias* (Walker), 2.0 mm; 35, *D. crassinervis* Erdös, 2.0 mm; 36, *D. eleanorae* Graham, 1.6 mm.

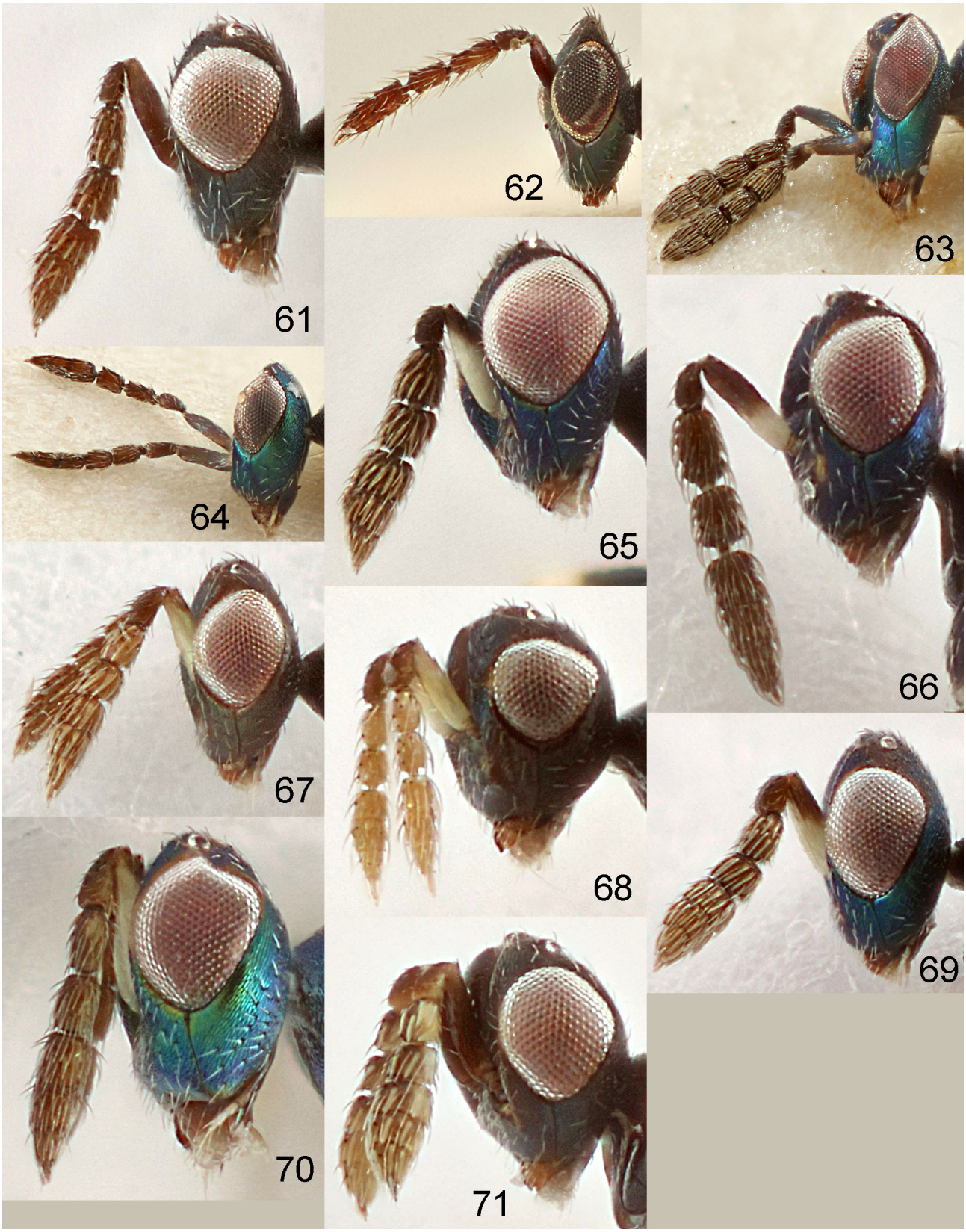


FIGURES 37–42. *Diglyphus* spp., length of body, female habitus in lateral view: 37, *D. isaea* (Walker), 1.7 mm; 38, *D. minoeus* (Walker), 1.8 mm; 39, *D. pachyneurus* Graham, 1.9 mm; 40, *D. poppoea* Walker, 1.2 mm; 41, *D. sabulosus* Erdös, 1.7 mm; 42, *D. pusztensis* (Erdös & Novicky), 1.4 mm.

FIGURES 43–48. 43–44, *Diglyphus* spp., length of body, female habitus in lateral view: 43, *D. propodealis* Szelényi holotype, 1.5 mm; 44, *D. subplanus* (Erdös), 1.3 mm. 45–48. *Diglyphus scapus* Yefremova: 45, female holotype, dorsal view; 46, male paratype 1, dorsal view; 47, male paratype 2, dorsal view; 48, female holotype, lateral view.



FIGURES 49–60. *Diglyphus* spp., head & antenna in lateral view: 49, *D. albiscapus* Erdös female; 50, *D. anadolucus* Doganlar female; 51, *D. anadolucus* male; 52, *D. begini* (Ashmead) female; 53, *D. begini* male; 54, *D. chabrias* (Walker) female; 55, *D. chabrias* male; 56, *D. crassinervis* Erdös female; 57, *D. eleanorae* Graham female; 58, *D. eleanorae* male; 59, *D. isaea* (Walker) female; 60, *D. isaea* male.



FIGURES 61–71. *Diglyphus* spp., head & antenna in lateral view: 61, *D. minoeus* (Walker) female; 62, *D. minoeus* male; 63, *D. pachyneurus* Graham female; 64, *D. pachyneurus* male; 65, *D. poppoea* Walker female; 66, *D. poppoea* male; 67, *D. pusztensis* (Erdös & Novicky) female; 68, *D. pusztensis* male; 69, *D. sabulosus* Erdös female; 70, *D. sabulosus* male; 71, *D. subplanus* (Erdös) female.

