REVISION OF THE GENUS SPHECODES LATREILLE OF EGYPT (HYMENOPTERA: HALICTIDAE)

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(Manuscript received March, 2002)

Abstract

Revision of the genus *Sphecodes* Latreille provides a great assistance in the identification of the parasitic group of the family Halictidae. Seven Egyptian species of this genus are revised. Each taxon is provided with synonyms, description, hosts and distribution. A key to species is also presented. Male genitalia of six species are illustrated.

INTRODUCTION

The genus *Sphecodes* Latreille, 1804 consists of hundreds of species. It is almost world-wide in distribution, although it is nearly absent in Australia (Michener, 1978). Many species are known from the Palaearctic Region. It consists of social parasites unable to provision their own nests. Most species of *Sphecodes* are parasitic in nests of halictine bees (*Halictus* Latreille and *Lasioglossum* Curtis).

This genus differs from most other Halictinae by the following characters: scopa absent in the female; prepygidial fimbria reduced in female, not divided by longitudinal line; head and thorax coarsely punctate; propodeal dorsal surface coarsely rugose; head and thorax black, abdomen usually red, clypeus and legs not marked with yellow.

Major papers on the taxonomy of Old World species of the genus are recorded by Blüthgen (1923, 1924, 1927 and 1928). The same author (1933) recorded the following six species from Egypt: *S. fuscipennis rubripes* Spin., *S. olivieri* Lep., *S. gibbus* L., *S. alternatus* Sm., *S. ruficrus* Erichs. and *S. divisus* K. In 1934, he added two more species from Egypt, *S. puncticeps* Thoms. and only female of *S. hirtellus* Blüthgen. The systematic study and descriptions of these species are lacking in Egypt. In this paper, a taxonomic revision of Egyptian species is made to facilitate the identification of these parasitic species of Halictidae.

MATERIALS AND METHODS

The practical part of the present study was carried out by the examination of all specimens of the genus in the main Egyptian reference insect collections, in addition to fresh materials collected during the study from different localities in Egypt. Fresh

materials were used to make microscopic preparations, to illustrate the taxonomic characters and drawing of the male genitalia. Ocular micrometer was used in making measurments. All drawings were made by square eyepiece. The main Egyptian insect collections are: Ain Shams Univ. Collection, Faculty of Science. (Coll. Ain.); Al-Azhar Univ. Collection, Faculty of Agriculture (Coll. Alf.); Cairo Univ. Collection, Faculty of Science (Coll. Car.); Egyptian Entomology Society Collection (Coll. Soc.) and Ministry of Agriculture Collection, Plant Protection Research Institute (Coll. Agr.).

Genus *Sphecodes* Latreille

According to Michener (1978), the genus *Sphecodes* is composed of two subgenera. The first one is *Austrosphecodes*, which is only found in South America and includes the South American species. The second is *Sphecodes* proper, which is found on all other continents. All Egyptian species belong to the latter subgenus.

Subgenus *Sphecodes* Latreille

Sphecodes Latreille, 1804, Nouvelle dictionnaire d'histoire naturelle [Deterville], Paris, Tableaus methodiques, 24: 182.
Type species : *Sephex gibba* Linnaeus, 1758, monobasic.
Dichroa Illiger, 1806, Mag. Insektenk., 5: 39.
Sabulicola Verhoeff, 1890, Ent. Nachr., 16: 328.
Sphecodium Robertson, 1903, Ent. News, 14: 103.
Machaeris Robertson, 1903, Ent. News, 14: 104.
Callosphecodes Friese, 1909, Ann. Mus. Nat. Hungarici, 7: 182.

Diagnostic characters of subgenus *Sphecodes*

In the following characters listing, the identifing character numbers are the same that are used in the identification and description of the Egyptian *Sphecodes* species.

Description : Female

[1] Total length 6.5 - 15 mm.; [2] fore wing length 1.42 - 3.9 mm, the measurements taken from the base of arcuate vein (vein M) to the distal - most extention of the third submarginal cell (vein 2 r-m) Fig.1.

Structure: [3] Head short, length / width ratio 0.74 - 0.83. [4] Eyes converging below, upper interorbital distance always longer than lower interorbital distance. [5] length of eye usually shorter than upper or lower interorbital distances. [6] Clypeus

usually three times as wide as long, feebly biconvex to gently convex. [7] Labrum slightly broader than long, with transverse basal elevated area and flat process which is truncated to weakly emarginate apically. [8] Mandible with subapical tooth, except *S. puncticeps*. [9] Scape long, at least, reaching to the median ocellus, [10] pedicel subequal to or slightly longer than flagellomere 1, [11] flagellomere 2 subequal to or shorter than flagellomere 3. [12] Pronotal lateral angle sharply pointed, projecting nearly right angle, [13] pronotal lateral ridge extends to base of fore coxa. [14] Scutellum feebly biconvex to gently convex. [15] Scutellum nearly 1 – 2 times as long as propodeal dorsal surfuce [16] posterior margin of propodeal dorsal surfuce rounded, with or without elevated ridge. [17] lateral carinae of posterior propodeal surface well developed in all species. [18] Upper side of the second submarginal cell nearly one third to subequal the lower side of same cell; [19] lower side of second submarginal cell receiving first recurrent vein (1m-c) beyond the midpoint, in *S. puncticeps* the veins 1m-cu and 1r-m meeting in the same point, Fig.3. [20] Legs robust, hind femora about three times as long as wide at the widest point near base. [21] Basitibial plate of hind tibia present, feebly defined, tibial spurs simple. [22] Abdominal tergum I nearly 1.5 - 2.0 times as wide as long. [23] abdominal tergites usually depressed apically, nearly one - third the tergal length medially, narrower laterally. [24] Tergites II - IV sometimes depressed basally.

