

Revision of the genus *Falcidius* Stål (Hemiptera: Fulgoroidea: Issidae)

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The genus *Falcidius* Stål, 1866 is revised and includes 10 species, distributed in Morocco, Algeria, Tunisia, Malta, Southern Italy (including Sicily), and Southern France. *Falcidius apterus* (Fabricius, 1794), *F. limbatus* (A. Costa, 1864), *F. doriae* (Ferrari, 1884), *F. chlorizans* (Rey, 1891), *F. marocanus* Bergevin, 1923, *F. diphtheriopsis* Bergevin, 1919, and *F. duffelsicus* Dlabola, 1982 are redescribed. Three new species are described: *F. ebejeri* sp. nov. from Malta, *F. hannibal* sp. nov. from Tunisia and Algeria, and *F. scipionis* sp. nov. from Algeria. *Falcidius bergevini* Lindberg, 1963 is placed in synonymy under *F. marocanus* Bergevin; *F. doriae* is newly recorded from Sicily, and *F. limbatus* from Algeria. Data on distribution and a key for identification of the species are given.

Keywords: Hemiptera; Issidae; *Falcidius*; morphology; taxonomy; new species

Introduction

The genus *Falcidius* was erected by Stål (1866) for a single species – *Cercopis aptera* Fabricius, 1794 from Mediterranean Africa. Following Berg (1883), Bergevin (1919, 1923), Lindberg (1963), and Dlabola (1979, 1980, 1982, 1983, 1984) 15 species have been included in the genus. However, the genus has never been revised and misidentifications of species are common. Correct identification is only possible using male genital characters. Gnezdilov (2003, 2004) and Gnezdilov and Wilson (2007) transferred seven species to other genera and have showed that *F. limbatus* (A. Costa, 1864) described from Sicily and treated as a junior synonym of *F. apterus* (see Metcalf 1958) differs from the last in the structure of the male genitalia and is a distinct species. During the present study a diagnosis of the genus *Falcidius* s. str. is proposed, all previously included species are redescribed, and three further species described. Currently the genus *Falcidius* Stål includes 10 species distributed only in the Mediterranean region: Morocco, Algeria, Tunisia, Malta, Southern Italy (including Sicily), and Southern France.

The genus *Falcidius* belongs to the tribe Issini Spinola (subtribe Hysteropterina Melichar). The question of close relationships between issid genera needs further study and including molecular investigations. According to the presence of a single lobe of the median field of gonapophyses IX the genus *Falcidius* belongs to *Bubastia* generic group (Gnezdilov 2002, 2003) which includes also the genera *Bubastia* Emeljanov, *Libanissum* Dlabola, *Mulsantereum* Gnezdilov, *Palmallorcus* Gnezdilov, and *Numidius* Gnezdilov, Guglielmino & D'Urso. *Falcidius* is distinguished by the

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structure of the penis, which has a distinctive ‘tubular collar’ apically and strongly curved aedeagal hooks (Figure 27A,B,C) – these features should be treated as synapomorphies of the genus.

This revision forms part of a under study of the West Palaearctic issid fauna, which will lead to an illustrated checklist.

Checklist of *Falcidius* species and current taxonomic position of the species previously included in *Falcidius*

***Falcidius apterus* (Fabricius, 1794)**

F. chlorizans (Rey, 1891)

F. diphtheriopsis Bergevin, 1919

F. doriae (Ferrari, 1884)

F. duffelsicus Dlabola, 1982

F. ebejeri sp. nov.

F. hannibal sp. nov.

F. limbatus (A. Costa, 1864)

F. marocanus Bergevin, 1923

F. bergevini Lindberg, 1963, syn. nov.

F. scipionis sp. nov.

***Hysteropterum tkalcui* (Dlabola, 1980)**

Falcidius tkalcui Dlabola 1980: 216

Hysteropterum tkalcui, comb. nov., Gnezdilov 2003: 47

***Latematium cygnetis* (Fieber, 1877)**

Hysteropterum cygnetis Fieber 1877: 27

Falcidius cygnetis Dlabola 1979: 28C

Latematium (Latematium) cygnetis, comb. nov., Gnezdilov 2003: 67

***Lethierium juniperi* (Bergevin, 1915)**

Hysteropterum juniperi Bergevin 1915: 71

Falcidius juniperi Dlabola 1984: 65

Lethierium juniperi, comb. nov., Gnezdilov 2004: 80

***Mulsantereum abruzicum* (Dlabola, 1983)**

Falcidius abruzicus Dlabola 1983: 123

Mulsantereum abruzicum, comb. nov., Gnezdilov 2004: 80

***M. novaki* (Wagner, 1962)**

Hysteropterum novaki Wagner 1962: 48 (in Novak and Wagner 1962)

Falcidius novaki Dlabola 1980: 214

Mulsantereum novaki, comb. nov., Gnezdilov and Wilson 2007: 302

M. oculatum (Linnavuori, 1965)

Hysteropterum oculatum Linnavuori 1965: 64

Falciidius oculatus Dlabola 1983: 125

Mulsantereum oculatum, comb. nov., Gnezdilov 2004: 80

Kervillea anatolica (Dlabola, 1979)

Falciidius anatolicus Dlabola 1979: 280

Kervillea anatolica, comb. nov., Gnezdilov and Wilson 2007: 302

Argepara lyra (Berg, 1883)

Falciidius lyra Berg, 1883: O'Brien 2008: 13

Argepara lyra, comb. nov., Gnezdilov and O'Brien 2008: 13

Material and methods

Morphological terminology follows Gnezdilov (2003). The genital segments of the examined specimens were macerated in 10% KOH and figured in glycerine jelly using a light microscope. Photographs of the specimens were taken using a Leica MZ8 with JVC video camera KY F70B and Nikon video camera SMZ 1500, images are produced using the software SYNOPTICS AUTOMONTAGE.

Abbreviations of depositories used: MNHN – Museum National d'Histoire Naturelle (Paris, France); ZMAN – Universiteit van Amsterdam, Zoölogisch Museum (the Netherlands); NMWC – National Museum of Wales (Cardiff, UK); BMNH – The Natural History Museum (London, UK); USNM – United States National Museum of Natural History (Washington, USA); IRSNB – Institut Royal des Sciences Naturelles de Belgique (Brussels, Belgium); MSNG – Museo Civico di Storia Naturale (Genova, Italy); CVDU – Collection of Prof. V. D'Urso (Catania, Italy); CAG – Collection of Prof. A. Guglielmino (Viterbo, Italy); MMBC – Moravian Museum, Collection of L. Melichar (Brno, Czech Republic); NMPC – National Museum of Natural History (Prague, Czech Republic); MZHF – Zoological Museum, University of Helsinki (Finland); ZIN – Zoological Institute, Russian Academy of Sciences (St Petersburg, Russia).

Taxonomy

Genus *Falciidius* Stål, 1866

Falciidius Stål 1866: 205. Type species: *Cercopis aptera* Fabricius, 1794.

Diagnosis

Coryphe transverse, anterior margin convex, posterior margin concave. Metope sometimes with weak median or sublateral keels. Forewings with or without narrow hypocostal plate. Radius usually bifurcate, sometimes trifurcate, median bi-, tri- or tetrafurcate, cubitus anterior simple or bifurcate (R 2–3 M 2–4 CuA 1–2). Hind wings rudimentary. Pronotum sometimes with weak median keel. Scutellum sometimes with weak lateral keels. Hind tibia usually with two lateral spines. Metatarsomere I with one to four intermediate spines.

Male genitalia. Pygofer with hind margin convex or nearly straight. Dorsolateral phallobase lobes form distinctive 'tubular collar' apically (Figure 27B). Aedeagus

with a pair of long, pointed, curved ventral hooks (Figure 27A). Style with concave hind margin, caudodorsal angle widely rounded. Capitulum on distinct neck; lateral tooth in shape of wide lobe; apical tooth weak.

Female genitalia. Hind margin of sternum VII usually with short and wide median process. Gonoplasts usually with a pair of weak transverse keels. Median field of the gonapophyses IX with a single lobe.

Relationships of the species

Falcidius apterus, *F. limbatus*, and *F. maroccanus* are close to each other in their pattern of forewing coloration – yellowish brown with cells bearing a dark brown edging inside (Figures 1, 2, 4, and 6). The two first species are also characterized by wide supporting processes of the phallobase (Figures 27A and 28A). *Falcidius maroccanus* is distinguished by a phallobase strongly enlarged proximally, with groove on its median line and very wide covering processes (Figure 29A,B).

Falcidius doriae, *F. chlorizans*, *F. diphtheriopsis*, and *F. scipionis* sp. nov. are close each to other in their yellow general coloration (Figures 8, 10, 12, and 15). The three last species are characterized by narrow or reduced supporting processes of the phallobase (Figures 31A, 32A, and 33A). *Falcidius chlorizans* is distinguished by a phallobase with a waist proximally and a ventral phallobase lobe with a pair of longitudinal bulge-like projections basally (Figure 31A,B); *F. diphtheriopsis* is distinguished by a wide male anal tube (in dorsal view) (Figure 32D); *F. scipionis* sp. nov. is distinguished by the lateral margins of the male anal tube being turned down (Figure 33F); and *F. doriae* is distinguished by the lateral margins of male anal tube straight in lateral view and a wide horizontal supporting processes of the phallobase (Figure 30A,B).

Falcidius duffelsicus, *F. ebejeri* sp. nov., and *F. hannibal* sp. nov. are characterized by a metope with large dark brown or black spot or band near above the clypeus (Figures 19, 22, 25, and 26), phallobase with narrow (rudimentary) supporting processes (Figures 34A, 35A, 36A, and 37A), and male anal tube with apical angles turned down (Figures 34F, 35D, 36C, and 37C). Within this group *F. duffelsicus* and *F. ebejeri* sp. nov. are more closely related each to other according to the forewings, which have dark brown longitudinal veins (Figures 18 and 21).

It is quite difficult to recognize plesiomorphic and apomorphic conditions of the features within the genus. The species groups mentioned above are erected provisionally based on the pattern of coloration. Within the structural features of the male genitalia we can treat as plesiomorphic conditions the narrow phallobase (presented in most of the species) and the narrow supporting and covering processes of the phallobase (but this could also be secondary rudimentation). In contrast, an enlarged phallobase with wide processes may be treated as an apomorphic condition. According to this, the *F. apterus* species group is the most advanced one.