FIGURES 72–77. 72–73, *Diglyphus* spp., right fore wing, females: 72, *D. chabrias* (Walker); 73, *D. isaea* (Walker). 74–77, *Diglyphus* spp., right wing-pair, males: 74, *D. anadolucus* Doganlar; 75, *D. crassinervis* Erdös; 76, *D. pachyneurus* Graham; 77, *D. clematidis* **sp. nov**.

Non-European species of *Diglyphus* described from the vicinities of Europe

Diglyphus scapus Yefremova

Figs 45–48

Diglyphus scapus Yefremova *in* Hesami *et al*., 2008, holotype female in ZISP, examined.

Diagnosis. Female scape white with apical ⅓ dark brown (Fig. 48), male antenna yellowish-white with scape strongly swollen (Fig. 47), 1.5× as long as wide; legs (Fig. 48): fore femur with basal ½ dark brown and apical ½ white, mid femur predominantly dark brown with very apex white, hind femur with basal ⅔ dark brown and apical ⅓ white; fore tibia white, mid tibia with basal ½ dark brown and apical ½ white, hind tibia white with a dark brown ring close to base; fore wing speculum bare; submedian grooves on scutellum pale (Figs 45–47).

Material. Iran: female holotype and two male paratypes of *D. scapus* (ZISP).

Distribution. Iran (Hesami *et al.* 2006).

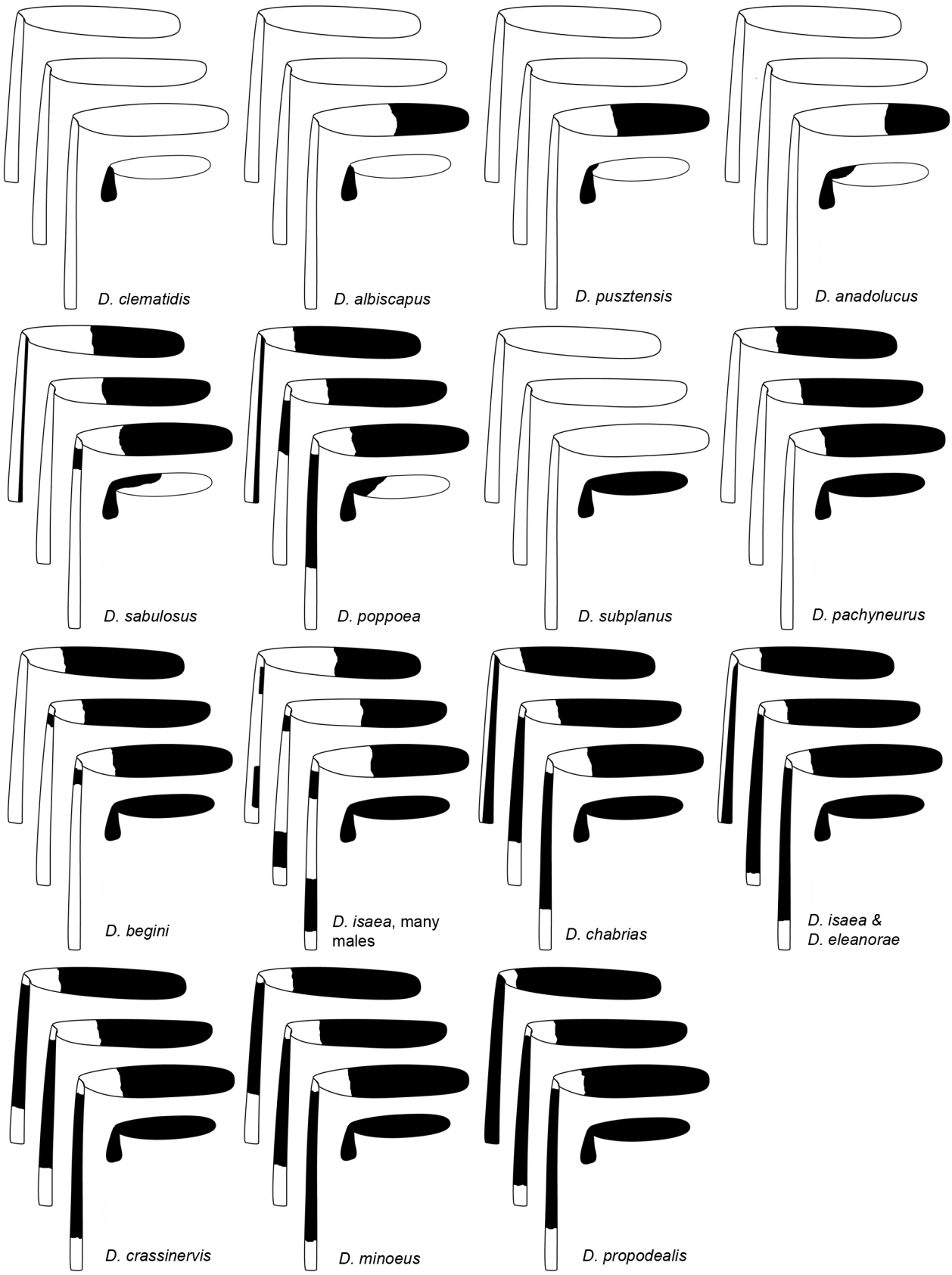


FIGURE 78. *Diglyphus* spp., schematic drawings of femora+tibiae from top to bottom: fore, mid and hind leg; scape+pedicel. Species are arranged according to colour of the scape, from pale to dark, and then according to colour of the legs, also from pale to dark.