Sculpture: Punctation of head and thorax usually coarse (50 – 70 μ) to moderately coarse punctate (30 - under 50 μ, abdominal tergites with finer punctures (less than 20 μ). [25] Clypeus usually densely punctate, puncture separated by puncture width or less; [26] supraclypeal area, frons and vertex finer and closer punctate than clypeus. [27] Mesoscutum (a) densely punctate, puncture separated by less than puncture width; (b) sparsely punctate, puncture separated by more than puncture width. [28] Scutellum scattered to densely punctate. [29] Dorsal surface of propodeum usually reticulated medially, striolate laterally. [30] Abdominal T.I (a) densely punctate, (b)only with few punctures, visible impunctate in wide areas, (c) doubly punctate; [31] apical depression of T .I (a) punctate, (b) impunctate; [32] abdominal T.II - IV usually punctate; [33] apical depression of T. II (a) punctate, (b) impunctate; [34] apical depression of T. III (a) usually impunctate, (b) punctate; [35] apical depression of T. IV usually impunctate except in *S. alternatus* sparsely punctate.

Vestiture: [36] Pubescence of head and thorax (a) yellowish white plumose hairs, (b) dark brown plumose hairs. [37] Wing covered with short and dense brown hairs apically, somewhat longer and less dense toward base. [38] Femora with scattered plumose hairs, hind tibiae covered with long dense plumose hairs; [39] outer margin of hind tibia with spine-like setae or peg-like setae. [40] abdominal T. V with somewhat dense short hairs, also with long dark brown plumose hairs in *S. albilabris* and *S. rufi-crus*.

Colouration: [41] Head and thorax usually black,sometimes dark brown to reddish brown; [42] Wings hyaline to dark brown; [43] Coxae, trochanters and femora usually black to dark brown, tibiae and tarsi usually reddish; [44] abdomen usually red, sometimes with black marking .

Male: Males are similar to females except as follows

[1] length 5.3 - 14 mm.; [2] fore wing length 1.4 - 4.1 mm [3] Head slightly longer than females, length / width ratio 0.80 - 0.87. [4] Eyes more converging below, [5] length of eye usually longer than lower interorbital distance except in *S. albilabris* (Kirby). [8] Mandible simple, apical tooth absent. [9] Scape shorter than female, reaching to the midpoint between antennal socket and median ocellus; [10] pedicel usually subequal to flagellomere 1; [11] flagellomere 2 longer than or subequal to flagellomere 3, (a) dorso - lateral surfaces of flagellomeres 2 - 11 covered with sensory plates (Fig.6) or (b)sensory plates are presented in oval area which is called tyli, Fig.5. [21] Basitibial plate absent. [37] Pubescence of head and thorax usually snow white. [40] Outer margin of hind tibia without spine-like setae .

Terminalia: Male genitalia as in Figs. 9-14. [45] Gonobase short; [46] gonocoxite weakly to strongly striate; [47] gonocoxite entirely striate or striae found on dorsolateral area; [48] gonostylus large, with basal setose lobe.

Key to Egyptian *Sphecodes* species (Females)

1- Abdominal tergum I impunctate or with some scattered points on the disk (Fig. 8) 2

– Abdominal tergum I densely punctat, Fig.7 3

2- The second submarginal cell of fore wing trapizoidal-shaped, upper side narrower than lower side, Fig.3; mandible finely pointed, without subapical tooth; scutellum as long as propodeal dorsal surface; abdominal tergites IV and V black. Length 7 – 8 mm..... ***S. puncticeps*** Thomson

– The second submarginal cell oblong in shape, upper and lower sides are equal, Fig.4; mandible with subapical tooth; scutellum 1.3 times as long as propodeal dorsal surface; abdominal tergites IV and V red; head and thorax with erect dark brown hairs. Length 8.2 - 9.5 mm..... ***S. ruficrus*** (Erichson)

3- Apical depression of T. II impunctate, except narrow basal area somewhat punctate; apical depression of T. III entirely impunctate..... 4

– Apical depressions of T. II and III densely punctate..... 5

4- Mesoscutum densely punctate, punctures separated by one-half p. w. or less; scutellum 1.8 – 2.0 times as long as propodeal dorsale surface; head and thorax covered with erect dark brown hairs. Length 12.5 – 15 mm..... .....***S. albilabris subsp. rubripes*** Spinola

– Mesoscutum somewhat scattered punctate, punctures separated by 0.5 – 2 p. w. medially; scutellum as long as propodeal dorsal surface; head and thorax with denese yellowish white hairs. length 7.5 – 9.5 mm..... ***S. olivieri*** Lepeletier

5- Mesoscutum coarsely punctate (70 μ), punctures separated by 1 – 2 p. w. medially; scutellum 1.2 times as long as propodeal dorsal surface; upper side of second submarginal cell of fore wing nearly one half the lower side or less, Fig.2. Length 10.5 – 11 mm..... ***S. gibbus*** (L.)