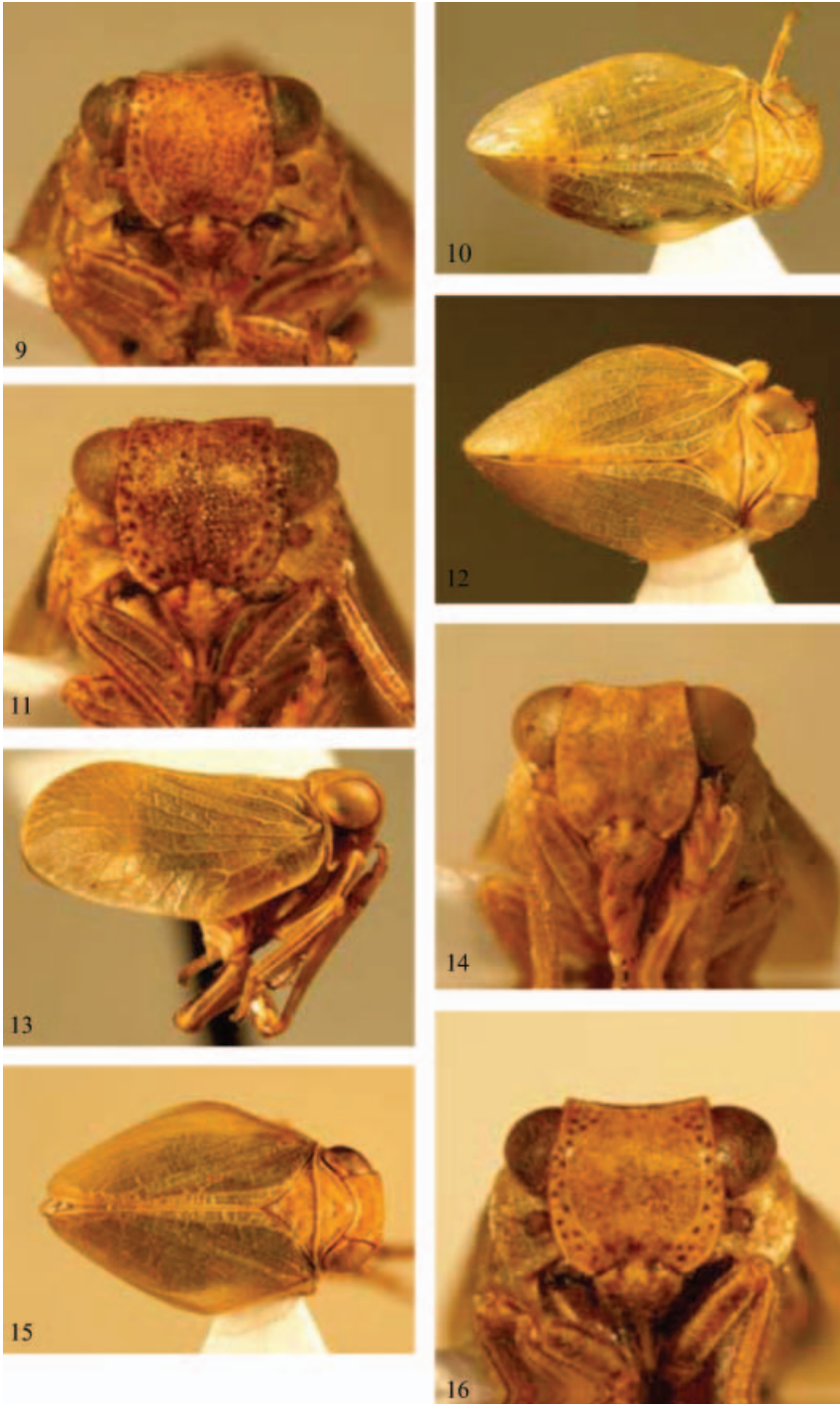
Falcidius apterus (Fabricius, 1794)

(Figures 1–3, 27)

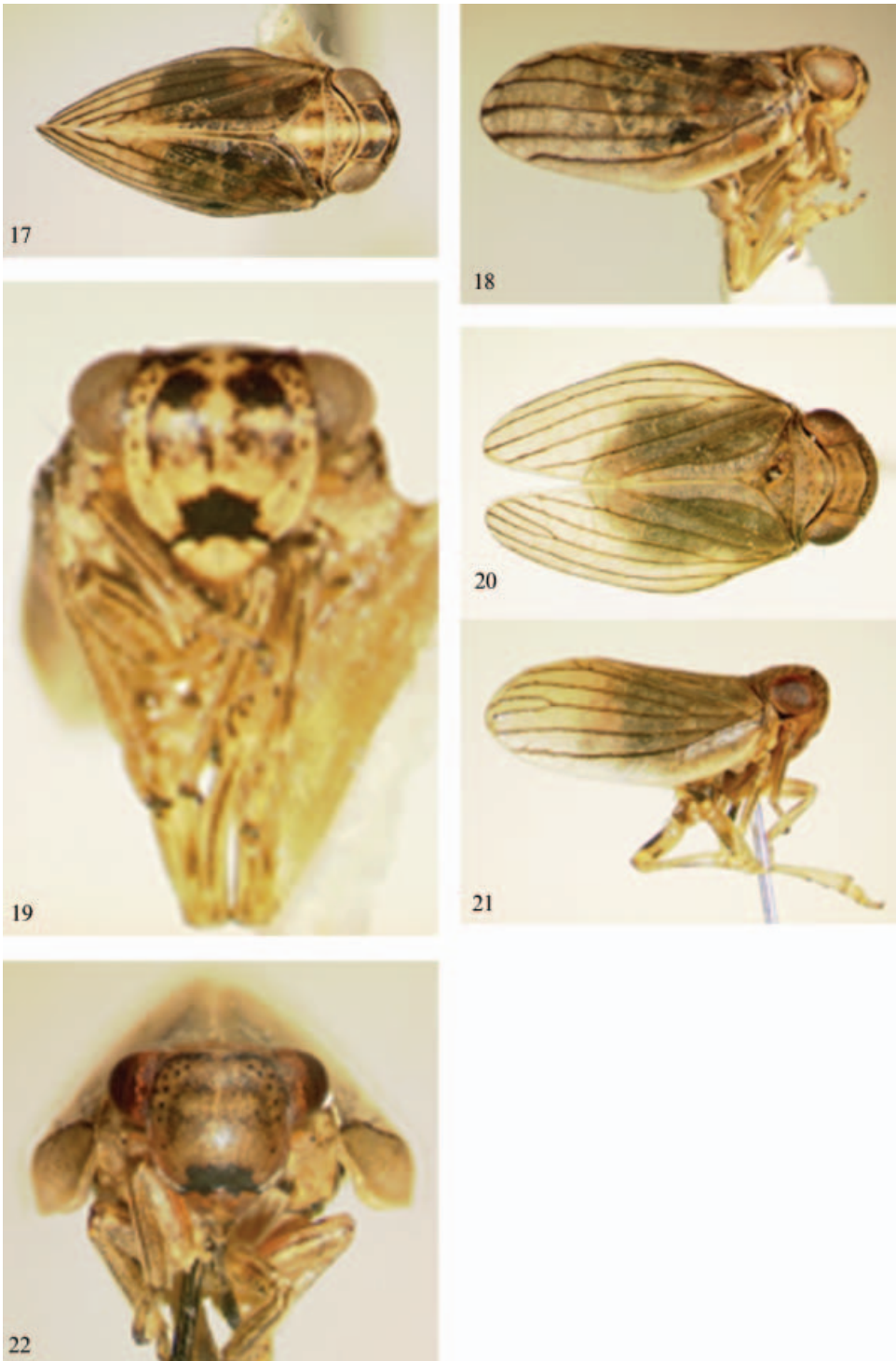
Cercopis aptera Fabricius 1794: 54.



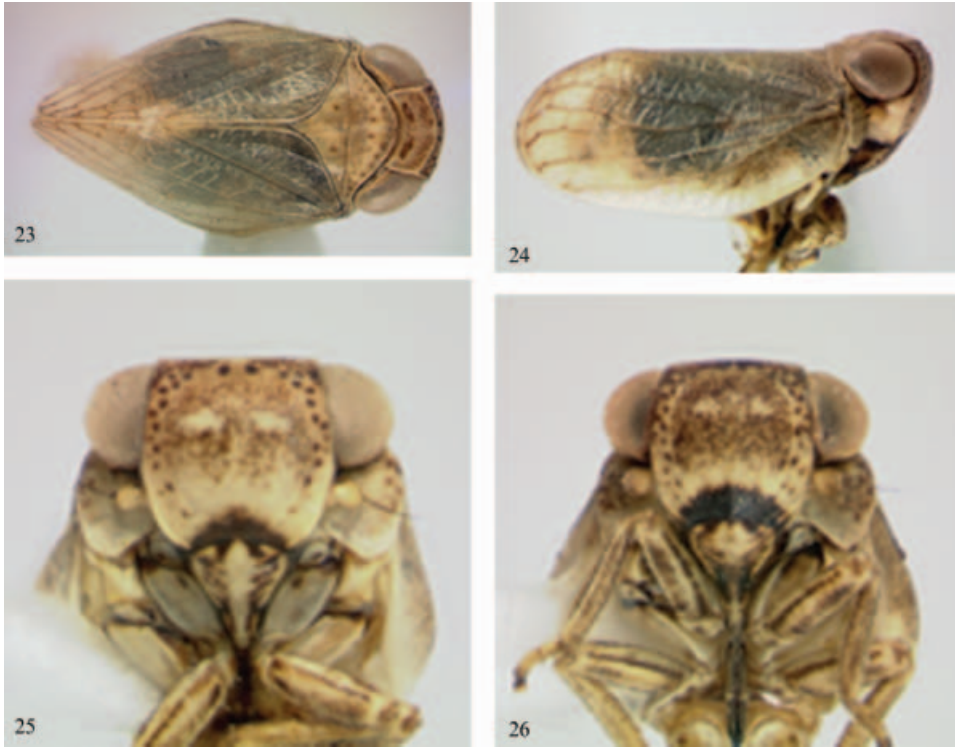
Figures 1–8. *Falcidius* spp., general view. (1–3) *Falcidius apterus* (F.), female (Algeria). (1) dorsal view; (2) lateral view; (3) frontal view. (4, 5) *F. limbatus* (A. Costa), female (Italy, Sicilia, Palermo). (4) dorsal view; (5) frontal view. (6, 7) *F. maroccanus* Berg., female (Morocco). (6) dorsal view; (7) frontal view. (8) *F. doriae* (Ferr.), female (Tunisia, Bizerte), dorsal view.