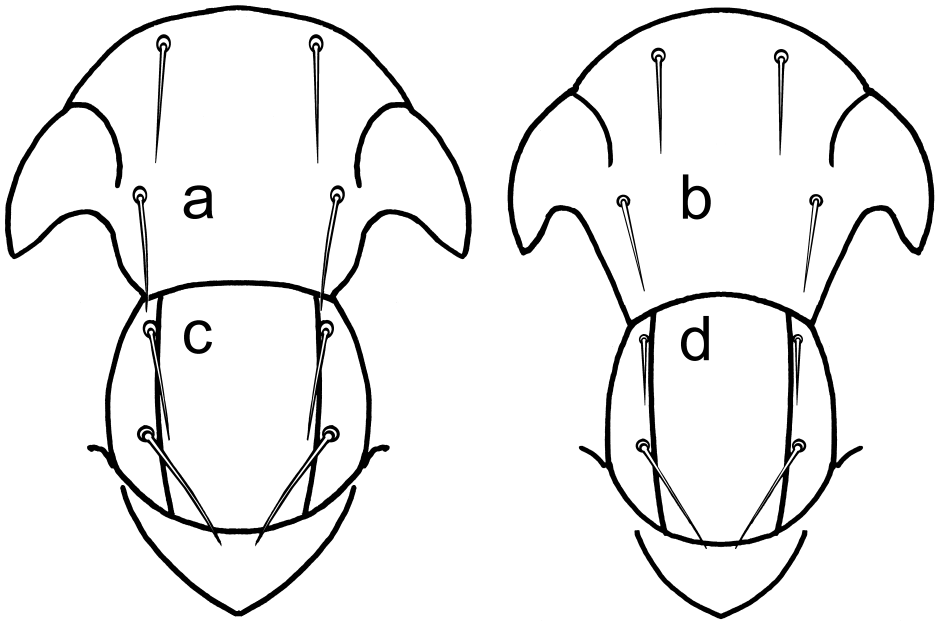


FIGURE 79. *Diglyphus* spp., schematic drawings of the length of the main dorsal setae on thoracic dorsum: *D. minoeus* (Walker), posterior setae on mesoscutum (a) and anterior setae on scutellum (c); *D. crassinervis* Erdös, posterior setae on mesoscutum (b) and anterior setae on scutellum (d).

Remarks. The type material of *D. scapus* is in poor condition (Figs 45–48) and appears morphologically heterogeneous as compared to other species of *Diglyphus*. The two paratype males differ considerably in the colour of the head. In one specimen the head is dark and metallic (Fig. 46) but in the other male it is completely pale non-metallic (Fig. 47). The dark-headed male lacks the antennae (probably lost after the description as they are included in the description, or on slide but slide not found), whereas the pale-headed male has both antennae intact, albeit in poor condition. It is possible that the dark-headed male and the holotype female are conspecific, and the pale-headed male is a different species. However, without additional material in better condition, biological and/or molecular data, this is impossible to establish.

Contrary to what is written in the original description of the holotype female of *D. scapus* the flagellomeres are not yellow, they are pale brown (Fig. 48) and as the specimen appears slightly bleached they may have been dark brown originally.

Diglyphus sensilis Yefremova

Diglyphus sensilis Yefremova, *in* Yefremova *et al*., 2011: 277–279, holotype female in University of Mugla, Turkey, not seen.

Distribution. Turkey (Yefremova *et al*. 2011).

Remarks. We have not been able to examine any type material of *D. sensilis*. According to the description it is close to *D. isaea*, and the setation of the fore wing with a densely hairy speculum supports this statement. It is also compared to *D. isaea* in other characters, but some of these characters allegedly present in *D. isaea* do not agree with type material of *D. isaea,* or with the additional material of this species we have examined. Specimens of *D. isaea* have width of mouth 1.0–1.2× malar space, not 2.0× as stated in Yefremova *et al.* (2011); antennal clava 2.6–2.8× (excl. antennal spicule) as long as second funicular, not 2× as stated in Yefremova *et al.* (2011); the propodeum may or may not have a weak median carina. Remaining diagnostic characters for *D. sensilis*, as compared to *D. isaea*, are the ratio of the distance between posterior ocelli (POL) and the distance between one lateral ocellus and eye (OOL), and the colour of the tibiae in females. In *D. sensilis* POL/OOL = 2.3, but the value of this ratio depends on whether the head is collapsed or not and the state of the head(s) measured is not mentioned by Yefremova *et al.* (2011), the ratio for *D. isaea*, from non-collapsed heads, is 1.4–1.5. In females of *D. sensilis* the tibiae have two dark bands, as in many males of *D. isaea* (Fig. 78), females of *D. isaea* have tibiae predominantly dark with apical ⅕–¼ white.

TABLE 1. *Diglyphus* species—Agromyzidae and Gracillariidae hosts; "*" indicates a new host record, based on our material.