– Mesoscutum finer punctate (30 – 40 μ), interspaces variable; scutellum as long as propodeal dorsal surface; upper side of the second submarginal cell nearly two thirds the lower side 6

6- Mandible with subapical tooth; Mesoscutum sparsely punctate, punctures separated by 1 – 4 p.w.; propodeum with fine elevated ridge posteriorly, sculpture reaching posterior margin. Length 8.3 – 9.8 mm..... ***S.alternatus*** Smith

– Mandible without subapical tooth; Mesoscutum denser punctate, punctures separated by 0.5 – 1.5 p. w.; posterior margin of propodeum smooth and rounded, without elevated ridge, sculpture not reaching the posterior margin. Length 6 – 7 mm. ..... ***S. hertillus*** Blüthgen

Key to Egyptian *Sphecodes* species (Males)

1- Abdominal tergum I nearly impunctate, only with some points ; its apical depression impunctate; second flagellomere nearly 1.25 as long as wide, subequal third flagellomere in length; upper side of second submarginal cell narrower than the lower side; gonocoxite entirely striate on most dorsal surface, stylus pointed apically, Fig.13 ..... ***S. puncticeps*** Thomson

– Abdominal tergum I punctate, sometimes densely punctate centrally and sparsely laterally..... 2

2- Apical depression of T. I impunctate, disk of T. I densely punctate centrally, sparsely punctate laterally; The second submarginal cell oblong in shape, upper and lower sides are equal, Fig.4; second flagellomere 1.5 as long as wide, subequal

third flagellomere in length; gonocoxite entirely striate on most dorsal surface; gonostylus broad apically, Fig.14..... ***S. ruficrus*** (Erichson)

– Abdominal T. I and its apical depression densely punctate; second flagellomere slightly longer than third flagellomere..... 3

3- Apical depressions of T. II & III impunctate, except narrow basal area somewhat punctate 4

– At least, apical depression of abdominal T. II densely punctate..... 5

4- Mesoscutum densely punctate, punctures separated by one half p. w. or less; scutellum 1.8 – 2.0 times as long as propodeal dorsal surface; flagellomeres 2 – 11 with oval tyli, Fig.5; gonocoxite striate on small dorso-lateral area; gonostylus truncated apically, Fig 9. ..... ***S. albilabris subsp. rubripes*** Spinola.

– Mesoscutum somewhat scattered punctate, punctures separated by 0.5 – 2 p. w. medially; scutellum as long as propodeal dorsal surface; flagellomeres 2 – 11 without oval tyli, Fig.6; gonocoxite striate on most of dorso-lateral area; gonostylus rounded apically, Fig.12..... ***S. olivieri*** Lepeletier

5- Mesoscutum coarsely punctate (70 μ), punctures separated by 1 – 2 p. w. medially; scutellum 1.2 times as long as propodeal dorsal surface; upper side of second submarginal cell nearly one half the lower side or less; flagellomeres 2 – 11 with broad tyli; gonocoxite entirely striate on dorsal surface; gonostylus tapring apically, Fig.11..... ***S. gibbus*** (L.)

– Mesoscutum finer punctate (30– 40 μ), interspaces variable; scutellum as long as propodeal dorsal surface; flagellomeres 2 – 11 without tyli 6

6- Mesoscutum sparsely punctate, punctures separated by 1 – 4 p.w.; propodeum with fine elevated ridge posteriorly, sculpture reaching posterior margin;gonocoxite striate on most of dorso - lateral area; gonostylus somewhat pointed apically, Fig.10. ..... ***S. alternatus*** Smith;

– Mesoscutum denser punctate, punctures separated by 1.0 – 1.5 p.w.; posterior margin of propodeum smooth and rounded, without ridge .... ***S. hertillus*** Blüthgen

Sphecodes albilabris subsp. rubripes Spinola

Andrena albilabris Kirby, Monogr. apum. Angl. II. 1802.
Dichroa fucipennis Germar, Faun. Insect. Europ. p. 5, 1819; Tab. 18.
Sphecodes rubripes Spinola, Ann. soc. entom. France VII,1838, p. 512.
Sphecodes fuscipennis subsp. rubripes Spinola, Bull. soc. ent. Egypt, 1933, p. 22.

This species can be recognized by the following

Female: [1] Length 12.5 - 15 mm .; [2] fore wing length 3.3 - 3.9 mm .

Structure: [3] Head short, length / width ratio 0.80. [9] Scape reaching behind lateral ocellus; [10] Pedicel subequal flagellomere 1, [11] flagellomere 2 distinctly longer than flagellomere 1 and subequal to flagellomere 3. [14] Scutellum feebly biconvex; [15] scutellum 1.8 - 2 times as long as propodeal dorsal surface; [16] posterior margin of propodeal dorsal surface without elevated ridge.

Sculpture: Head and thorax coarsely punctate (55 – 70 μ). [27] Mesoscutum densely punctate, punctures separated by half puncture width or less. [30] T.I densely punctate; [31] apical depression of T.I densely punctate; [32] T.II - IV densely punctate; [33] apical depression of T.II impunctate, except narrow basal area with row of punctures; [34 - 35] apical depressions of T.III & IV impunctate.

Vestiture: [36] Pubescence of head and thorax dark brown; [39] outer margin of hind tibia with peg-like setae; [41] T.V with long dark brown hairs.

Colouration: [42] Wings dark brown at apical half ; [43] femora reddish.