Figures 9–16. *Falcidius* spp., general view. (9) *F. doriae* (Ferr.), female (Tunisia, Bizerte), head. (10, 11) *F. chlorizans* (Rey), female (Algeria, Teniet). (10) dorsal view; (11) frontal view. (12–14) *F. diptheriopsis* Berg., syntype, male (Algeria, Djebel Ouach). (12) dorsal view; (13) lateral view; (14) frontal view. (15, 16) *F. scipionis* sp. nov., paratype, male (Algeria, Souq Ahras). (15) dorsal view; (16) frontal view.



Figures 17–22. *Falcidius* spp., general view. (17–19) *F. duffelsicus* Dlab., female (Tunisia, Korbous). (17) dorsal view; (18) lateral view; (19) frontal view. (20–22) *F. ebejeri* sp. nov., paratype, female (Malta). (20) dorsal view; (21) lateral view; (22) frontal view.



Figures 23–26. *Falcidius hannibal* sp. nov., paratypes, males, general view, (23–25) (Tunisia, Sbeitla), (26) (Algeria, Bouhamana). (23) dorsal view; (24) lateral view; (25, 26) frontal view.

Material examined

Algeria: 2♂, 1♀, 16.VI.[18]60, C. Moravits leg. (ZIN); 2♂, 1♀, V.1860, C. Moravits leg. (ZIN); 1♀, [18]60, C. Moravits leg. (ZIN); 1♂, Blidah, 25–26.IV.1860, C. Moravits leg. (ZIN); 1♂, Blidah, J. de Gaulle 1898 (MNHN); 1♂, Hammam El Rh'ira, 30.IV.1913, I.L. Pastukhov leg. (ZIN); 1♂, Teniet, 10.V.[18]95, J. de Gaulle 1898 (MNHN); 2♂, 1♀, Alger, 29.IV.[18]94, J. de Gaulle 1898 (MNHN); 1♂, env. d'Alger, Vacherot (MNHN); 26♂, 28♀, Alger, 15–16.V.1971, A. Hoffer et J. Horák leg. (NMPC); 1♀, Saida, 23.V.[18]95, J. de Gaulle 1898 (MNHN); 3♀, Constantine, Coll. E. de Bergevin (MNHN); 1♂, Oran (MNHN); 1♂, 6♀, Djebel Ouach (MNHN).

Supplementary description

Metope convex (visible from above), longitudinal keels indistinct. Coryphe plate concave, three times as wide as long. Pronotum and scutellum without keels. Forewings widely rounded apically, without hypocostal plate. Radius, median, and cubitus anterior are bifurcate (R 2 M 2 CuA 2), longitudinal veins with plenty of small branches after first bifurcation. Metatarsomere I with single intermediate spine.

Coloration (Figures 1–3). Head, pronotum, scutellum, and forewings yellowish brown. Metope, especially in lower part, with plenty of dark brown dots, traces of

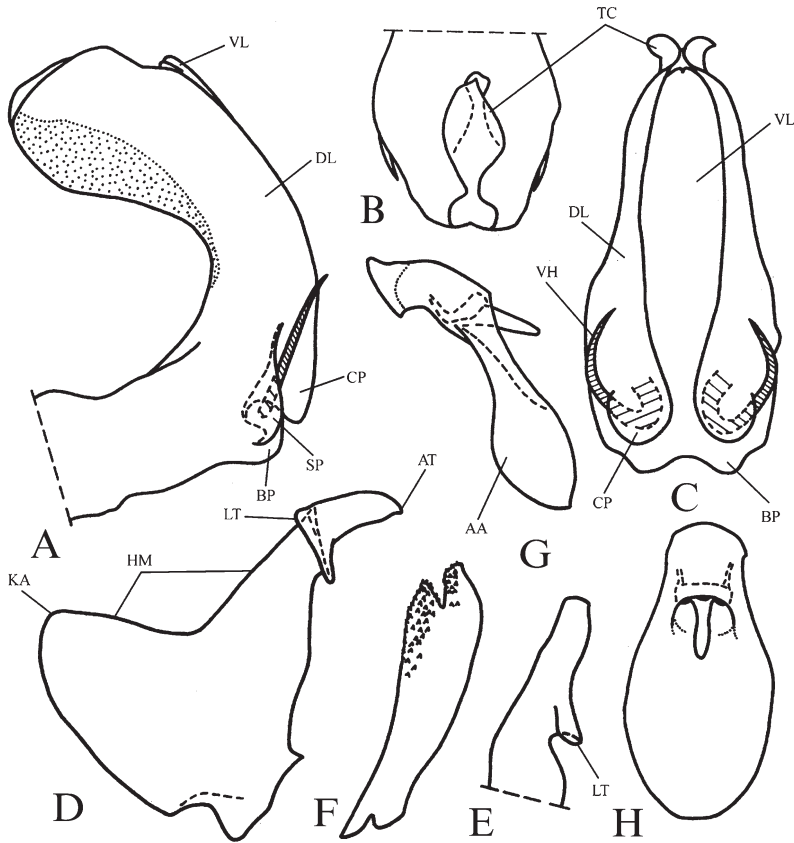


Figure 27. *Falcidius apterus* (F.) (Algeria), male genitalia. (A) Penis, lateral view; (B) penis, apical view; (C) penis, ventral view; (D) style, lateral view; (E) capitulum of style, dorsal view; (F) apical aedeagal process, lateral view; (G) anal tube, lateral view; (H) anal tube, dorsal view; (BP) bulge-like projection; (AA) apical angle of anal tube; (SP) supporting process of phallobase; (CP) covering process of phallobase; (TC) tubular collar of phallobase; (AT) apical tooth of style; (LT) lateral tooth of style; (HM) hind margin of style; (KA) caudodorsal angle of style; (VL) ventral phallobase lobe; (DL) dorso-lateral phallobase lobe; (VH) ventral aedeagal hooks.

sensory pits also dark brown. Postclypeus with dark brown transverse stripes. Anteclypeus dark brown excluding median line. Rostrum dark brown. Paranotal lobes with wide dark brown stripe. Cells of forewings with dark brown edging inside. Costal margin of forewing light yellowish. Abdomen dark brown excluding yellow brownish anal tube in male. Femora and tibiae with wide dark brown longitudinal stripes. Pro- and mesotarsi, metatarsomeres III, claws, apices of spines dark brown.

Male genitalia (Figure 27). Pygofer with weakly convex hind margin. Anal tube elongate, apical angles distinctly turned down. Anal column narrow, one-quarter as long as anal tube. Phallobase strongly curved (in lateral view), with a pair of bulge-like projections under aedeagal hooks. Each dorsolateral lobe with wide vertical

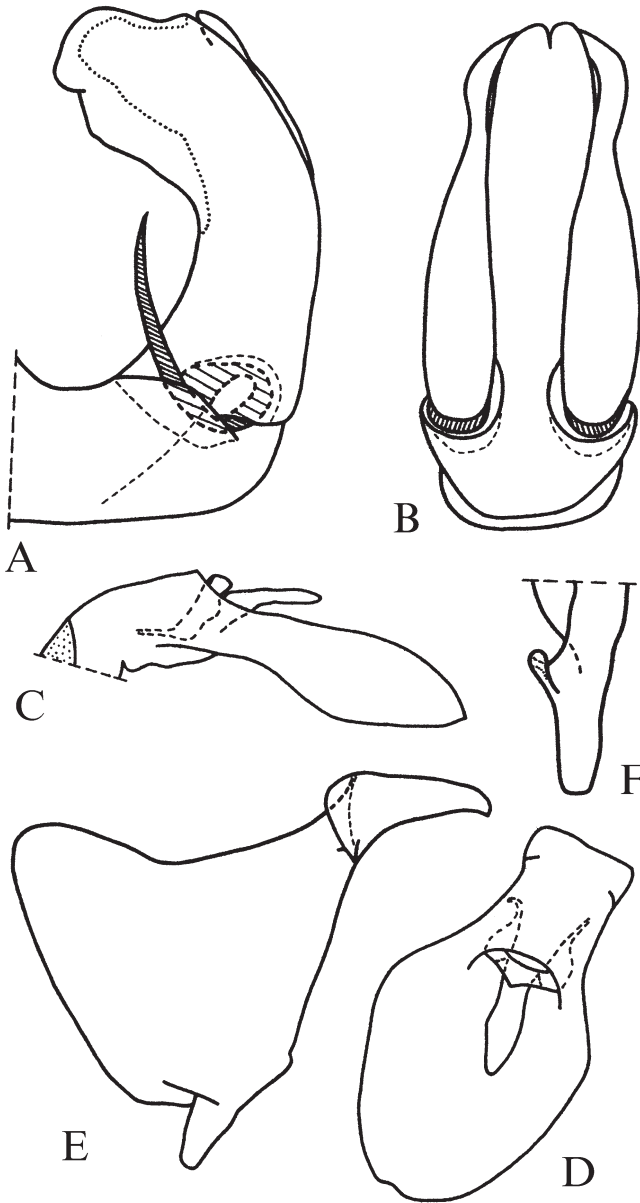


Figure 28. *Falcidius limbatus* (A. Costa) (Italy, Sicilia), male genitalia. (A) Penis, lateral view; (B) penis, ventral view; (C) anal tube, lateral view; (D) anal tube, dorsal view; (E) style, lateral view; (F) capitulum of style, dorsal view.

supporting process situated near to its ventral margin under aedeagal hook and large covering process above the hook. Ventral phallobase lobe long, narrowing apically, apex with weak longitudinal cranny-like incision. Aedeagal hooks strongly curved and directed to the ventral margin of the phallobase. Apical aedeagal processes wide, not narrowing to weakly bifurcated apices. Style with strongly concave hind margin. Capitulum of style narrow, not narrowing apically (in dorsal view), apex truncated.