D. albiscapus	*Agromyza albipennis* (Kamijo 1978), *A. nigrella* (*), *A. oryzae* (Kamijo 1978), *Agromyza* ?*phragmitidis* (*), *Agromyza* sp. (*), *Chromatomyia horticola* (Kamijo 1978), *Liriomyza trifolii* (Nishino & Uchida 1999), *Paraphytomyza populi* (Georgiev & Boyadzhiev 2002), *Phytomyza paniculatae* (Kamijo 1978)
D. anadolucus	*Agromyza abiens* (*)
D. begini	*Agromyza alnivora* (*), *A. frontella* (Hutchinson *et al.*1997), *A. parvicornis* (Thompson 1955), *A. rufipes* (Hansson 1987), *Metopomyza scutellata* (Peck 1963), *Aulagromyza populicola* (Gordh & Hendrickson 1979), *Calycomyza platyptera* (Gratton & Welter 2001), *Chromatomyia fuscula* (Hågvar *et al.* 1998), *C. horticola* (*), *Liriomyza helianthi* (Gratton & Welter 2001), *L. huidobrensis* (Saray *et al.* 1988), *L. pictella* (Jensen & Koehler 1970), *L. pusilla* (Peck 1963), *L. sativae* (McClanahan 1975), *L. strigata* (*), *L. trifolii* (Heinz *et al.*1988), *Paraphytomyza hendeliana* (*), *Pa. populicola* (*), *Phytoliriomyza melampyga* (*), *Ph. variegata* (*), *Phytomyza albiceps* (Peck 1963), *P. aquilegiae* (Peck 1963), *P. chaerophylli* (*), *P. cytisi* (*),-*P. lanati* (Tauber & Tauber 1968), *P. marginella* (*), *P. minuscula* (Thompson 1955), *P. periclymeni* (*), *P. pubicornis* (*), *P. ranunculi* (*), *P. sii* (*), *P. solidaginis* (*), *P. syngenesiae* (Gates *et al.* 2002), *P. tussilaginis* (*)
D. chabrias	*Chromatomyia fuscula* (Hågvar *et al*. 1998), *C. horticola* (Yefremova *et al*. 2011), *Liriomyza sativae* (Yefremova *et al.* 2011)
D. clematidis	*Phytomyza vitalbae* (*)
D. crassinervis	*Agromyza frontella* (*), *A. nana* (*), *Cerodontha inconspicua* (*), *Chromatomyia gentianae* (*), *C. horticola* (Rizzo & Massa 2002), *Liriomyza huidobrensis* (Godinho & Mexia 2000), *L. sativae* (Yefremova *et al.* 2011), *L. trifolii* (Godinho & Mexia 2000), *Liriomyza* sp. (*), *Ophiomyia beckeri* (*), *Ophiomyia* sp. (*), *Paraphytomyza populi* (Georgiev & Boyadzhiev 2002), *P. ranunculi* (Burgio *et al*. 2007), *P. vitalbae* (*), *Phytomyza* sp. (Bouček & Askew 1968)
D. isaea	*Agromyza albipennis* (Kamijo 1978), *A. albitarsis* (Çikman & La Salle 2011), *A. frontella* (Drea *et al.* 1982), *A. hiemalis* (Massa & Rizzo 2000), *A. nana* (Bouček & Askew 1968), *A. nigrescens* (*), *A. oryzae* (Kamijo 1978), *Calycomyza humeralis* (Bouček & Askew 1968), *Chromatomyia fuscula* (Hågvar *et al*. 1998), *C. horticola* (Del Bene 1989), *Dizygomyza crucifericola* (Fulmek 1962), *D. lateralis* (Goureau 1851), *Liriomyza bryoniae* (Boot *et al.* 1992), *L. cicerina* (Wiegand 1990), *L. congesta* (Minkenberg 1990), *L. fasciola* (Bouček & Askew 1968), *L. huidobrensis* (Çikman & La Salle 2011), *L. impatientis* (Vidal 1993), *L. pusilla* (Sha *et al.* 2007), *L. pusio* (Bouček & Askew 1968), *L. sativae* (Bouček 1988), *L. strigata* (Çikman & La Salle 2011), *L. trifolii* (Bouček & Askew 1968), *Liriomyza* spp. (*), *Paraphytomyza populi* (Georgiev & Boyadzhiev 2002), *Phytagromyza dianthicola* (Ciampolini 1949), *Phytoliriomyza variegata* (*), *Phytomyza angelicae* (Fulmek 1962), *P. atricornis* auctt. (Voukassovitch 1928), *P. bipunctata* (Fulmek 1962), *P. chaerophylli* (Herting 1978), *P. cytisi* (Bouček & Askew 1968), *P. lappae* (Jansson 1952), *P. melana* (Herting 1978), *P. minuscula* (Hansson 1987), *P. mylini* (Bouček & Askew 1968), *P. orobanchia* (C.I.L.B. 1963), *P. petoei* (Çikman & La Salle 2011), *P. plantaginis* (Jansson 1952), *P.* ?*pubicornis* (*), *P. ranunculi* (Kamijo 1978), *P. solidaginis* (Hansson 1987), *P. spondylii* (Hansson 1987), *P. syngenesiae* (*), *P. tetrasticha* (Çikman & La Salle 2011), *P. vitalbae* (Bouček & Askew 1968), *Phyllocnistis citrella* (González Tirado *et al.* 1996)
D. minoeus	*Agromyza demeijeri* (Hansson 1987), *Aulagromyza tridentata* (Askew & Shaw 1974), *Calycomyza artemisiae* (Hansson 1987), *Chromatomyia fuscula* (Hågvar *et al.* 1998), *C. horticola* (Rizzo & Massa 2002), *C. lonicerae* (Bouček & Askew 1968), *Liriomyza huidobrensis* (Stolz & Bluemel 1998), *L. sativae* (Yefremova *et al*. 2011), *L. strigata* (Rizzo & Massa 2002), *Liriomyza* sp. (*), *Paraphytomyza hendeliana* (Hansson 1987), *Pa. populi* (Celli 1964), *Phytoliriomyza melampyga* (*), *Phytomyza atricornis* auctt. (Bouček & Askew 1968), *P. cytisi* (Bouček & Askew 1968), *P. jucunda* (Kamijo 1978), *P. lappae* (*), *P. lonicerella* (Viggiani 1962), *P. milii* (Hansson 1987), *P.* ?*pubicornis* (*), *P. ranunculi* (Kamijo 1978), *P. suikazurae* (Kato 1996), *P. syngenesiae* (*), *P. vitalbae* (Bouček & Askew 1968)
D. pachyneurus	*Chromatomyia horticola* (Çikman & La Salle 2011), *Japanagromyza salicifolii* (Bouček & Askew 1968 - as *Agromyza*), *Liriomyza trifolii* (Çikman & La Salle 2011)
D. poppoea	*Agromyza frontella* (*), *Chromatomyia fuscula* (Vidal 1993), *C. horticola* (Rizzo & Massa 2002), *Liriomyza bryoniae* (Vidal 1997), *L. huidobrensis* (Godinho & Mexia 1996), *L. trifolii* (Godinho & Mexia 2000), *Liriomyza* spp. (*), *Phytomyza atricornis* auctt. (Bouček & Askew 1968), *P. conyzae* (*), *P. syngenesiae* (Askew *et al.* 2001), *P* ?*tetrasticha* (*), *P. vitalbae* (Vidal 1997)
D. pusztensis	*Agromyza albipennis* (Kamijo 1978), *Cerodontha incisa* (*), *Chromatomyia horticola* (Kamijo 1978), *Liriomyza trifolii* (Nishino & Uchida 1999), *Phytomyza ranunculi* (Kamijo 1978), *P. spinaciae* (*), *P. syngenesiae* (Burgio *et al.* 2007)
D. sabulosus	*Agromyza luteitarsis* (*), *A. nigrella* (*), *A. ?phragmitidis* (*), *A. rondensis* (*), *Agromyza* sp. (*), *Liriomyza* sp. (Herting 1978)
D. subplanus	*Paraphytomyza populi* (Celli 1964)