Male: Similar to female except as follows: [1] Length 11 - 14 mm; [2] fore wing length 2.85 - 4.1 mm. [3] Length / width ratio of head 0.81; [5] lower interorbital distance longer than eye lenght; [10] pedicel subequal to flagellomere 1; [11] flagellomere 2 nearly 1.15 flagellomere 3, each of flagellomeres 2 - 11 with oval tyli (Fig.5). [36] Pubescence of head and thorax snow white.

Terminalia: Male genitalia as in Fig. 9, [46] gonocoxite weakly striate, [47] striae on small limited area doso-laterally; [48] gonostylus large, tuncated apically, with well developed setose basal lobe.

Hosts: Many authors are recorded that this species found in or near nests of *Halictus* spp.(*H. quadricinctus* (*Fabricius*) and *H. sexcinctus* (*Fabricius*)), *Andrena spp.* and *Colletes spp.* Also, this species is reared from cells of *Colletes* and *Meliturga* (Michener, 1978).

Specimens Examined: Esmailia, -.2.1965(♀), 22.3.98(♀); and 13.3.98 (2♀); Abu Rawash, 29.2.28 (♀); Maadi, 30.2.1913 (♂) and -.2.1912 (♂) **[Coll.Agr.].**

Sphecodes alternatus Smith

Sphecodes alternatus Smith, Catal. Hymen. Brit. Mus. I, 1853, p. 36 n.9.

This species can be recognized by the following

Female: [1] Length 8.3 - 9.4 mm; (2) fore wing length 2.2 - 2.7 mm.

Structure: [3] Head distinctly short, length / width ratio 0.74. [9] Scape reaching to the end of median ocellus; [10] pedicel slightly longer than flagellomere 1, [11] flagellomere 2 subequal to flagellomere 3. [14] Scutellum gently convex. [15] Propodeal dorsal surface subequal to scutellum in length, [16] posterior margin with fine elevated ridge.

Sculpture: Head and thorax moderately coarse punctate (35 – 45μ). [25] Clypeus somewhat sparser punctate medially than laterally. [27] Mesoscutum sparsely punctate, puncture separated by 1 – 4 puncture width. [30] Dorsal surface of propodeum reticulated. [30] T. I punctate ; [31] apical depression of T. I punctate; [32] T. II - IV densely punctate, punctures of T. IV finer and denser than T. II & III, [33] apical depression of T.II densely punctate, [34] apical depression of T. III densely punctate, [35] apical depression of T. IV sparsely punctate .

Vestiture: [36] Pubescence of head and thorax snow white. [39] Outer margin of hind tibia with spine-like setae . [40] T. V only with yellowish short hairs.

Colouration: [42] Wings more or less dark brown. [44] Femora dark brown.

Male: Similar to female except as follows: [1] length 7 - 8 mm; [2] fore wing length 1.90 - 2.1 mm. [3] Head sligthtly longer than female, length / width ratio 0.81. [5] eye longer than lower interorbital distance. [11] second Flagellomere nearly 1.33 times third , flagellomeres 2 – 11 without tyli. [36] Pubescence of head and thorax snow white.

Terminalia : Male genitalia as in fig.(10) [46] gonocoxite strongly striate, [47] striate on most of dorso- lateral area; [48] gonostylus somewhat pointed apically.

Host: Only one species of family Halictidae [*Lassioglossum (Evylaeus) nigripes* (Lepe.)] is recorded by Knerer (1968) as a host of this species.

Specimens Examined: Maadi,18.3.12(♀); Helwan, 23.1.26(♀), 12.7.30(♂), 2.5.31(2♀) and 19.3.35(♀); Abu rawash, 16.1.27(♀) and 2.7.30(♀); Cairo, without data (♀); Suez, 6.3.65(♀); Mansourya, 13.5.31(♂),15.6.32(♂),4.6.33(♂); Kerdasa, 16.6.64(♂); Kafer Hakim, 5.5.32(♂); Nobariah, 3.6.69(♂) **[Coll. Agr.].**

Giza, 5.3.53(♀); Fayoum, 9.5.53(♀); Burg El-Dera, 16-20.4.56(♀) and Burg Abu Seer, 16-20.4.56(2♂+3♀) **[Coll. Car.].**

Sphecodes gibbus (Linnaeus)

Sphex gibba Linnaeus, Syst. Nat. Ed . 10a I, 1758, p. 571.

Sphecodes gibbus Latreille, Gen. Crust. & Insect. IV. 1809, p.153.

This species can be recognized by the following

Female: [1] Length 10.5 - 11 mm .; [2] fore wing length 2.8 - 2.9 mm .

Structure: [3] Length / width ratio of head 0.83. [9] Scape reaching behind lateral ocellus; [10] pedicel subequal flagellomere 1, [11] flagellomere 2 shorter than flagellomere 3. [15] Scutellum 1.2 times as long as propodeal dorsal surface; [16] posterior margin of propodeal dorsal surface without elevated ridge. [19] upper side of second submarginal cell one third lower side or less of same cell, Fig .2.

Sculpture: Head and thorax coarsely punctate (55 – 45μ). [25] Clypeus densely punctate, puncture separated by one half puncture width. [27] Mesoscutum sparsely punctate, puncture separated by 1 – 2 puncture width . [28] Scutellum with sparse punctures marginally, smooth and impunctate centrally. [29] Dorsal surface of propodeum reticulated . [30] Abdominal T. 1 doubly punctate, [31] apical depression densely punctate, [32] T . II & III also doubly punctate, T .IV punctate only, [33 -34] apical depressions of T . II & III densely punctate, [35] apical depression of T. IV impunctate.