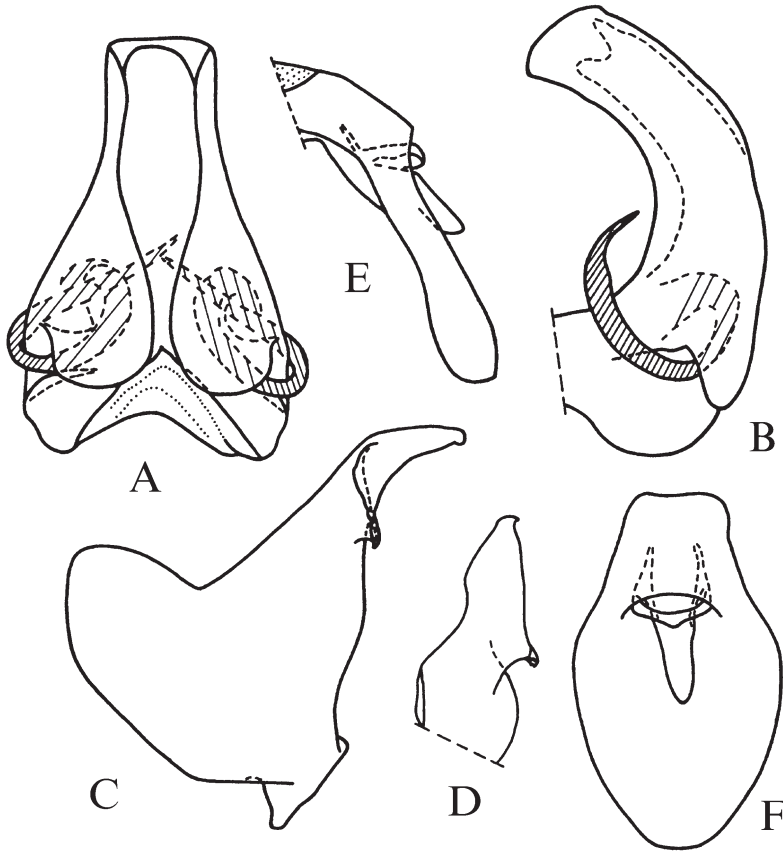


Figure 29. *Falcidius maroccanus* Berg., male genitalia, (A–D) type (Maorocco, Volubilis), (E, F) (Maorocco, Sebou). (A) Penis, ventral view; (B) penis, lateral view; (C) style, lateral view; (D) capitulum of style, dorsal view; (E) anal tube, lateral view; (F) anal tube, dorsal view.

Female genitalia. Hind margin of sternum VII with short and wide median process. Gonocoxa VIII with low lobe-shaped hind margin equally advanced on all an extent. Endogonocoxal process gradually narrowing apically.

Body length. Males 4.0–4.7 mm; females 4.5–5.5 mm.

Distribution

Confirmed records of this species are from Algeria and Italy (Abruzzo Province) (Fabricius 1794; Gnezdilov 2004; present data).

Note

The species was described after a female from Berberia (Fabricius 1794), which is an ancient name (since the sixteenth to nineteenth centuries) for the territory of northern Africa that now comprises Morocco, Algeria, Tunisia, and Libya. The photos of the type specimen were examined.

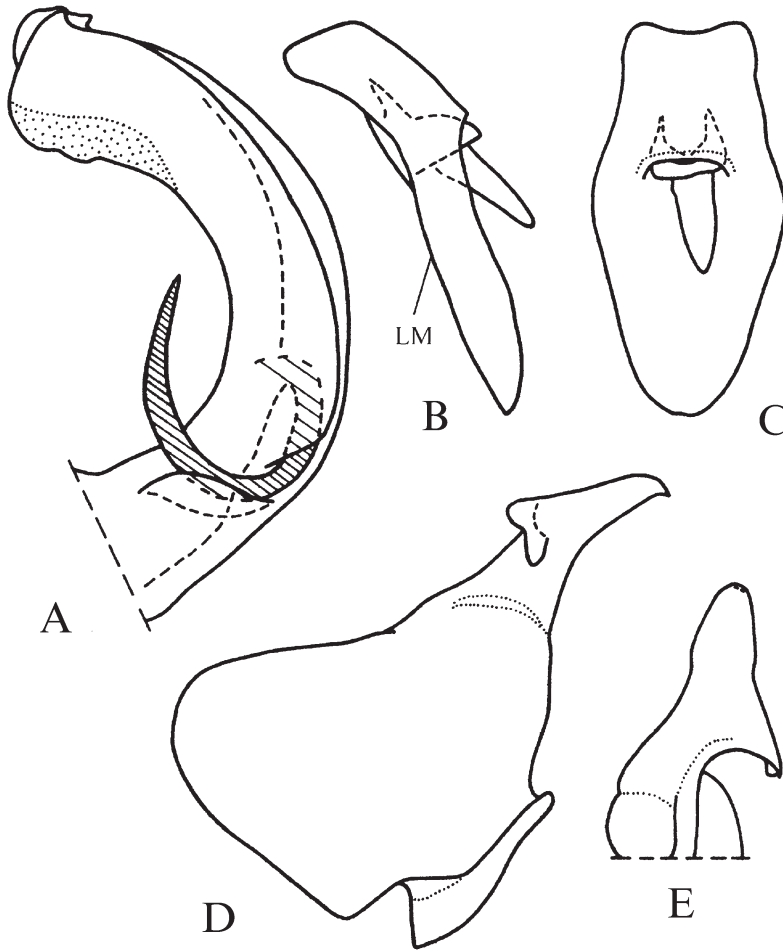


Figure 30. *Falcidius doriae* (Ferr.), male genitalia, (A) (Tunisia, TebourSouk), (B–E) (Tunisia, Bizerte). (A) Penis, lateral view; (B) anal tube, lateral view; (C) anal tube, dorsal view; (D) style, lateral view; (E) capitulum of style, dorsal view; (LM) lateral margin of anal tube.

Falcidius limbatus (A. Costa, 1864)

(Figures 4, 5, and 28)

Hysteropterum limbatum A. Costa 1864: 137.

Falcidius limbatus Gnezdilov 2003: 39 (redescription).

Falcidius apterus Holzinger et al. 2003: 465, fig. 254.

Material examined

Italy, Sicilia: 1♂, Sotto M. Barca (Etna), 700 m, 30.V.1988, A. Guglielmino leg. (CAG); 1♂, Lago Fonaco (Costronovo), 18.V.1986, V. D'Urso leg. (CVDU); 1♂, 8♀, Palermo, 18.V.1961, H. Eckerlein leg. (NMWC); 1♂, 1♀, Pachino, III.1961 (MNHN); 1♀, Siracusa, IV.1961 (MNHN); 1♂, Ragusa (MNHN); 1♀, Ragusa, Ashmead leg. (USNM). Algeria: 1♂, Souq Ahras (Souk Akras), Coll. E. de Bergevin

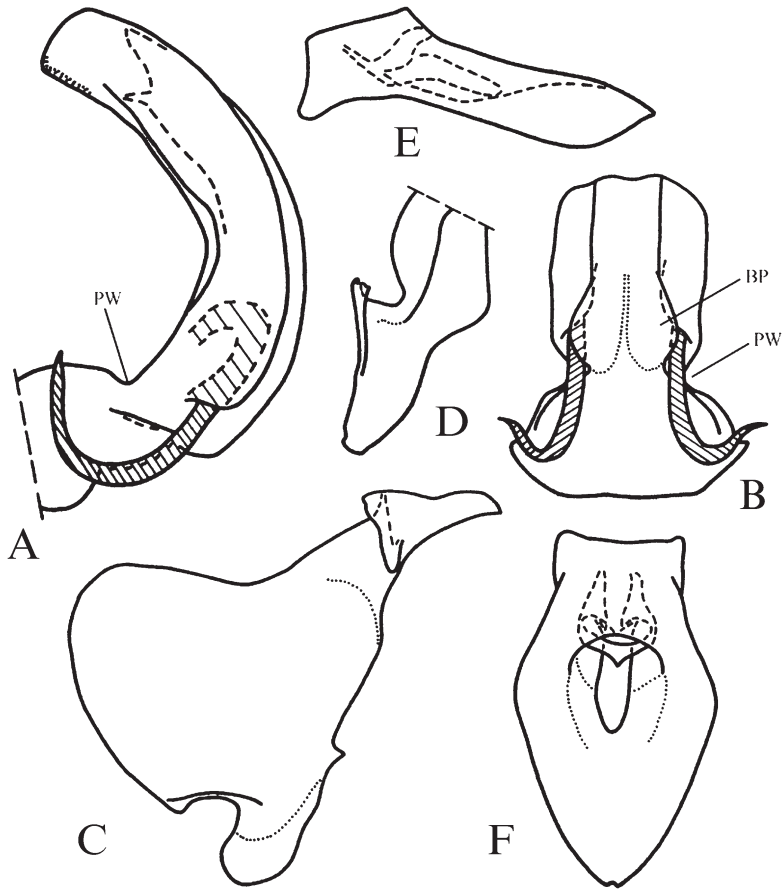


Figure 31. *Falcidius chlorizans* (Rey) (Algeria, Teniet el Haad), male genitalia. (A) Penis, lateral view; (B) penis, ventral view; (C) style, lateral view; (D) capitulum of style, dorsal view; (E) anal tube, lateral view; (F) anal tube, dorsal view; (PW) waist of phallobase; (BP) bulge-like projection.

(MNHN); 1♂, Téniet, Coll. H. Marmottan 1914 (MNHN); 1♂, Kef Kourrat, 1886 (MNHN); 1♂, 3♀, Laverdure, 30.IV. – 14.V.[19]27, Mořan leg. (NMPC, MNHN); 2♂, 1♀, near Aïn Amara, 18 km SW of Guelma, 650 m, 5.V.1980, olive yard, E. van Nieuwerkerken, G. Bryan & P. Oosterbroek leg. (ZMAN, MNHN).