TABLE 2. Agromyzidae and Gracillariidae hosts—*Diglyphus* species; "*" indicates a new host record, based on our material.

Agromyza abiens Zetterstedt, 1848	*D. anadolucus* (*)
Agromyza albipennis Meigen, 1830	*D. albiscapus* (Kamijo 1978), *D. isaea* (Kamijo 1978), *D. pusztensis* (Kamijo 1978)
Agromyza albitarsis Meigen, 1830	*D. isaea* (Çikman & La Salle 2011)
Agromyza alnivora Spencer, 1969	*D. begini* (*)
Agromyza demeijeri Hendel, 1920	*D. minoeus* (Hansson 1987)
Agromyza frontella (Rondani, 1875)	*D. begini* (Hutchinson *et al.*1997), *D. crassinervis* (*), *D. isaea* (Drea *et al.* 1982), *D. poppoea* (*)
Agromyza hiemalis Becker, 1908	*D. isaea* (Massa & Rizzo 2000)
Agromyza luteitarsis (Rondani, 1875)	*D. sabulosus* (*)
Agromyza nana Meigen, 1830	*D. isaea* (Bouček&Askew 1968), *D. crassinervis* (*)
Agromyza nigrella (Rondani, 1875)	*D. albiscapus* (*), *D. sabulosus* (*),
Agromyza nigrescens Hendel, 1920	*D. isaea* (*)
Agromyza oryzae Munakata, 1910	*D. albiscapus* (Kamijo 1978), *D. isaea* (Kamijo 1978)
Agromyza parvicornis Loew, 1869	*D. begini* (Thompson 1955)
Agromyza ?phragmitidis Hendel, 1922	*D. albiscapus* (*), *D. sabulosus* (*)
Agromyza rondensis Strobl, 1900	*D. sabulosus* (*)
Agromyza rufipes Meigen, 1830	*D. begini* (Hansson 1987)
Agromyza sp.	*D. albiscapus* (*), *D. sabulosus* (*)
Aulagromyza tridentata (Loew, 1858)	*D. minoeus* (Askew & Shaw 1974)
Metopomyza scutellata (Fallén, 1823)	*D. begini* (Peck 1963)
Aulagromyza populicola (Haliday, 1853)	*D. begini* (Gordh & Hendrickson 1979)
Calycomyza artemisiae (Kaltenbach, 1856)	*D. minoeus* (Hansson 1987)
Calycomyza humeralis (von Roser, 1840)	*D. isaea* (Bouček & Askew 1968)
Calycomyza platyptera (Thomson, 1869)	*D. begini* (Gratton & Welter 2001)
Cerodontha inconspicua (Malloch, 1913)	*D. crassinervis* (*)
Cerodontha incisa (Meigen, 1830)	*D. pusztensis* (*)
Chromatomyia fuscula (Zetterstedt, 1838)	*D. begini* (Hågvar *et al.* 1998), *D. chabrias* (Hågvar *et al.* 1998), *D. isaea* (Hågvar *et al.* 1998), *D. minoeus* (Hågvar *et al.* 1998), *D. poppoea* (Vidal 1993)
Chromatomyia gentianae (Hendel, 1920)	*D. crassinervis* (*)
Chromatomyia horticola Goureau, 1851	*D. albiscapus* (Kamijo 1978), *D. begini* (*), *D.chabrias* (Yefremova *et al.* 2011), *D. crassinervis* (Rizzo & Massa 2002), *D. isaea* (Del Bene 1989), *D. minoeus* (Rizzo & Massa 2002), *D. pachyneurus* (Çikman & La Salle 2011), *D. poppoea* (Rizzo & Massa 2002), *D. pusztensis* (Kamijo 1978)
Chromatomyia lonicerae (Robineau-Desvoidy, 1851)	*D. minoeus* (Bouček&Askew 1968)
Dizygomyza crucifericola Hering, 1951	*D. isaea* (Fulmek 1962)
Dizygomyza lateralis Macquart, 1936	*D. isaea* (Goureau 1851)

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TABLE 2. (Continued)