Vestiture: [36] Pubescence of head and thorax yellowish except clypeus with long dark brown hairs, also pronotal lateral lobe with some long dark brown hairs, [38] Hind tibia carried dark brown hairs at outer margin , white at inner margin; [39] outer margin of hind tibia with some peg - like setae. [40] Abdominal tergum V with some dark brown hairs.

Colouration: [43] Wings more or less dark brown. [44] Femora dark brown to black.

Male: Similar to female except as follows: [1] Length 8 - 11.5 mm.. [2] fore wing length 2.45 - 3.3 mm. [3] length / width ratio of head 0.80 - 0.87. [5] Eye longer than lower interorbital distance. [11] Flagellomere 2 slightly longer than 3, flagellomeres 2 – 11 with broad tyli, Fig.5. [36] Pubescence of head and thorax snow white.

Terminalia: Male genitalia as in fig.(11) [46] gonocoxite strongly striate, [415867] entirely striate on dorsal surface; [48] gonostylus tapring apically.

Hosts: *Halictus* spp, *Lasioglossum (Lasioglossum) leucozonium* and *Lasioglossum (Evylaeus) malachurum* are recorded as hosts of this species by Blüthgen, 1934b, Stoeckhert, 1933 and Michener, 1978.

Specimens Examined: Maadi, 4.3.12(♀) and 26.3.13(♀); Sakha, 1.7.14(2♂); Burg El-Arab, -.6.62 (♂). **[Coll. Agr.].**

Sphecodes hirtellus Blüthgen

Sphecodes hirtellus Blüthgen, Deutsh. Ent. Zeitschr., 1923, p. 502, ♂ & ♀ .

This species can be recognized by the following

Female: [1] Length 6.5 mm (only one specimen is available in the main collection of Ministry of Agriculture); [2] fore wing length 1.42 mm. [15] Scutellum subequal to propodeal dorsal surface; [16] propodeal dorsal surface slightly rounded posteriorly and without elevated ridge. [27] Mesoscutum moderately coarse punctate (30μ), punctures separated by 0.5 – 1.5 p.w. [29] Sculpture of propodeal dorsal surface not reaching the posterior margin. [30] Abdominal T. I densely and finely punctate; [31] apical depression of T. 1 densely punctate; [32] abdominal T. II – IV densely punctate; [33 - 34] apical depression of T. II & III densely punctate; [35] apical depression of T. IV impunctate.

Male: According to Blüthgen (1923), male is similar to female except as follows: antennal segments reddish brown ventrally; mesoscutum densely and strongly punctate, distance between punctures more than puncture width; tergites III & IV strongly depressed at apical end, tergum II weakly depressed at apical end; tergites more densely punctate than female, apical depression of tergum III impunctate. Length 5 mm.

Hosts: Unknown

Specimens Examined: Only one specimen from Mariut, 10.1.1916(♀) [Coll. Agr.].

Sphecodes olivieri Lepeletier

Sphecodes olivieri Lepeletier , Encycl. method . Insect. X. 1825, p. 448 n. 2.
Sphecodes rufithorax Morawitz, Fedtschenko: Turkestan Mellifera II, 1876, p. 225.
Sphecodes verticalis Hagens, Deutsch. Entom. Zeitschr. XXVI, 1882, p. 219.

This species can be recognized by the following:

Female : [1] Length 7.5 - 9.5 mm ; (2) fore wing length 2.0 – 2.7 mm.

Structure: [3] Head short, length / width ratio 0.80. [10] Pedicel subequal to flagellomere 1; [11] flagellomere 2 shorter than flagellomere 3. [14] Scutellum gently convex. [15] scutellum as long as propodeal dorsal surface; [15] posterior margin of propodeal dorsal surface without elevated ridge.

Sculpture: [27] Mesoscutum somewhat coarsely punctate (55 u), punctures separated by 1 – 2 p.w. [28] Scutellum scattered punctate. [30] Abdominal T. I punctate; [31] apical depression of T. I punctate; [32] abdominal T. II – IV punctate; [33] apical

depression of T. II impunctate, except narrow basal area with some punctures; [34 & 35] apical depression of T. III & IV impunctate.

Vestiture: [36] Pubescence of head and thorax yellowish white. [39] Outer margin of hind tibia with peg-like setae. [40] Tergum V without blackish brown hairs.

Male: Similar to female except as follows:

[1] Length 5.3 – 9.5 mm.; [2] fore wing length 1.4 – 2.4 mm. [5] lower interorbital distance shorter than length of eye.; [10] pedicel subequal to flagellomere 1; [11] flagellomere 2 nearly 1.25 times flagelloere 3, flagellomeres 2 – 11 without tyli (Fig.6).

Terminalia: Male genitalia as in fig.(12) [46] gonocoxite strongly striate; [47] striae found on most of dorso-lateral area; [48] gonostylus rounded apically.

Hosts: Unknown

Specimens Examined: Mazghuna, 8.5.14(♀); Cairo, 19.9.16(♀); Helwan, 4.3.39(♂); Tisfa, 7.9.45(4♀ +♂); Giza, 9.5.53(♀); Merssa Matrouh, 22-29.8.45(4♀+5♂); Burg Abu Seer, 16-20.4.56(3♀) **[Coll. Car.]** .