Supplementary description (after Gnezdilov 2003)

Externally similar to *F. apterus*. Pronotum with weak median keel. Forewing with radius and median bi- or trifurcate, cubitus anterior simple (R 2–3 M 2–3 CuA 1). Hind tibia with two lateral spines, sometimes there is also an additional small spine.

Coloration (Figures 4 and 5). As given for *F. apterus*.

Male genitalia (Figure 28). Anal tube elongate, apical angles distinctly turned down. Anal column about one-third as long as anal tube. Each dorsolateral phallobase lobe

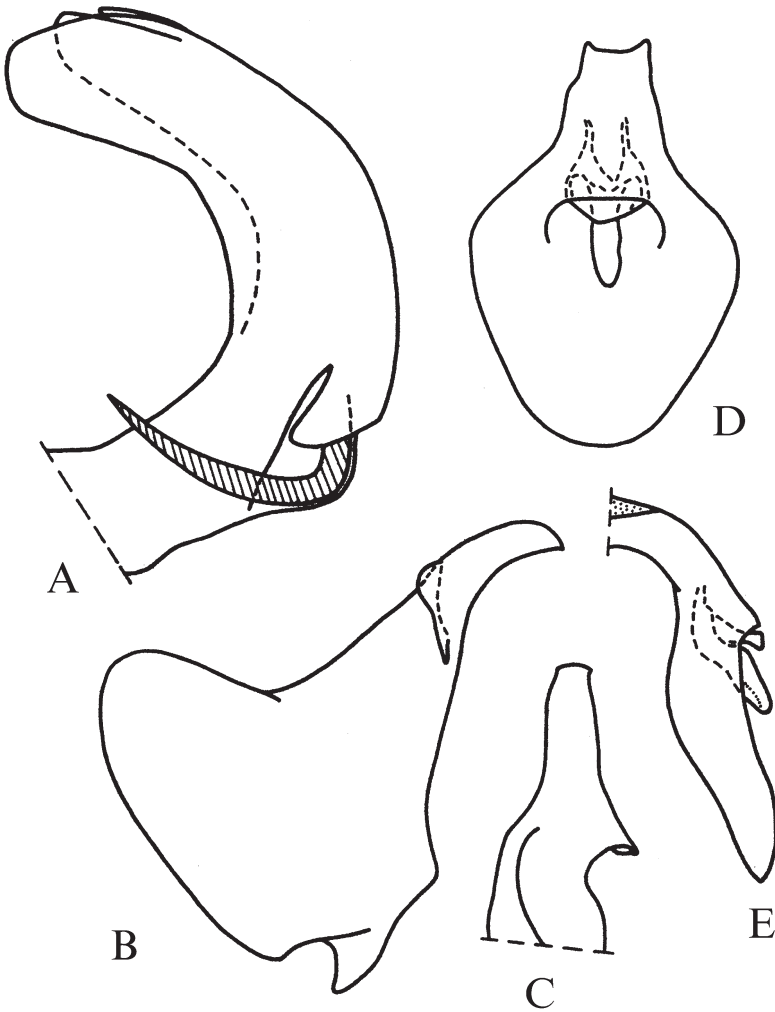


Figure 32. *Falcidius diphtheriopsis* Berg., syntype (Algeria, Djebel Ouach), male genitalia. (A) Penis, lateral view; (B) style, lateral view; (C) capitulum of style, dorsal view; (D) anal tube, dorsal view; (E) anal tube, lateral view.

with wide horizontal supporting process situated near to its dorsal margin and large covering process. Ventral phallobase lobe long, narrowing apically, apex with weak longitudinal cranny-like incision. Aedeagal hooks strongly curved and directed to the dorsal margin of the phallobase. Hind margin of style weakly concave; caudodorsal angle widely rounded. Capitulum of style not narrowing to truncated apex (in dorsal view).

Body length. Males 4.4–4.7 mm; females 4.5–5.3 mm.

Distribution

Sicily and Algeria (Costa 1864; Gnezdilov 2003, 2004; present data).

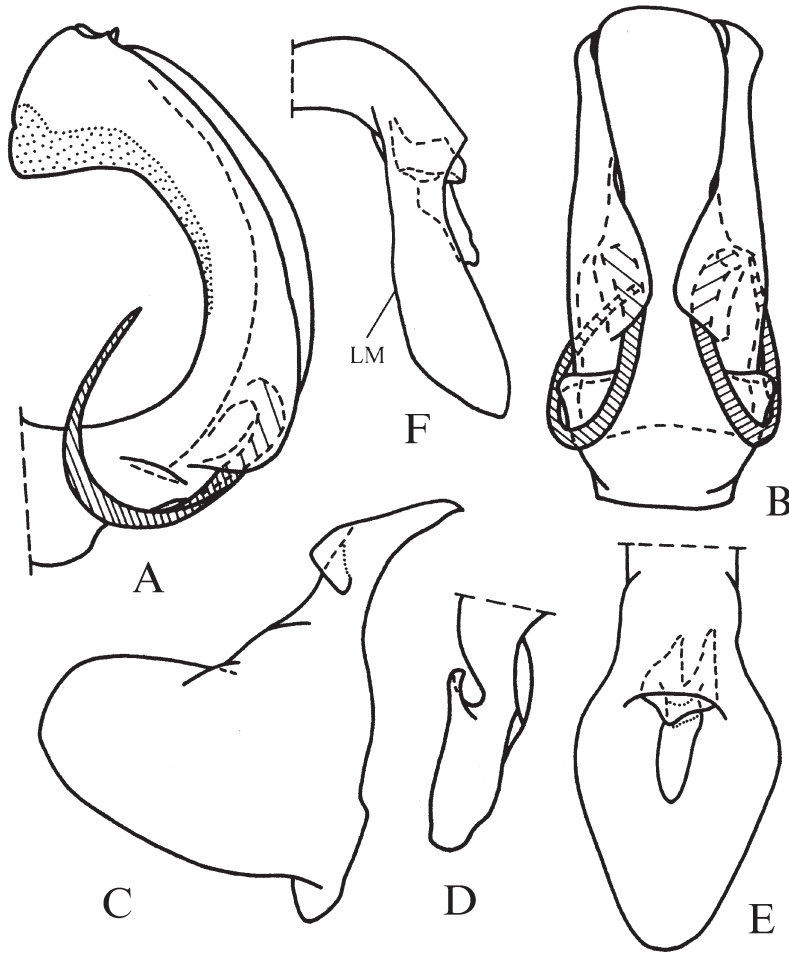


Figure 33. *Falcidius scipionis* sp. nov., paratype (Algeria, Oued Taga), male genitalia. (A) Penis, lateral view; (B) penis, ventral view; (C) style, lateral view; (D) capitulum of style, dorsal view; (E) anal tube, dorsal view; (F) anal tube, lateral view; (LM) lateral margin of anal tube.

Note

The type specimen was not examined. The species was described from Sicily (Costa 1864) and only this species from the *F. apterus* species group is known from Sicily. We have based our treatment of the species on male specimens from Sicily. The material described by Holzinger et al. (2003) as *F. apterus* really belongs to *F. limbatus*.

Falcidius maroccanus Bergevin, 1923

(Figures 6, 7, and 29)

Falcidius maroccanus Bergevin 1923: 80

Falcidius bergevini Lindberg, 1963: 29, syn. nov.

Material examined

Morocco: 1♂, type, Volubilis, 400 m, Alluud 197, Coll. E. de Bergevin (MNHN); 2♂, 1♀ (all specimens on single pin labelled as 'holotype *Falcidius bergevini*'),

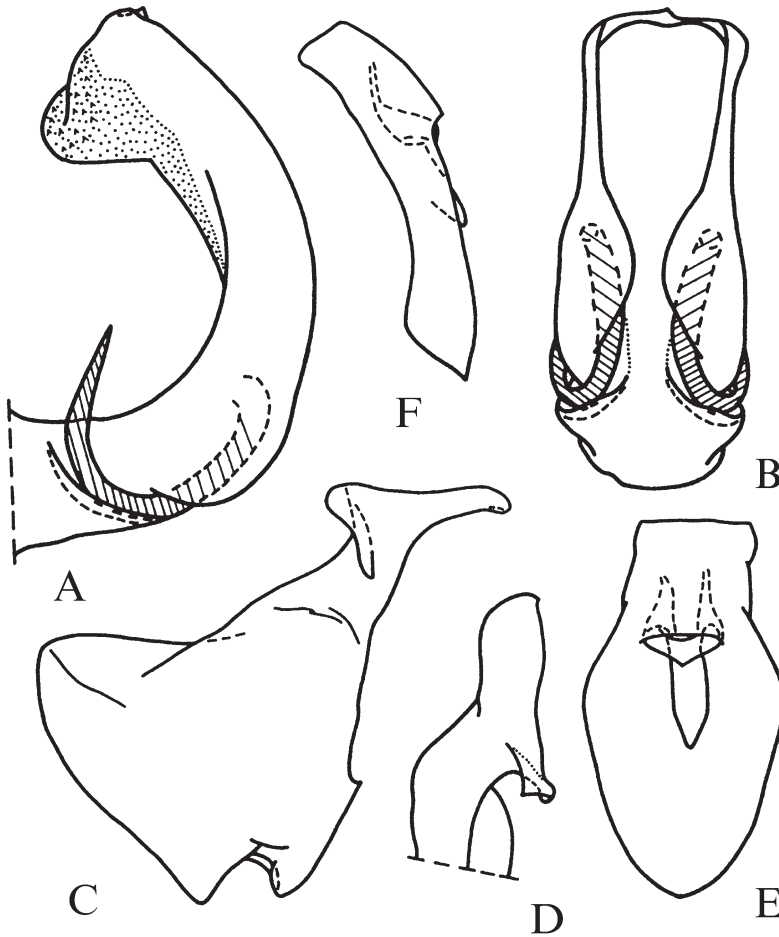


Figure 34. *Falcidius duffelsicus* Dlab. (Tunisia, Korbous), male genitalia. (A) Penis, lateral view; (B) penis, ventral view; (C) style, lateral view; (D) capitulum of style, dorsal view; (E) anal tube, dorsal view; (F) anal tube, lateral view.