Japanagromyza salicifolii (Collin, 1911)	*D. pachyneurus* (Bouček&Askew 1968, as Agromyza)
Liriomyza bryoniae (Kaltenbach,1858)	*D. isaea* (Boot *et al.* 1992), *D. poppoea* (Vidal 1997)
Liriomyza cicerina (Rondani, 1875)	*D. isaea* (Wiegand 1990)
Liriomyza congesta (Becker,1903)	*D. isaea* (Minkenberg 1990)
Liriomyza fasciola (Meigen,1838)	*D. isaea* (Bouček&Askew 1968)
Liriomyza helianthi Spencer,1981	*D. begini* (Gratton & Welter 2001)
Liriomyza huidobrensis Blanchard, 1926	*D. begini* (Saray *et al.* 1988), *D. crassinervis* (Godinho & Mexia 2000), *D. isaea* (Çikman & La Salle 2011), *D. minoeus* (Stolz & Bluemel 1998), *D. poppoea* (Godinho & Mexia 1996)
Liriomyza impatientis Brischke, 1881	*D. isaea* (Vidal 1993), *D. minoeus* (*)
Liriomyza pictella (Thomson,1869)	*D. begini* (Jensen & Koehler 1970)
Liriomyza pusilla (Meigen, 1830)	*D. begini* (Peck 1963), *D. isaea* (Sha *et al.* 2007)
Liriomyza pusio (Meigen,1830)	*D. isaea* (Bouček & Askew 1968)
Liriomyza sativae Blanchard, 1938	*D. begini* (McClanahan 1975, *D. chabrias* (Yefremova *et al.* 2011), *D. crassinervis* (Yefremova *et al.* 2011), *D. isaea* (Bouček 1988), *D. minoeus* (Yefremova *et al.* 2011)
Liriomyza strigata (Meigen, 1830)	*D. isaea* (Çikman & La Salle 2011), *D. minoeus* (Rizzo & Massa 2002), *D. begini* (*)
Liriomyza trifolii (Burgess, 1880)	*D. albiscapus* (Nishino & Uchida 1999), *D. begini* (Heinz *et al.*1988), *D. crassinervis* (Godinho & Mexia 2000), *D. isaea* (Bouček&Askew 1968), *D. pachyneurus* (Çikman & La Salle 2011), *D. poppoea* (Godinho & Mexia 2000), *D. pusztensis* (Nishino & Uchida 1999)
Liriomyza spp.	*D. crassinervis* (*), *D. isaea* (*), *D. minoeus* (*), *D. sabulosus* (Herting 1978), *D. crassinervis* (*), *D. poppoea* (*)
Ophiomyia beckeri (Hendel, 1923)	*D. crassinervis* (*)
Ophiomyia sp.	*D. crassinervis* (*)
Paraphytomyza hendeliana (Hering, 1926)	*D. begini* (*), *D. minoeus* (Hansson 1987)
Paraphytomyza populi (Kaltenbach, 1856)	*D. albiscapus* (Georgiev & Boyadzhiev 2002), *D. crassinervis* (Georgiev & Boyadzhiev 2002), *D. isaea* (Georgiev & Boyadzhiev 2002), *D. minoeus* (Celli 1964), *D. subplanus* (Celli 1964)
Paraphytomyza populicola (Haliday, 1853)	*D. begini* (*)
Phytagromyza dianthicola (Venturi, 1949)	*D. isaea* (Ciampolini 1949)
Phytoliriomyza melampyga (Loew, 1869)	*D. begini* (*), *D. minoeus* (*)
Phytoliriomyza variegata (Meigen, 1830)	*D. begini* (*), *D. isaea* (*)
Phytomyza albiceps Meigen, 1830	*D. begini* (Peck 1963)
Phytomyza angelicae Kaltenbach, 1872	*D. isaea* (Fulmek 1962)
Phytomyza aquilegiae Hardy, 1849	*D. begini* (Peck 1963)
Phytomyza atricornis auctt.	*D. isaea* (Voukassovitch 1928), *D. minoeus* (Bouček&Askew 1968), *D. poppoea* (Bouček&Askew 1968)
Phytomyza bipunctata Loew, 1858	*D. isaea* (Fulmek 1962)
Phytomyza chaerophylli Kaltenbach, 1856	*D. isaea* (Herting 1978), *D. begini* (*)
Phytomyza conyzae Hendel, 1920	*D. poppoea* (*)
Phytomyza cytisi Brischke, 1880	*D. isaea* (Bouček&Askew 1968), *D. minoeus* (Bouček&Askew 1968), *D. begini* (*)

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TABLE 2. (Continued)

Phytomyza jucunda Frost & Sasakawa, 1954	*D. minoeus* (Kamijo 1978)
Phytomyza lanati Spencer, 1966	*D. begini* (Tauber & Tauber 1968)
Phytomyza lappae Goureau, 1851	*D. isaea* (Jansson 1952), *D. minoeus* (*)
Phytomyza lonicerae Robineau-Desvoidy, 1851	*D. minoeus* (Hansson 1987)
Phytomyza lonicerella Hendel, 1932	*D. minoeus* (Viggiani 1962)
Phytomyza marginella Fallen, 1823	*D. begini* (*)
Phytomyza melana Hendel, 1920	*D. isaea* (Herting 1978)
Phytomyza milii Kaltenbach, 1864	*D. minoeus* (Hansson 1987)
Phytomyza minuscula Goureau, 1851	*D. begini* (Thompson 1955), *D. isaea* (Hansson 1987)
Phytomyza mylini Hering, 1957	*D. isaea* (Bouček&Askew 1968)
Phytomyza orobanchia Kaltenbach, 1864	*D. isaea* (C.I.L.B. 1963)
Phytomyza paniculatae Sasakawa, 1953	*D. albiscapus* (Kamijo 1978)
Phytomyza periclymeni Hendel, 1922	*D. begini* (*)
Phytomyza petoei Hering, 1924	*D. isaea* (Çikman & La Salle 2011)
Phytomyza plantaginis Robineau-Desvoidy, 1851	*D. isaea* (Jansson 1952)
Phytomyza pubicornis Hendel, 1920	*D. begini* (*)
Phytomyza ?pubicornis Hendel, 1920	*D. isaea* (*), *D. minoeus* (*)
Phytomyza ranunculi (Schrank, 1803)	*D. begini* (*), *D. crassinervis* (Burgio *et al.* 2007), *D. isaea* (*), *D. minoeus* (Kamijo 1978), *D. pusztensis* (Kamijo 1978)
Phytomyza sii Hering, 1930	*D. begini* (*)
Phytomyza solidaginis Hendel, 1920	*D. begini* (*), *D. isaea* (Hansson 1987)
Phytomyza spinaciae Hendel, 1928	*D. pusztensis* (*)
Phytomyza spondylii Robineau-Desvoidy, 1851	*D. isaea* (Hansson 1987)
Phytomyza suikazurae (Sasakawa, 1993)	*D. minoeus* (Kato 1996)
Phytomyza syngenesiae Hardy, 1849	*D. begini* (Gates *et al.* 2002), *D. isaea* (Kamijo 1978), *D. poppoea* (Askew *et al.*2001), *D. pusztensis* (Burgio *et al.* 2007)
Phytomyza tetrasticha Hendel, 1927	*D. isaea* (Çikman & La Salle 2011)
Phytomyza ?tetrasticha Hendel, 1927	*D. poppoea* (*)
Phytomyza tussilaginis Hendel, 1925	*D. begini* (*)
Phytomyza vitalbae Kaltenbach, 1874	*D. clematidis* (*), *D. crassinervis* (*), *D. isaea* (Bouček&Askew 1968), *D. minoeus* (Bouček&Askew 1968), *D. poppoea* (Vidal 1997)
Phytomyza sp.	*D. crassinervis* (Bouček & Askew 1968), *D. poppoea* (*)
Phyllocnistis citrella Stainton, 1856	*D. isaea* (González Tirado *et al.* 1996)