Fayoum, 5.5.52(♀); Matrouh, -.7.52(♀), -.8.53(♀) and 28.9.54(2♀+3♂); Abu Rawash, 4.10.52(♀); Zeitoun, 1.8.53(♂) ; Pyramids, 20.9.53(♀); Asswan, 30.1.54(♂). **[Coll. Ain.].**

Wadi Um Elek, 29.3.38(♀); Helwan, 28.10.30(♂), 4.11.30(♂), 20.12.30(♂), 5.3.31 (2♀), 25.3.31(♂), 9.6.31(2♂), 8.2.32(♀), 7.6.32(♀+2♂), 17.9.32(♀), 17.10.34(4 ♀+2♂), 6.11.34(♀+3♂), 10.11.34(3♀+7♂), 13.11.34(2♀+♂), 17.11.34(2♀+4♂), 19.3.35(♀), 3.5.35(♂), 23.11.35(♀), 17.11.36(♀+2♂), 21.5.38(♀ +♂); Maadi, 3.3.12 (2♀), 23.6.13(♀); Sedi Salem, 6.7.14(2♂); Beni Suef, -.3.66(♀); Esmailia, 24.8.32(♀), 8.4.66(♂); Sakha, 16.6.66(♀); Giza,28.6.13(♂), 27.5.67(♀), 24.10.91(♂); Magadlah, 8.7.31(♂), 29.11.34 (4♂); Nahia, 24.7.32(♀); Warak El hadar, 24.4.32(♀); Alexandria, 21.1.63(♂); Nobariah, 25.5.69(3♂); Wadi Malah, May32(♀), 4.6.32(♀); Matana, 9.6.64(♂); Burg El Arab, 6.8.68(♂); Mout, 6.6.63(♂); Tanta, 3.4.67(♀); Paris Oasis, 22.11.91(4♂); Kharga Oasis, 1.4.63(♂), 25.6.96(2♂); Borgash, 22.6.32(♂); Dakhla Oasis, 29.3.63(♀), 7.6.66(♂); Port Said, 27.9.35(♂). **[Coll. Agr.]** .

Sphecodes puncticeps Thomson

Sphecodes puncticeps Thomson, Opusc. Entom. P. 2, 1870, p. 99, n. 6.

This species can be recognized by the following

Female: [1] Length 6 – 7 mm.; [2] fore wing length 1.6 mm.

Structure: [3] Head short, length / width ratio 0.81; [8] mandible simple, finely pointed without subapical tooth. [14] Scutellum gently convex; [15] nearly as long as propodeal dorsal surface; [16] propodeal dorsal surface with elevated ridge posteriorly; [18] upper side of second submarginal cell distinctly narrower than the lower side of the same cell; [19] vein 1r-m and 1m-cu are meeting at the end point of the lower margin of the second submarginal cell, Fig.3.

Sculpture: [27] Mesoscutum moderately coarse punctate (40 μ) , punctures separated by 0.5 p. w.; [29] propodeal dorsal surface coarsely reticulated. [30] Abdominal T. I impunctate (only with some scattered points on the disk of tergum); [31] apical depression of T. I impunctate; [32] abdominal T. II – IV punctate; [33 – 35] apical depressions of T. II, III and IV impunctate; [44] basal half of T I , T IV and T. V entirely black , the remaining parts are red.

Male: Similar to female except as follows: [1] Length 5.3 – 6 mm.; [2] fore wing length 1.4 – 1.5 mm. [3] Head longer, length / width ratio 0.85. [11] Flagellomere 2 subequal to flagellomere 3, anntenal flagellomeres 2 – 11 without tyli.

Terminalia: Male genitalia as in Fig.13 [46] gonocoxite strongly striate, [47] gonocoxite entirely striate on most dorsal surface;[48] gonostylus pointed apically.

Hosts: The hosts of this species are *Lasioglossum (Evylaeus)* spp. (Alfken, 1912 and Blüthgen, 1934b).

Specimens Examined: Zagazig. 6.6.13(♂); Mamoura, 16.6.14(♂); Suff, 17.8.32(♂) and Nobaria, 6.6.70(♂). **[Coll. Agr.].**

Sphecodes ruficrus (Erichson)

Dichroa ruficrus Erichson, Waltl: Reise d. Tirol etc. 1835, P. 2, p. 101.
Sphecodes hispanicus Wesmael, Bull. Acad. Sc. Belgique II, 1835, p. 286.

This species can be recognized by the following

Female: [1] Length 8.2 – 9.5 mm. ; [2] fore wing length 2.2.- 2.4 mm.

Structure: [3] Head short, length / width ratio 0.76; [14] scutellum nearly 1.3 times as long as propodeal dorsal surface; [15] the latter with elevated ridge posteriorly; [18] upper and lower sides of the second submarginal cell of fore wing are equal in length, Fig. 4.

Sculpture: [27] Mesoscutum coarsely punctate (55μ), punctures separated by 0.5 – 0.75 p. w.; [30] abdominal T. I impunctate, only with some points on disk, Fig. 8; [31] apical depression of T. I impunctate; [32] abdominal T. II – IV partially punctate, dense-

ly punctate at basal fourth, impunctate at remaining areas; [33 – 35] apical depressions of T. II, III and IV impunctate.

Vestiture: [36] Head and thorax with erect dark brown hairs; [39] hind tibia with spine like setae; [40] tergum V bears dark brown hairs.