Benslimane, 25.III.1961, Lindberg leg. (MZHF); 1♂ (paratype of *F. bergevini*), same data (NMWC); 1♂, 1♀ (paratypes of *F. bergevini*), Oulmes-Maaziz, 19.III.1961, Meinander leg. (MZHF); 2♂, 1♀, Sebou, A. Théry (MNHN); 4♂, env. Tanger, Favier (MNHN); 1♀, Korifla, Coll. Théry (MNHN).

Supplementary description

Externally similar to *F. apterus*. Metope with weak median keel. Forewing with radius bifurcate, median trifurcate, cubitus anterior simple (R 2 M 3 CuA 1). Metatarsomere I with 4 (3+1) intermediate spines.

Coloration (Figures 6 and 7). As mentioned for *F. apterus*. Abdominal tergites from brown to dark brown. Abdominal sternites with dark brown median line. Male genital segments light brown yellowish.

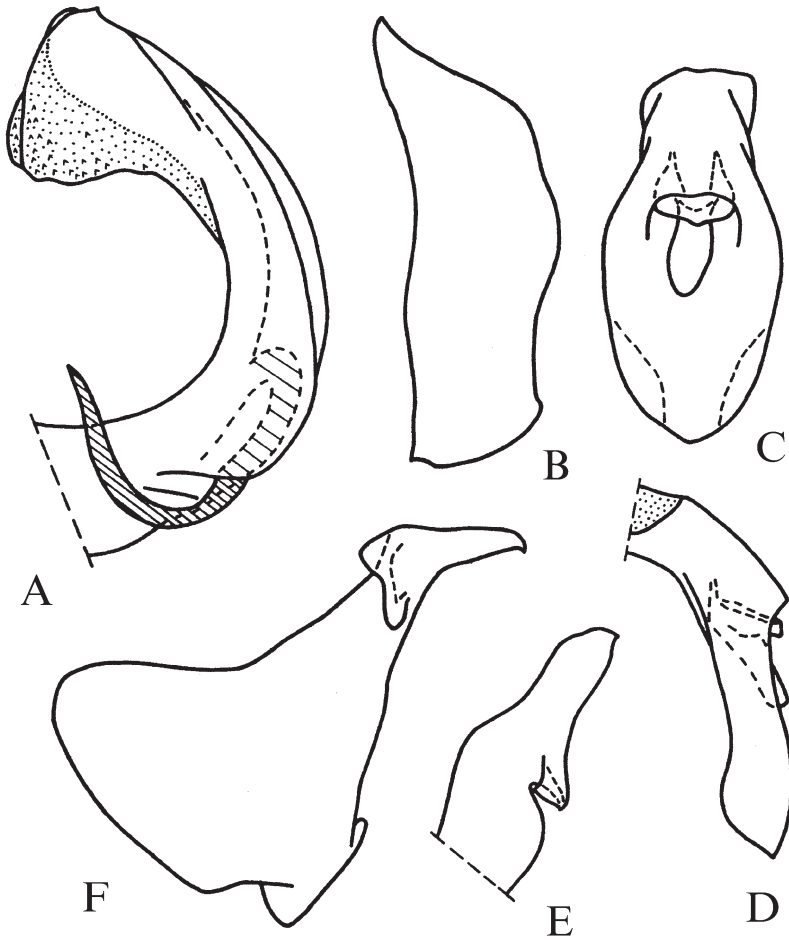


Figure 35. *Falcidius ebejeri* sp. nov., holotype (Malta), male genitalia. (A) Penis, lateral view; (B) pygofer, lateral view; (C) anal tube, dorsal view; (D) anal tube, lateral view; (E) capitulum of style, dorsal view; (F) style, lateral view.

Male genitalia (Figure 29). Pygofer with weakly convex hind margin. Anal tube elongate, its lateral margins weakly turned down. Anal column about one-third as long as anal tube. Phallobase strongly enlarged proximally, with groove on median line (in ventral view). Each dorsolateral phallobase lobe with narrow supporting process and very wide covering process. Ventral phallobase lobe long and wide. Aedeagal hooks turned to dorsal side of the phallobase. Style with strongly concave hind margin; caudodorsal angle narrowly rounded. Capitulum of style narrowing to truncated apex (in dorsal view).

Body length. Males 4.1–4.5 mm; females 5.0–5.5 mm.

Distribution

Morocco (Bergevain 1923; Lindberg 1963; present data).

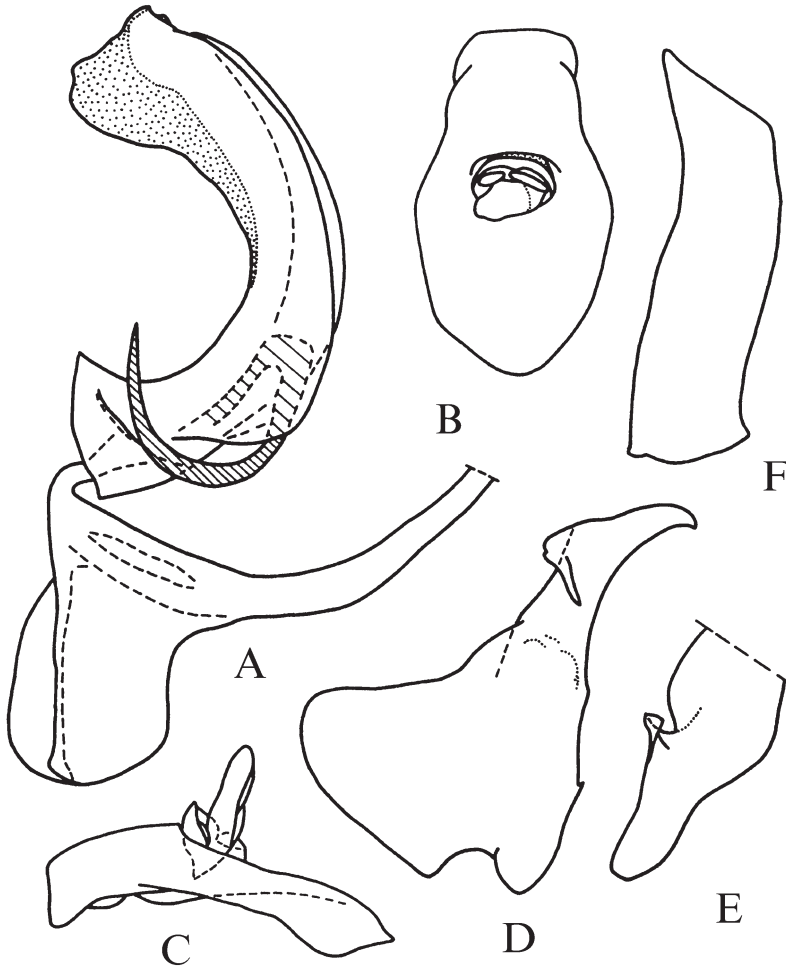


Figure 36. *Falcidius hannibal* sp. nov., paratype (Tunisia, Sbeitla), male genitalia. (A) Penis with connective, lateral view; (B) anal tube, dorsal view; (C) anal tube, lateral view; (D) style, lateral view; (E) capitulum of style, dorsal view; (F) pygofer, lateral view.

Falcidius sp.

Material examined

France: 1♀, Var, X.[19]56 (MNHN).

Note

The specimen belongs to the *F. apterus* species group according to the coloration of the head and forewings.

Falcidius doriae (Ferrari, 1884)

(Figures 8, 9, and 30)

Hysteropterum doriae Ferrari 1884: 507.

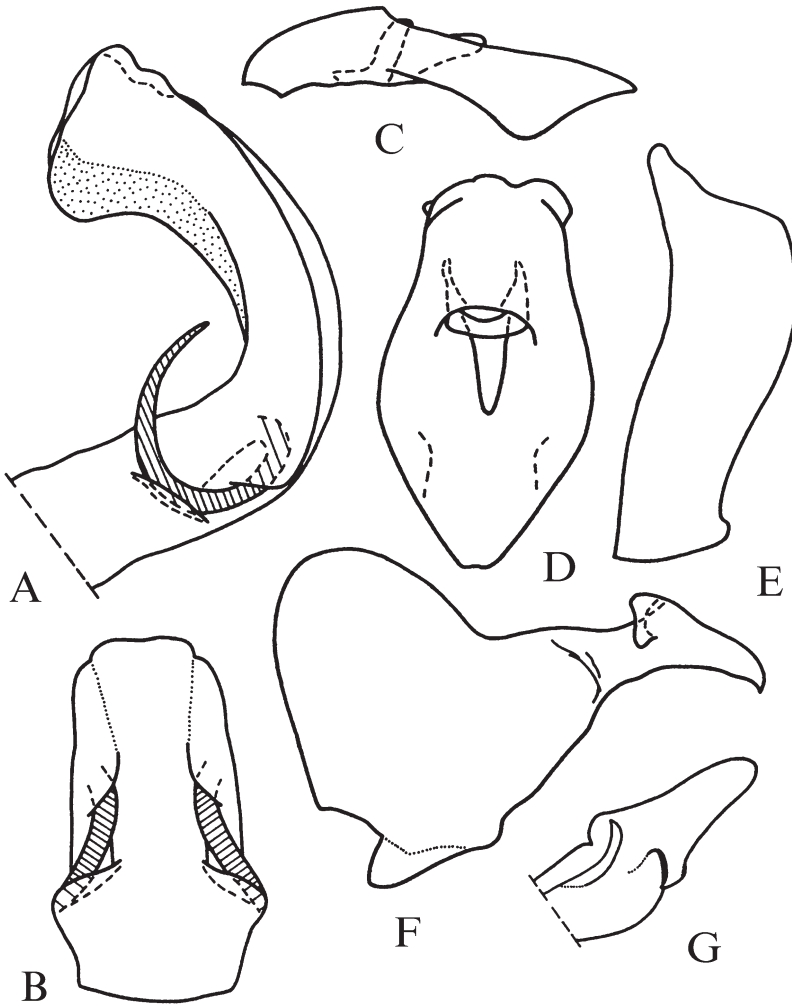


Figure 37. *Falcidius hannibal* sp. nov., paratype (Algeria, Bouhamana), male genitalia. (A) Penis, lateral view; (B) penis, ventral view; (C) anal tube, lateral view; (D) anal tube, dorsal view; (E) pygofer, lateral view; (F) style, lateral view; (G) capitulum of style, dorsal view.

