

## A TAXONOMIC STUDY ON *SEMIOTELLUS* (HYMENOPTERA: PTEROMALIDAE) FROM CHINA\*

XIAO HUI & HUANG DA-WEI

Institute of Zoology, The Chinese Academy of Sciences  
Beijing, 100080, China

**ABSTRACT.** The pteromalid genus *Semiotellus*, is reported from China for the first time. Five new species, *Semiotellus plagiotropus* sp. nov., *Semiotellus electrus* sp. nov., *Semiotellus tumidulus* sp. nov., *Semiotellus longispinus*, sp. nov., *Semiotellus nudus*, sp. nov., and 2 newly recorded species are dealt with in the present paper. The type specimens are deposited in the Zoological Museum, Institute of Zoology, Chinese Academy of Sciences, Beijing.

Key words: *Semiotellus*, Pteromalidae, new species, China.

### Introduction

The placement of *Semiotellus* in the taxonomic hierarchy has changed several times since it was erected. It was placed in the tribe Tridymini by Thomson (1876), in Tridymini, Tridyminae of Miscogasteridae by Ashmead (1904), in Tridyminae of Pteromalidae by Bouček (*in* Peck, Bouček & Hoffer, 1964), and in Ormocerini, Miscogasterinae of Pteromalidae by Graham (1969). Bouček (1988: 310) established a new tribe Systasini under subfamily Ormocerinae, and placed *Semiotellus* in it, which we follow. *Semiotellus* is close to *Systasis* and is distinguished from *Systasis* by the following characters: Thoracic dorsum with conspicuous coarse piliferous punctures; forewing densely hairy, speculum relatively smaller than in *Systasis*, and postmarginal vein about twice as long as the stigmal vein.

Fifteen species of *Semiotellus* were recorded from the world, distributed mainly in Palearctic Region. Only 1 species was recorded from Canada, 4 species from Australia and 2 species from Japan. Bouček (1988) mentioned that there are at least 2 undescribed species from South Asia. It is reported from China for the first time.

### Genus *Semiotellus* Westwood, 1839

*Semiotus* Walker, 1834. Ent. Mag., 2: 288, 290-291. Type-species: *S. mundus* Walker, designation by Westwood, 1839:70. Preoccupied by *Semiotus* Eschscholtz, 1829 (Coleoptera).

*Semiotellus* Westwood, 1839. An introduction to the modern classification of insects, 13: 70. Replacement name for *Semiotus* Walker, 1834.

*Stictonotus* Förster, 1856. Chalcidiae und Proctotrupii. 64, 68. Replacement name for *Semiotus* Walker, 1834, *nec* Eschscholtz, 1829.

*Neosystasis* Girault, 1915a. Mem. Qld. Mus., 3: 188. Type-species: *N. umbilicatus* Girault; by original designation. Synonymized with *Semiotellus* by Bouček (1988:312).

*Cheiopachysia* Girault, 1915b. Mem. Qld. Mus., 4: 208. Type-species: *C. longifasciati-pennis* Girault; by original designation. Synonymized with *Semiotellus* by Bouček (1988: 312).

\* The project supported by National Natural Science Foundation of China, (NSFC grant No. 39625004).

*Semiotellus* Westwood: Graham, 1969. Bull. British Mus. Nat. Hist. Ent., Suppl., 16: 254-257. Key to species of Europe.

*Semiotellus* Westwood: Askew & Kennaugh, 1992. Ent. Monthly Mag., 128: 215-218. Key to species of Europe.

**Generic diagnosis:** Body metallic dark green or blue green; clypeal margin truncate; epistomal sulcus distinct; antennal insertion just on or slightly upper the center of face; antennae 12-segmented, with the formula 11253; thoracic dorsum scattering conspicuous coarser piliferous punctures; notauli deep and complete; forewing densely hairy, speculum absent or small, hardly reaching end of marginal vein; postmarginal vein about twice as long as the stigmal vein; in many females, lower surface of forewing with irregular rows of hairs.

**Biology:** Unknown except that *Semiotellus mundus* is a parasitoid of cecidomyiid, *Mayetiola destructor* (Say) (Herting, 1978).

**Distribution:** Apparently worldwide but not yet recorded from Africa and South America. It is reported here from south and north China.