Male: Similar to female except as follows: [1] Length 6.0 – 8.3 mm.; [2] fore wing length 1.5 – 2.3 mm. [3] head longer, length / width ratio 0.81; [11] flagellomere 2 subequal to flagellomere 3, antennal flagellomeres without tyli.

Terminalia: Male genitalia as in fig.14 [46] gonocoxite strongly striate, [47] entirely striate on most dorsal surface; [68] gonostylus broad apically.

Hosts: *Lasioglossum malachurum* (Kirby) is only record as a host of this species (Ferton, 1898 and Michener, 1978)

Specimens Examined: Maadi, 27.2.12(♀) and 23.2.32(♀); Zagazig, 6.6.13(♂) and 24.4.65(♂); Shoubra El Namla, 14.4.13(♂); Badrashin, 20.3.14(♂); Barrage, 22.5.14 (♂); Kerdasa, 28.3.30(♀); Borgash 13.1.35(♀+♂); Helwan, 21.4.34(♀); Magadlah, 6.3.35(♂) Burg El Arab, 17.4.63(♀+2♂).**[Coll. Agr.]**

Gemmezia, 29.3.51(♀) **[Coll. Ain.].**

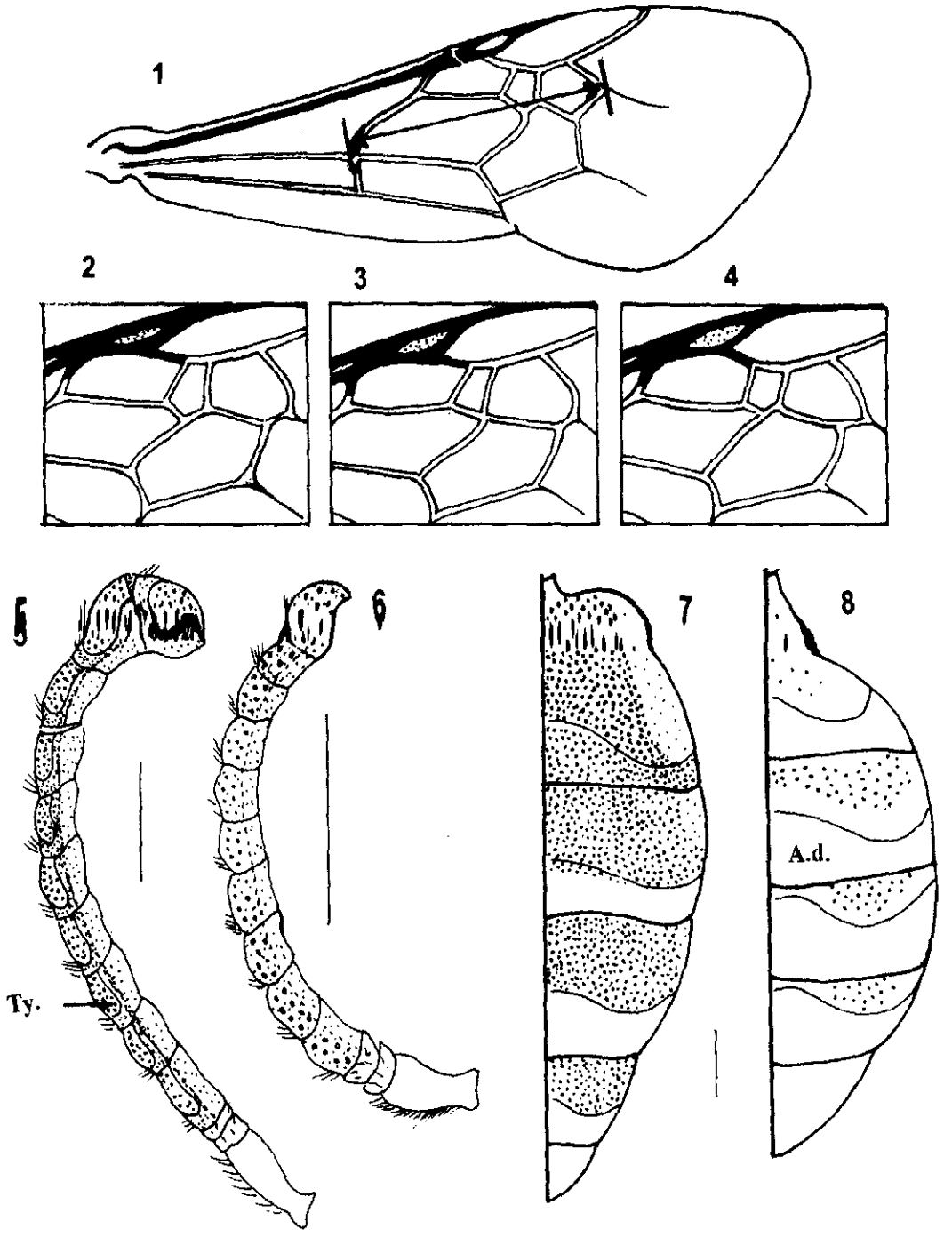


Fig. (1): *S. alternatus* wing showing wing length measurement.