Material examined

Tunisia: ♀, type, ♀, toptype, 'dint 1881', 'G. e L. Doria' (MSNG); 5♂, 7♀ (locality is not mentioned) (MMBC, ZIN); 1♂, 4♀, Bizerte, J. de Gaulle 1898 (MNHN); 1♂, 2♀, 7–15 km W of Teboursouk, 400–500 m, 4.VI.1980, J.P. Duffels leg. (ZMAN); 1♂, Gabes, 'Exp. Obenb.' (NMPC). Italy: 1♂, Sicily, 30 km N of Sciacca, 22.V.2006, A. Maryńska-Nadachowska leg. (ZIN).

Supplementary description

Coryphe transverse (three times as wide as long), anterior margin convex with truncated apex, posterior margin concave. Metope convex (visible from above), with

weak longitudinal keels joined at its upper margin. Pronotum with weak median keel. Scutellum without keels. Forewing weakly narrowing apically, with narrow hypocostal plate. Radius bifurcate, median trifurcate, cubitus anterior simple (R 2 M 3 CuA 1). Metatarsomere I with 2 intermediate spines.

Coloration (Figures 8 and 9). General coloration light yellowish brown. Traces of sensory pits of metope brown. Upper margin of postclypeus dark brown. Femora and tibiae with brown longitudinal stripes. Apices of spines of legs dark brown. Abdominal sternites light yellow; sternites IV and V with dark brown median areas; traces of sensory pits dark brown. Abdominal tergites I–VI dark brown with light yellow median line, tergites VII–VIII light yellow. Gonoplares dark brown with light yellow lateral areas. Female anal tube light yellow with brownish apex.

Male genitalia (Figure 30). Pygofer with convex hind margin in apical part. Anal tube elongate, narrowing apically (in dorsal view), its lateral margins turned down, straight in lateral view. Anal column one-third as long as anal tube. Each dorsolateral phallobase lobe with wide horizontal supporting process situated near to its ventral margin and narrow covering process. Ventral phallobase lobe long. Aedeagal hooks directed to dorsal side of the phallobase. Style with weakly concave hind margin; caudodorsal angle widely rounded. Capitulum of style weakly narrowing to rounded apex (in dorsal view); lateral tooth with deeply concave margin.

Female genitalia. Hind margin of sternum VII with short and broad semicircular median process. Anal tube nearly rectangular, weakly narrowing apically (in dorsal view), convex (in lateral view). Anal column about one-quarter as long as anal tube. Gonocoxa VIII with lobe-shaped hind margin bearing leaf-like process distally.

Body length. Males 3.4–3.9 mm; females 3.7–4.3 mm.

Distribution

The species is known from Tunisia and Sicily (Ferrari 1884; present data).

Note

The species was described after a female from Tunisia (Ferrari 1884). We have based our treatment of the species on male specimens from Tunisia.

***Falcidius chlorizans* (Rey, 1891)**
(Figures 10, 11, and 31)

Hysteropterum chlorizans Rey 1891: 242

Material examined

Algeria: 1♂, Ouarsenis, Teniet el Haad, 30.V.–5.VI.1954, G. Fagel leg. (IRSNB); 2♂, 2♀, Teniet el H.[aad], Coll. H. Marmottan 1914 (MNHN); 3♂, 2♀, Teniet (MNHN).

Supplementary description

Metope with weak median and sublateral keels joined at its apical margin. Coryphe 2.5–3.0 times as wide as long, its margins keel-shaped. Pronotum with weak median keel. Scutellum with weak lateral keels. Forewing, narrowing apically, with narrow hypocostal plate. Radius bi- or trifurcate, median trifurcate, cubitus anterior simple (R 2–3 M 3 CuA 1). Metatarsomere I with two intermediate spines.

Coloration (Figures 10, 11). General coloration light brown yellowish. Metope with many dark brown dots, traces of sensory pits also dark brown. Clypeus with dark brown stripes and spots. Pronotum sometimes with dark brown traces of sensory pits. Femora and tibiae with dark brown longitudinal stripes, dorsal margins of hind femora dark brown. Abdominal tergites dark brown. Abdominal sternites yellowish with dark brown anterior margin, middle part, and spots around the setae. Genital segments yellowish. Apices of metatarsomeres III, claws, teeth, and spines of legs dark brown.

Male genitalia (Figure 31). Pygofer with weakly convex apically hind margin. Anal tube narrowing apically, its lateral margins turned down. Anal column about one-third as long as anal tube. Phallobase with waist proximally. Each dorsolateral phallobase lobe with rudimentary supporting process and narrow covering process. Ventral phallobase lobe long, narrowing apically, with a pair of longitudinal bulging projections basally which cover supporting processes of the phallobase (in ventral view). Hind margin of style weakly concave; caudodorsal angle widely rounded. Capitulum of style narrowing to rounded apex (in dorsal view); lateral tooth with concave margin.

Female genitalia. Hind margin of sternum VII with short and broad median process. Anal tube convex (in lateral view). Each distal part of posterior connective lamina of gonapophyses IX with short tooth in bend place. Gonocoxa VIII with high lobe-shaped hind margin bearing leaf-like process distally.

Body length. Males 3.8–4.1 mm; females 4.0–4.3 mm.

Distribution

Authentically known from Algeria (Rey 1891; present data).

Note

The species was described from Teniet el Haad (Rey 1891) and we base our treatment on the topotypes. Type specimen was not examined.

Falcidius diphtheriopsis Bergevin, 1919

(Figures 12–14, and 32)

Falcidius diphtheriopsis Bergevin 1919: 157.

Material examined

Algeria: 1♂, 1♀, syntypes, Djebel Ouach, Coll. E. de Bergevin (MNHN); 1♂, 1♀, Constantine, 28.III.[19]51, R. Mayné (IRSNB).

Supplementary description

Metope with weak median keel and traces of sublateral keels. Coryphe 2.5–3.0 times as wide as long. The border between metope and coryphe keel-shaped. Pronotum and scutellum without keels. Forewing with broad hypocostal plate. Radius and median bifurcate, cubitus anterior simple (R 2 M 2 CuA 1); net of transverse veins. Metatarsomere I with 4 (3+1) intermediate spines.

Coloration (Figures 12–14). General coloration light brown yellowish. Abdominal tergites dark brown. Abdominal sternites yellow brownish with dark brown spots. Male and female sternum VII and male genital segments brown yellowish. Gonoplacs with dark brown margins.

Male genitalia (Figure 32). Pygofer with weakly convex medially hind margin. Anal tube strongly enlarges medially and narrowing basally (in dorsal view), with rounded apex, its lateral margins turned down (in lateral view). Anal column one-third as long as anal tube. Each dorsolateral phallobase lobe with reduced supporting process and wide covering process. Aedeagal hooks curved at right angle. Style with strongly concave hind margin; caudodorsal angle widely rounded. Capitulum of style long, weakly narrowing to truncated apex (in dorsal view).

Female genitalia. Sternum VII with weakly convex hind margin. Anal tube elongate, rounded, weakly narrowing apically. Gonoplacs with deep incision between first and second lobes. Gonocoxa VIII with low lobe-shaped hind margin, without process. Endogonocoxal process sharply narrowing before apex.

Body length. Males 3.2–3.4 mm; females 3.9–4.0 mm.

Distribution

Algeria (Bergevin 1919; present data).

Falcidius scipionis sp. nov.

(Figures 15, 16, and 33)

Falcidius doriae Dlabola 1984: 66, figs 236–244.

Type material

Algeria: ♂, holotype, Souq Ahras, Coll. E. de Bergevin (MNHN).

Paratypes. 2♂, as holotype (MNHN, ZIN); 1♂, 1♀, Oued Taga, 6–11 km SW of Timgad, ‘stat. 45, wet cultivated area’, 1300–1400 m, 3–4.V.1980, E v. Nieuwerkerken, G. Bryan & P.

Oosterbroek leg. (ZMAN); 1♂, near Aïn Amara, 18 km SW of Guelma, 650 m, 5.V.1980, olive yard, E v. Nieukerken, G. Bryan & P. Oosterbroek leg. (MNHN); 3♂, 3♀, Constantine, Coll. E. de Bergevin (MNHN, ZIN); 1♂, 2♀, Djebel Ouach, Coll. E. de Bergevin (MNHN); 1♂, 1♀, St. Charles, A. Théry (MNHN, ZIN).

Description

Metope with weak median and sublateral keels jointed at its upper margin. Coryphe three times as wide as long, with widely convex anterior margin. Pronotum without keels. Scutellum without keels or sometimes with weak median keel. Forewings nearly oval, with narrow hypocostal plate. Radius bifurcate, median trifurcate, cubitus anterior simple (R 2 M 3 CuA 1). Metatarsomere I with single intermediate spine.

Coloration (Figures 15 and 16). General coloration light brown yellowish. Metope with dark brown dots and traces of sensory pits. Femora and tibiae with longitudinal dark brown stripes. Apices of spines, metatarsomeres III, and claws dark brown. Abdominal tergites black.

Male genitalia (Figure 33). Pygofer with weakly convex hind margin. Anal tube elongate, narrowing apically, lateral margins turned down. Anal column about one-third as long as anal tube. Each phallobase lobe with narrow supporting process and wide covering process. Ventral phallobase lobe long and wide. Aedeagal hooks turned to dorsal surface of the phallobase. Style with weakly concave hind margin. Capitulum weakly narrowing to rounded apex (in dorsal view); lateral tooth with straight margin.

Female genitalia. Hind margin of sternum VII with short semicircular median process. Anal tube widely rounded apically.

Body length. Males 3.7–3.8 mm; females 4.1–4.2 mm.

Distribution

Algeria.

Etymology

The species name is derived from the name of Roman general Scipio in the third Punic war.

Falcidius duffelsicus Dlabola, 1982

(Figures 17–19, and 34)

Falcidius duffelsicus Dlabola 1982: 135.