#### Key to the species of *Semiotellus* from China, females

1. Antennae distinctly clavate, dorso-apically subtruncate, bearing an extensive area of micropilosity; at least second claval suture distinctly oblique..... 2
- Antennae indistinctly clavate, clava at most with small area of micropilosity on the tip, sutures perpendicular ..... 4
2. All claval sutures distinctly oblique (Fig. 2), clava about 2.2 times as long as broad; POL about 2.6 times as OOL; mesoscutum elongate and flatten, about 1.48 times as long as broad (Fig. 3); fore wing speculum small, basal cell pilose..... *plagiotropus*, sp. nov.
- Only second claval suture oblique; mesoscutum slightly elongate, about 1.1-1.2 times as long as broad..... 3
3. Antennae slightly clavate (Fig. 6); flagellum plus pedicel longer than head width (about 1.1-1.2 times), each funicular segment longer than its width except the fifth one quadrate; basal vein of fore wing pilose, basal cell bare; stigma not capitate..... *electrus*, sp. nov.
- Antennae distinctly clavate (Fig. 8); flagellum plus pedicel shorter than head width; each funicular segment slightly transverse except the first one slightly elongate; basal vein and basal cell of fore wing pilose; stigma capitate (Fig. 9)..... *tumidulus*, sp. nov.
4. Eyes relatively small, eye height about a half of head height; POL about 3 times as long as OOL; gaster 2.5 times as long as broad; basal cell of fore wing bare, marginal vein slightly thickness..... *S. nudus*, sp. nov.
- Eyes large, eyes height about two thirds of head height; POL 2.5 times as long as OOL..... 5

5. Spur of mid tibia distinct longer than the length of the first tarsal segment; basal vein and basal cell of fore wing pilose; gaster longer than thorax, and shorter than head plus thorax; planta large .....  
 ..... *S. longispinus*, sp. nov.
- Spur of mid tibia distinct shorter than the length of the first tarsal segment .....6
6. Gaster about 2.2 times as long as broad; spur of mid tibia about four fifths the length of the first tarsal segment ..... *S. mundus* (Walker)
- Gaster about 3 times as long as broad; spur of mid tibia about two thirds the length of the first tarsal segment ..... *S. diversus* (Walker)

### Species description

#### 1. *Semiotellus plagiotropus*, sp. nov. (Figs. 1-5)

*Diagnosis:* Female: 4mm. Head green, thorax bluish green, gaster brown; antennal scape yellowish, pedicel yellowish brown; coxa concolorous with thorax.

Head in front view (Fig. 1), reticulate and scattering piliferous punctures; antennal insertion at center of face; scape beyond median ocellus; pedicel about 1.25 times as long as broad, and almost as long as first funicular segment; flagellum plus pedicel longer than head width; clava in lateral view 2.2 times as long as broad, dorso-apically subtruncate, bearing an extensive area of micropilosity; two claval sutures distinctly oblique (Fig. 2). Relative measurements: head width 53, height 43, dorsal length 28, POL:OOL as 12:4.5, eyes space 31, eyes height 24, malar space 12, flagellum plus pedicel 58.

Thorax (Fig. 3) dorsum slightly depressed, reticulated and scattering coarse piliferous punctures; the anterior part of mesoscutum distinct protrudent; propodeum (Fig. 4) finely reticulate, with completely median carina, plica only distinct at the hind 2/3. Fore wing densely hairy outside speculum, basal cell and basal vein pilose. Petiole longer than its broad, with single hair on each side. Gaster (Fig. 5) about 2.4 times as long as broad, longer than thorax; each tergite pubescent; first tergite about as long as three following tergites combined. Relative measurements: pronotum length 4, width 42, mesoscutum 44: 50, scutellum 30: 23, marginal vein 48, postmarginal vein 36, stigmal vein 15.

*Male:* 2-2.5mm, antennae hairy, each funicular segment longer than its broad. Gaster shorter than thorax. Relative measurements: marginal vein 28, postmarginal vein 28, stigmal vein 13.

*Holotype:* ♀, CHINA: Fujian: Huanggang Mt. (27.8°N, 117.7°E), 27.vi.1980, Coll. HUANG Ju-Chang.

*Paratypes*: 1 ♀, 1 ♂, same data as holotype; 1 ♂, CHINA: Fujian: Huanggang Mt. (27.8°N, 117.7°E), 4.vii.1980, Coll. LIN Nai-Quan; 2 ♀, CHINA: Hunan, 29.vi.1987.

*Distribution*: CHINA (Fujian, Hunan).

This species closely resembles *S. rujanensis* Bouček, but it differs as follows: Two claval sutures oblique, POL:OOL as 12:4.5, basal cell pilose.

## 2. *Semiotellus electrus*, sp. nov. (Figs. 6-7)

*Diagnosis*: Female: 2.2mm. Head and thorax dark green, gaster bluish green; antennal scape yellowish in ventral; legs yellowish except coxa concolorous with thorax; fore wings brownish outside basal vein.