TABLE 3. Agromyzidae and Gracillariidae hosts—*Diglyphus* species; details of specimens reared in Italy.

Diglyphus	♀	♂	**host insect and host plant**	**locality and collection date**
albiscapus	2		*Agromyza nigrella* (Rondani 1875) on *Triticum aestivum* L. (Poaceae)	Pralormo 4.VI.2006
	3		*Agromyza ?phragmitidis* Hendel 1922 on *Arundo donax* L. (Poaceae)	Cisano sul Neva 11.VII.2009
	12	7	*Agromyza* sp. on *Triticum aestivum* L. (Poaceae)	Castellazzo Bormida 8.VI.2010
anadolucus	12	28	*Agromyza abiens* Zetterstedt 1848 on *Echium vulgare* L. (Boraginaceae)	Montjovet 26.VI.2011
	20	17	*Agromyza abiens* Zetterstedt 1848 on *Anchusa officinalis* L. (Boraginaceae)	Mattie - loc. Gillo 27.XI.2011, 10.VIII.2012
crassinervis		1	*Agromyza frontella* (Rondani, 1875) on *Medicago sativa* L. (Fabaceae)	Villeneuve 29.VII.2001
		1	*Agromyza nana* Meigen, 1830 on *Trifolium* sp. (Fabaceae)	Usseaux – fraz. Laux 15.VIII.2006
	3	3	*Cerodontha* (*Poemyza*) *inconspicua* (Malloch, 1913) on *Holcus lanatus* L. (Poaceae)	Portacomaro 13.VIII.2005
		3	*Chromatomyia gentianae* (Hendel, 1920) on *Gentiana lutea* L. (Gentianaceae)	Caprauna - Pian dell'Arma 22.IX.2013
	50	34	*Liriomyza trifolii* (Burgess, 1880) on *Heliotropium europaeum* L. (Boraginaceae)	Gallipoli - Lido delle Conchiglie 23.VIII.2003
	1	7	*Liriomyza trifolii* (Burgess, 1880) on *Lycopersicon esculentum* Miller (Solanaceae)	Vittoria 23.X.2007 (Legit S. Quartarone)
	5	2	*Liriomyza* sp. on *Lycopersicon esculentum* Miller	Albenga 10.I.2018
	2		*Liriomyza* sp. on *Centranthus ruber* (L.) DC (Valerianaceae)	Cisano sul Neva – fraz. Consciente 02.IX.2016. Toirano 18.IX.2016
	1		*Ophiomyia beckeri* (Hendel, 1923) on *Sonchus* sp. (Asteraceae)	Venaria Reale 22.VII.2005
	1	1	*Ophiomyia* sp. on *Lactuca serriola* L. (Asteraceae)	Villar Dora 9.VIII.2005
	2	1	*Phytomyza ranunculi* (Schrank, 1803) on *Ranunculus velutinus* Tenore (Ranunculaceae)	San Giovanni in Persiceto 19.V.1998
		2	*Phytomyza vitalbae* Kaltenbach, 1874 on *Clematis vitalba* L.	Ceriale - fraz. Peagna 15.XI.2015
isaea	2	3	*Agromyzidae* gen. sp. on *Pisum sativum* L. (Fabaceae)	Valperga 15.V.1995
	5	6	*Agromyzidae* gen. sp. on *Arnica montana* L. (Asteraceae)	Sampèyre 13.VII.2001
	3		*Agromyza frontella* (Rondani, 1875) on *Medicago sativa* L.	Cigliano 8.V.2012
	3	1	*Agromyza nana* Meigen, 1830 on *Trifolium repens* L.	Albisola 1.I.2006
	2		*Agromyza nigrescens* Hendel, 1920 on *Geranium* sp. (Geraniaceae)	Baldissero T/se 11.IX.2006
	32	6	*Liriomyza congesta* (Becker, 1903) on *Medicago sativa* L.	Verolengo 11.V.2012

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TABLE 3. (Continued)