Material examined

Tunisia: ♂, holotype, 1♂, 1♀, paratypes, 5 km N of Hammamet, 0–150 m, 9–17.VI.1980, J.P. Duffels leg. (ZMAN); 1♀, about 100 km N of Hammamet, sea cliff,

31.III.1980, J.M. Cox leg. (BMNH); 1♂, 1♀, 3–7 km S of Korbous, 0–100 m, 26.V.1984, J.P. Duffels leg. (ZIN).

Supplementary description

Metope convex (visible from above), with sublateral keels jointed at its upper margin. Coryphe 2.5 times as wide as long, sometimes with weak median keel, its anterior margin strongly convex. Pronotum sometimes with weak median keel. Scutellum with median groove. Forewings with narrow hypocostal plate. Radius and median bifurcate, cubitus anterior simple (R 2 M 2 CuA 1). Metatarsomere I with single intermediate spine.

Coloration (Figures 17–19). General coloration light brown yellowish with dark brown or black spots and stripes. Metope with large approximately rectangular black spot above clypeus and a pair of dark brown or black large rounded spots between sublateral keels apically. Upper angles of metope and traces of sensory pits dark brown. Clypeus with longitudinal brown stripes, it is edged by black stripes on each side. Rostrum with terminal segment dark brown. Coryphe with two pairs of dark brown elongate spots on each side. Forewings with dark brown longitudinal veins and light costal margin. Femora and tibiae with longitudinal dark brown strips. Spines of legs with dark brown apices. Abdominal sternites including pygofer (in males with dark brown apical angles) light yellow with brown dots at seta bases. Abdominal tergites dark brown or black excluding yellow brownish median line. Anal tube light yellow. Style light yellow excluding dark brown capitulum.

Male genitalia (Figure 34). Pygofer with weakly convex hind margin. Anal tube elongate, narrowing apically (in dorsal view), apical angles turned down (in lateral view). Anal column one-third as long as anal tube. Each dorsolateral phallobase lobe with narrow supporting process and wide covering process. Ventral phallobase lobe long and wide, not narrowing apically. Ventral aedeagal hooks strongly curved, directed to dorsal surface of the phallobase. Style with weakly concave hind margin, caudodorsal angle narrowly rounded. Capitulum on long neck, narrow, narrowing apically; lateral tooth with concave margin.

Female. Hind margin of sternum VII with semicircular median process.

Body length. Males 3.4 mm (after Dlabola 3.4–3.6 mm); females 3.8 mm (after Dlabola 4.1–4.2 mm).

Distribution

Tunisia (Dlabola 1982; present data).

Falcidius ebejeri sp. nov.
(Figures 20–22, and 35)

Type material

Malta: ♂, holotype, Mtahleb, 4.III.2001, M.J. Ebejer leg. (NMWC). Paratypes: 6 ♀, as holotype (NMCW and ZIN); 1♀, Isole Maltesi, Ghar Lapsi (Siggizwi), 19.IV.1965, C. Baroni leg. (MNHN).

Description

Metope convex (visible from above), with very weak sublateral keels. Coryphe transverse (three times as wide as long), anterior margin weakly convex. Pronotum and scutellum without keels. Forewings with narrow hypocostal plate. Radius bifurcate, median trifurcate, cubitus anterior simple (R 2 M 3 CuA 1); small number of transverse veins. Metatarsomere I with single intermediate spine.

Coloration (Figures 20–22). General coloration light brown. Metope with large rectangular black spot above clypeus. Apical angles of metope terminated by narrow dark brown stripes. Traces of sensory pits dark brown. Anteclypeus with four longitudinal black stripes. Terminal segment of rostrum black. Forewings with dark brown longitudinal veins and yellowish transversal veins. Abdominal tergites excluding median line black. Abdominal sternites and genital segments light yellow brownish. Femora and tibiae with longitudinal dark brown stripes. Spines and metatarsomeres III with dark brown apices. Gonoplocs with dark brown margins. Female anal tube with dark apex.

Male genitalia (Figure 35). Pygofer with convex hind margin. Anal tube not narrowing apically, its apical angles turned down. Anal column one-quarter to one-third as long as anal tube. Each dorsolateral phallobase lobe with rudimentary supporting process and wide covering process. Ventral phallobase lobe long and wide. Aedeagal hooks directed to dorsal surface of the phallobase. Style with weakly concave hind margin; caudodorsal angle widely rounded. Capitulum of style narrowing to apex (in dorsal view); lateral tooth with concave margin.

Female genitalia. Hind margin of sternum VII with semicircular median process. Gonoplocs with a pair of weak transverse keels. Anal tube weakly narrowing apically.

Body length. Male 3.6 mm; females 4.0–4.5 mm.

Distribution

Endemic species in Malta.

Etymology

The species is named for the collector and Maltese dipterist Dr Martin Ebejer.

***Falcidius hannibal* sp. nov.**

(Figures 23–26, 36, and 37)

Falcidius chlorizans Dlabola 1980: 215

Type material

Tunisia: ♂, holotype, 5 km W of Sbeitla, 300 m, 17.V.1984, J.P. Duffels leg. (ZMAN). Paratypes: 4♂, 8♀, as holotype (ZMAN, ZIN); Algeria: 5♂, 2♀, massif des Aurès, Bouhamana, 1300 m, 11.V.1984, J.P. Duffels leg. (ZMAN, ZIN); 4♂, 2♀,

Batna, 'Exp. Obenb.' (MNHN; NMPC); 9♂, 13♀, Djurdjura, 15–19.VI.1971, 1000–2000 m, A. Hoffer et J. Horák leg. (NMPC, ZIN, NMWC); 1♀, Lambéze, VI.1885, L. Bleuse leg. (MNHN).

Description

Metope convex, with distinct or very weak (traces) sublateral keels jointed close to its upper margin, sometimes with weak median keel. Coryphe 2.5 times as wide as long, sometimes with median keel, anterior margin convex. Pronotum and scutellum without keels. Forewings with narrow hypocostal plate. Radius bifurcate, median tri- or tetrafurcate, cubitus anterior simple (R 2 M 3–4 CuA 1). Metatarsomere I with one or two intermediate spines.

Coloration (Figures 23–26). General coloration light yellow brownish. Metope with dark brown or black wide transverse band above clypeus. Metope and pronotum with dark brown traces of sensory pits. Postclypeus with transverse lateral dark brown stripes. Anteclypeus with dark brown spots. Rostrum with dark brown terminal segment. Forewings with light costal margin. Longitudinal veins light brown. Femora and tibiae with dark brown longitudinal stripes and spots. Abdominal tergites excluding median line black. Abdominal sternites including genital segments light yellow. Apices of spines and metatarsomeres III dark brown.

Male genitalia (Figures 36 and 37). Pygofer with nearly straight or convex hind margin. Anal tube narrowing apically, its apical angles in shape of semicircular processes turned down. Anal column one-quarter as long as anal tube. Each phallobase lobe with narrow supporting process and wide covering process. Aedeagal hooks directed to dorsal surface of the phallobase. Style with weakly concave hind margin. Capitulum narrowing to truncated or rounded apex; lateral tooth with concave margin.

Female genitalia. Hind margin of sternum VII with semicircular median process. Gonoplasts with a pair of weak transverse keels. Anal tube weakly narrowing apically.

Body length. Males 2.7–3.2 mm; females 3.0–3.5 mm.

Distribution

Tunisia, Algeria.

Etymology

The species name is derived from the name of Carthaginian general Hannibāl.

Note

The material cited by Dlabola (Dlabola 1980: 215) under the name *F. chrorizans* belongs to *F. hannibal* sp. nov. This material is included in the type series.

Key to species

- (1) Cells of forewings with dark brown edging inside (Figure 2) 2
 Cells of forewings without dark brown edging inside (Figure 13) 4
- (2) Phallobase strongly enlarged proximally, with very wide covering processes (Figure 29A,B) *F. marocanus* Bergevin
 Phallobase not enlarged proximally, with moderately wide covering processes (Figures 28A,B). 3
- (3) Each dorsolateral phallobase lobe with vertical supporting process situated near to its ventral margin (Figure 27A). Aedeagal hooks directed to the ventral margin of the phallobase. Style with strongly concave hind margin (Figure 27D) *F. apterus* (Fabricius)
 Each dorsolateral phallobase lobe with horizontal supporting process situated near to its dorsal margin (Figure 28A). Aedeagal hooks directed to the dorsal margin of the phallobase. Style with weakly concave hind margin (Figure 28E) *F. limbatus* (A. Costa)
- (4) Metope with large black spot or band above clypeus (Figures 19, 22, 25, and 26) 5
 Metope without large black spot or band above clypeus (Figure 9) . . 7
- (5) Metope with black rectangular spot above clypeus (Figures 19 and 22). Forewings with dark brown longitudinal veins (Figures 18 and 21) 6
 Metope with dark brown or black band above clypeus (Figures 25 and 26). Forewings with light brown longitudinal veins (Figure 24)
 *F. hannibal* sp. nov.
- (6) Metope with a pair of distinct large dark brown or black spots apically (Figure 19). Coryphe with anterior margin strongly convex (Figure 17). Supporting processes of the phallobase narrow (Figure 34A)
 *F. duffelsicus* Dlabola
 Metope without distinct large dark brown or black spots apically (Figure 22). Coryphe with anterior margin weakly convex (Figure 20). Supporting processes of the phallobase rudimentary (Figure 35A)
 *F. ebejeri* sp. nov.
- (7) Male anal tube strongly enlarged medially in dorsal view (Figure 32D)
 *F. diphtheriopsis* Bergevin
 Male anal tube weakly enlarges medially in dorsal view (Figure 30C). 8
- (8) Phallobase with wide supporting processes (Figure 30A). Lateral margins of male anal tube straight in lateral view (Figure 30B) *F. doriae* (Ferrari)
 Phallobase with narrow supporting processes (Figure 31A). Lateral margins of male anal tube convex in lateral view (Figure 33F). 9
- (9) Phallobase with waist proximally (Figures 31A,B). Ventral phallobase lobe with a pair of longitudinal bulge-like projections basally which cover supporting processes of the phallobase (in ventral view) (Figure 31B)
 *F. chlorizans* (Rey)

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Phallobase without waist proximally (Figures 33A,B). Ventral phallobase lobe glib, not covering supporting processes of the phallobase (in ventral view) (Figure 33B) *F. scipionis* sp. nov.

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