Face minutely reticulate, piliferous punctures dense in upper face; clypeus shallow reticulate. Antennal insertion at the center of face; scape beyond median ocellus; pedicel about 1.5 times as long as broad, shorter than first funicular segment; funicular segments longer than broad except the fifth one slightly quadrate, and with one row of sensilla; flagellum plus pedicel slightly longer than head width; clava in lateral view 2.5 times as long as broad, dorso-apically subtruncate, bearing an extensive area of micropilosity; second claval suture distinctly oblique (Fig. 6). Relative measurements: head width 49, height 38, dorsal length 23, POL:OOL as 13:5, eyes space 30, eyes height 21, malar space 10, flagellum plus pedicel 58.

Thorax dorsum convex, scattering coarse piliferous punctures; the anterior part of mesoscutum protrudent; propodeum finely reticulate, median carina complete, plica almost complete. Fore wing (Fig. 7) densely hairy outside speculum; basal vein and the posterior part of basal cell pilose; under surface of fore wing with irregular hair line under marginal vein.

Gaster sessile, about 1.6 times as long as broad; each tergite weakly reticulate except first gastral tergite. Relative measurements: pronotum length 4, width 43, mesoscutum 44: 50, mesoscutum 33: 51, scutellum 32: 25, marginal vein 44, postmarginal vein 35, stigmal vein 17.

*Male*: 2mm, antennae longer, with long hairs, every funicular segment longer than its width. Gaster slightly longer than thorax; aedeagus produced.

*Holotype*: ♀, CHINA: Guangxi: Xingan (25.6°N, 110.6°E), 2540m, 1.viii.1985, Coll. LI Chang-Fang.

*Paratypes*: 3 ♀, 10 ♂, same data as holotype.

*Distribution*: CHINA (Guangxi).

This species differs from *Semiotellus tumidulus*, sp. nov. by the characters mentioned in the key. *S. electrus* can be separated from *S. rujanensis* Bouček by the following characters: Antennae only slightly clavate; POL 2.6 times as long as OOL.

### 3. *Semiotellus tumidulus*, sp. nov. (Figs. 8-9)

*Diagnosis:* Female: 2.8-3.0 mm. Body dark green, gaster blue green; antennae black; legs dark brown or concolorous with body except 1-4 tarsus yellowish; fore wing brownish outside basal vein.

Lower face slightly swollen; clypeus shallow reticulate; mandibles 3-toothed. Antennae clavate (Fig. 8); scape reticulate, beyond median ocellus; pedicel shorter than first funicular segment; each funicular segment slightly transverse except the first one slightly elongate, and with one row of sensilla; flagellum plus pedicel shorter than head width; clava in lateral view 2 times as long as broad, dorso-apically subtruncate, bearing an extensive area of micropilosity; the first claval suture perpendicular, the second distinctly oblique. Relative measurements: head width 54, height 38, dorsal length 22, POL:OOL as 12:7, eyes length 22, temple 4, eyes space 33, eyes height 26, malar space 10, flagellum plus pedicel 51.

Thorax dorsum convex, scattering coarse piliferous punctures; the anterior part of mesoscutum protrudent; propodeum finely reticulate, median carina and plica indistinct. Fore wing (Fig. 9) densely hairy outside speculum; basal vein and the posterior part of basal cell pilose; under surface of fore wing with irregular hair lines under marginal vein. Gaster sessile, about 2.5 times as long as broad; each tergite shallowly reticulate. Relative measurements: pronotum length 5, width 45, mesoscutum 30: 50, scutellum 26: 22, marginal vein 37, postmarginal vein 23, stigmal vein 15.

*Male:* Unknown.

*Holotype:* ♀, CHINA: Beijing (40.4°N, 115.9°E), 750m, 3.vii.1990, Coll. Huang Da-Wei.

*Distribution:* China (Beijing).

This species closely resembles *S. rujanensis* Bouček, but it differs as follows: Each funicular segment slightly transverse except the first one slightly long; marginal vein about 2.5 times as long as the stigmal vein; gaster 2.5 times as long as broad. In contrast, *S. rujanensis* with basal funicular segments slightly elongate, the fifth one subquadrate; marginal vein over 3 times as long as the stigmal; gaster 1.6 times as long as broad.

### 4. *Semiotellus longispinus*, sp. nov. (Figs. 10-12)

*Diagnosis:* Female: 2.5-2.8 mm. Body dark green and densely brown hairy; antennal scape and pedicle yellowish brown; fore coxa brown in base, mid and hind coxae concolorous with body.