Diglyphus	♀	♂	**host insect and host plant**	**locality and collection date**
	1	5	*Liriomyza ?congesta* (Becker, 1903) on *Medicago lupulina* L.	Torino 3.VI.2016
	11	8	*Liriomyza trifolii* (Burgess, 1880) on *Heliotropium europaeum* L.	Gallipoli - Lido delle Conchiglie 23.VIII.2003
	3	5	*Phytomyza cytisi* Brischke, 1881 on *Laburnum alpinum* (Mill.) Bercht. & J. Presl (Fabaceae)	Sampèyre 13.VII.2001
	3		*Phytomyza horticola* Goureau 1851 on *Sonchus oleraceus* L. and *S. tenerrimus* L.	Albisola 1.I.2005
	33	28	*Phytomyza horticola* Goureau 1851 on *Sonchus arvensis* L.	Torino 1.V.2016
	4	3	*Phytomyza lappae* Goureau, 1851 on *Arctium lappa* L. (Asteraceae)	Valperga – fraz. Gallenca 12.VII.1995
		2	*Phytomyza ?pubicornis* Hendel, 1920 on *Aegopodium podagraria* L. (Apiaceae)	Valperga – fraz. Comunie 5.VI.1995
	3	12	*Phytomyza vitalbae* Kaltenbach, 1874 on *Clematis vitalba* L.	Calizzano 17.IX.2015. Vessalico 17.IX.2015. Borgomaro 20.IX.2015. Ceriale - fraz. Peagna 15.XI.2015
	4	2	*Phyllocnistis citrella* Stainton, 1856 on *Citrus limon* (L.) Osbeck (Rutaceae)	Valenzano 15.X.2004 (Legit L. De Marzo)
minoeus	1		*Agromyzidae* gen. sp. on *Aquilegia* sp. (Ranunculaceae)	Usseaux – fraz. Laux 27.VIII.2008
	2		*Agromyzidae* gen. sp. on *Artemisia vulgaris* L. (Asteraceae)	Usseaux – fraz. Laux 10.IX.2008
	1		*Agromyzidae* gen. sp. on *Pisum sativum* L.	Valperga 05.VI.1995
	2	1	*Agromyzidae* gen. sp. on *Sonchus* sp.	Ceriale – fraz. Peagna 02.IV.1995
	8		*Agromyza demeijerei* Hendel, 1920 on *Laburnum alpinum* (Mill.) Bercht. & J. Presl	Sampèire 26.VII.2009, 13.VII.2001
	1	1	*Liriomyza* sp. on *Centranthus ruber* (L.) DC	Toirano 18.IX.2016
	1		*Phytoliriomyza melampyga* (Loew, 1869) on *Impatiens parviflora* De Candolle (Balsaminaceae)	Angrogna - loc. Sonagliette 27.VII.2008
	1		*Phytomyza horticola* Goureau 1851 on *Sonchus oleraceus* L.	Albisola 01.I.2005
	41	38	*Phytomyza lappae* Goureau, 1851 on *Arctium lappa* L.	Valperga – fraz. Gallenca 12.VII.1995
	3	4	*Phytomyza ?pubicornis* Hendel, 1920 on *Aegopodium podagraria* L.	Valperga – fraz. Comunie 5.VI.1995
	6	6	*Phytomyza syngenesiae* (Hardy, 1849) on *Sonchus tenerrimus* L.	Ceriale 27.IV.2003
	26	35	*Phytomyza vitalbae* Kaltenbach, 1874 on *Clematis vitalba* L.	Borgomaro 20.IX.2015. Calizzano 17.IX.2015. Ceriale - fraz. Peagna 2.IV.1995, 15.XI.2015. Cisano sul Neva - fraz. Consciente 2.IX.2016. Vessalico 17.IX.2015. Toirano 05.IX.1999, 19.IX.2016

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TABLE 3. (Continued)

Diglyphus	♀	♂	**host insect and host plant**	**locality and collection date**
poppoea		1	*Agromyzidae* gen. sp. on *Calicotome spinosa* (L.) Link (Fabaceae)	Albenga – loc. Campochiesa 24.IV.2006
		2	*Agromyzidae* gen. sp. on *Centranthus ruber* (L.) DC	Ceriale – fraz. Peagna 17.IX.2016. Toirano 18.IX.2016
	2		*Agromyzidae* gen. sp. on *Pisum sativum* L.	Valperga 5.VI.1995
		1	*Agromyzidae* gen. sp. on *Sonchus oleraceus* L.	San Giovanni in Persiceto 1.VII.1998
		1	*Agromyzidae* gen. sp. on *Trifolium* sp.	Ceriale – fraz. Peagna 17.IX.1995
	2	2	*Agromyza frontella* (Rondani, 1875) on *Medicago sativa* L.	Cigliano 16.IV.2012
	1	1	*Liriomyza* sp. on *Artemisia vulgaris* L.	San Giovanni in Persiceto 1.VII.1998. Venaria Reale 28.X.2006
		2	*Liriomyza* sp. on *Medicago sativa* L.	Chiusa Pesio 8.V.2005
	15	1	*Phytomyza conyzae* Kaltenbach, 1859 on *Dittrichia viscosa* (L.) Greuter (Asteraceae)	Ceriale 29.IV.2012
	2		*Phytomyza ?tetrasticha* Hendel, 1927 on *Mentha ?pulegium* L. (Lamiaceae)	Villar Dora bg. Torre del Colle 30.VI.2008
	7	7	*Phytomyza vitalbae* Kaltenbach, 1874 on *Clematis vitalba* L.	Vessalico 17.IX.2015. Borgomaro 20.IX.2015. Ceriale - fraz. Peagna 15.XI.2015, 17.IX.2016. Cisano sul Neva - fraz. Consciente 2.IX.2016. Toirano 5.IX.1999,19.IX.2016
pusztensis	1		*Agromyzidae* gen. sp. on *Helminthotheca echioides* (L.) Holub (Asteraceae)	Castel San Pietro 22.VII.1998
	3		*Cerodontha incisa* (Meigen, 1830) on *Phalaris arundinacea* L. (Poaceae)	Verolengo 15.VI.2012
	3		*Phytomyza spinaciae* Hendel, 1928 on *Cirsium arvense* (L.) Scopoli (Asteraceae)	Bussoleno 26.X.2005
	1	1	*Phytomyza syngenesiae* (Hardy, 1849) on *Cirsium arvense* (L.) Scopoli	Castel San Pietro 3.VI.1998
sabulosus		4	*Agromyza luteitarsis* (Rondani 1875) on *Triticum aestivum* L.	Quargnento 18.V.2007
		10	*Agromyza nigrella* Rondani 1875 on *Triticum aestivum* L.	Pralormo 4.VI.2006
		2	*Agromyza ?phragmitidis* Hendel, 1922 on *Arundo donax* L.	Cisano sul Neva 11.VII.2009
	7	9	*Agromyza* sp. on *Triticum aestivum* L.	Castellazzo Bormida 8.VI.2010

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