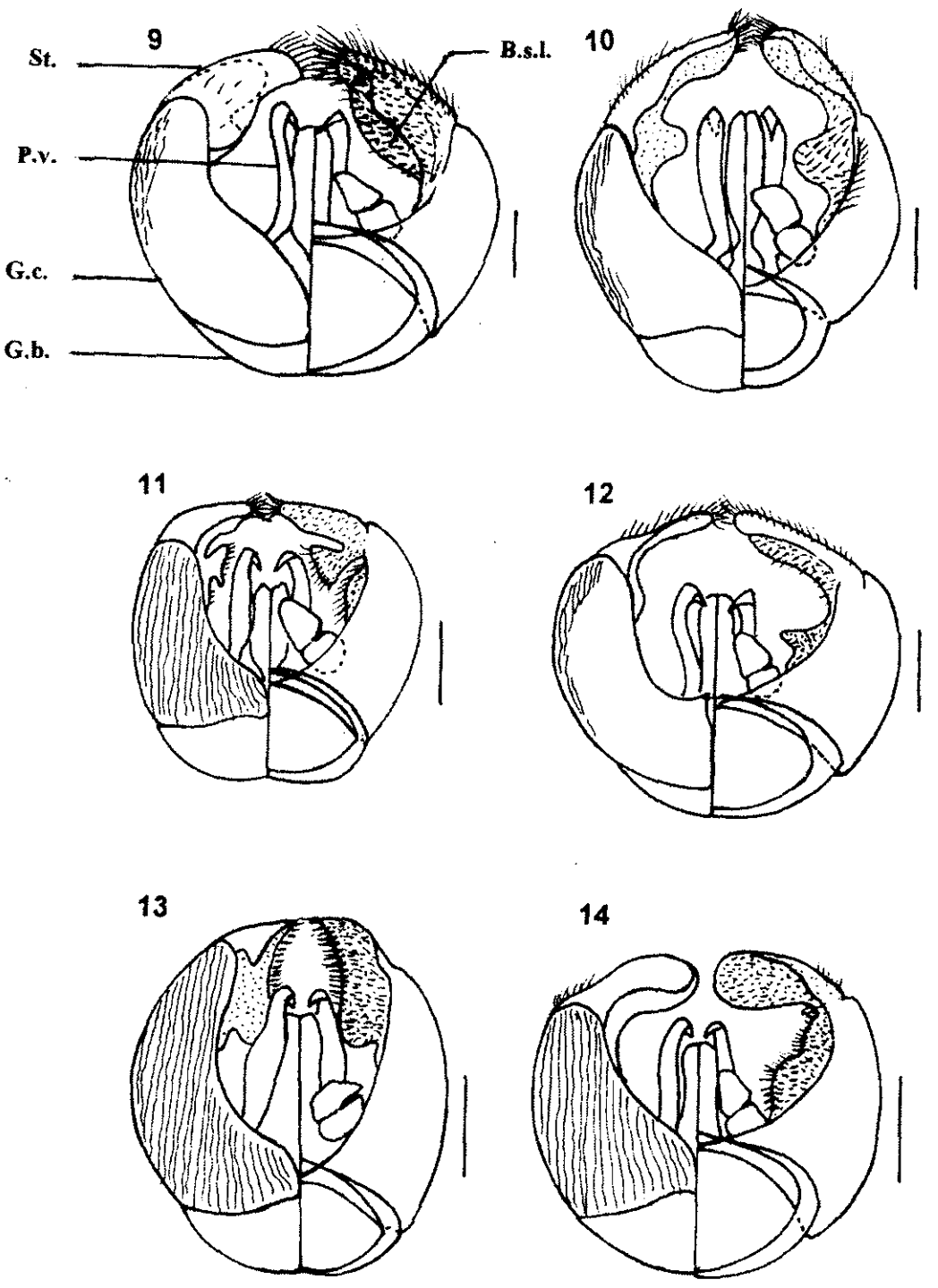
Figs. (2-4): Fore wing of (2) *S. gibbus*, (3) *S. puncticeps*, (4) *S. ruficrus*.

Figs. (5-8): Antenna of: (5) *S. albilabris* subsp. *Rubripes*, (6) *S. olivieri*.

Figs. (7-8): Right half of abdomen of: (7) S. *olivieri*, (8) *S. ruficrus*.

(Ty.: Tyli of antenna; A.d.: apical depresion of tergum)

Scale lines represent 1.0 mm.



Figs. (9-14): Male genitalia of: (9) *S. albilabris* subsp. *Rubripes*, (10) *S. alternatus*, (11) *S. gibbus*, (12) *S. olivieri*, (13) *S. puncticeps*, (14) *S. ruficrus*.

(B. S.L.: basal setose lobe; G.b.: gonobase; G.c.: gonocoxite; G.s.: gonostylus; P.v. : penis valve).

Scale lines represent 0.25 mm.

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مراجعة لجنس إسفيكودس فى مصر (رتبة غشائية الأجنحة : فصيلة هاليكتيدى)

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تشير الدراسات الى أن الأنواع التابعة لجنس اسفيكودس تتطفل على أنواع مختلفة من النحل البرى داخل أعشاشها وخاصة كل من جنس هاليكتس وجنس لاسيوجلوسم.

هذا وقد زودت هذه الدراسة بالصفات التشخيصية للجنس وتم وصف الأنواع السبعة المسجلة فى مصر والأسماء المرادفه والعوائل لكل منها كما تم إنشاء المفاتيح التصنيفية اللازمة لكل من الإناث والذكور كل على حده لسهولة تمييز وتعريف هذه الأنواع المسجله فى مصر.