Face in front view (Fig. 10), clypeus weakly reticulate. Antennae filiform (Fig. 11); scape beyond median ocellus; pedicel shorter than first funicular segment; each funicular segment longer than its width except the last one quadrate, and with one row of sensilla; flagellum plus pedicel longer than head width; clava in lateral view 2.6 times as long as broad, claval suture perpendicular. Relative measurements: head width 46, height 33, dorsal

length 22, POL:OOL as 12:5, eyes length 19, temple 4, eyes space 27, eyes height 22, malar space 8, flagellum plus pedicel 57.

Thorax dorsum convex, scattering coarse piliferous punctures; Mesoscutum slightly elongate; propodeum with complete median carina, plica almost complete. Fore wing (Fig. 12) densely hairy outside speculum; basal cell and basal vein pilose; under surface of fore wing with irregular hair line under marginal vein. Spur of mid tibia distinct longer than the length of the first tarsal segment. Gaster sessile, about 2 times as long as broad. Relative measurements: pronotum length 3, width 33, mesoscutum 30: 45, scutellum 25: 22, marginal vein 42, postmarginal vein 30, stigmal vein 14.

*Male:* Unknown.

*Holotype:* ♀, CHINA: Fujian: Huanggang Mt. (27.8°N, 117.7°E), 9.ix.1985, Coll. Huang Ju-Chang.

*Distribution:* China (Fujian).

This species can be distinguished from *Semiotellus mundus* and *Semiotellus diversus* by having spur of mid tibia distinctly longer than the length of the first tarsal segment.

##### 5. *Semiotellus nudus*, sp. nov. (Figs. 13)

*Diagnosis:* Female: 3 mm. Body bluish green; antennae black; legs colorous with body except tarsus yellowish.

Head almost round in front view; clypeus reticulate. Antennae slightly clavate; scape beyond median ocellus; first and second funicular segment longer than its width, others slightly transverse; flagellum plus pedicel combined longer than head width; claval suture perpendicular, micropilosity only on the tip of clava. Relative measurements: head width 48, height 39, dorsal length 23, POL:OOL as 15:5, eyes length 18, temple 6, eyes space 29, eyes height 23, malar space 10, flagellum plus pedicel 50.

Thorax with coarse sculpture; propodeum with complete median carina, plica almost complete. Fore wing (Fig. 13) with large speculum; basal vein complete, basal cell bare, stigmal vein slightly capitate. Gaster sessile, about 2.5 times as long as broad. Relative measurements: pronotum length 2, width 47, mesoscutum 37: 50, scutellum 30: 24, marginal vein 32, postmarginal vein 20, stigmal vein 11.

*Male:* Unknown.

*Holotype:* ♀, CHINA: Beijing (40.4°N, 115.9°E), 3.vii.1990, Coll. Huang Da-Wei.

*Paratype:* 1 ♀, same data as the holotype; CHINA: LIAONING: Xifeng, 1 ♀, 10.vii.1992, Coll. Lin Nai-Quan.

*Distribution:* China (Beijing).

This species is close to *S. longispinus*, sp. nov., differing from the latter in the following characters: Eyes relatively small, its height about half of head height; POL about 3 times as long as OOL; gaster 2.5 times as long as broad; fore wing with large speculum; basal cell of fore wing bare.

#### 6. *Semiotellus mundus* (Walker)

*Semiotus mundus* Walker, 1834. Ent. Mag., 2: 291.

*Semiotus clarus* Walker, 1834. Ent. Mag., 2: 291, ♂[nec ♀]. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus tarsalis* Walker, 1834. Ent. Mag., 2: 292, ♂[nec ♀]. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus scoticus* Walker, 1834. Ent. Mag., 2: 292. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus varians* Walker, 1834. Ent. Mag., 2: 293. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus praestans* Walker, 1834. Ent. Mag., 2: 293. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus maerens* Walker, 1834. Ent. Mag., 2: 295. Synonymized with *S. mundus* by Graham (1969: 256).

*Pteromalus Japis* Walker, 1839. Monographia Chalciditum, 1: 222. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotus tauriscus* Walker, 1848. List of the specimens of Hymenopterous insects in the collection of the British Museum, part II: 173. Synonymized with *S. mundus* by Graham (1969: 256).

*Semiotellus puncticollis* Thomson, 1876. Hymenopteren Scandinaviae. 4. Pteromalus (Svederus), 202. Synonymized with *S. mundus* by Graham (1969: 256).

*Specimens examined*: YUOGSLAVIA: 1 ♀, 1 ♂, Coll. R. W. Sehliek, Det. Bouček; Bohemia or Hradec Kralove, 1 ♂, 1.vi.1945, Coll. Bouček, Det. Bouček 1953 (from NHM, London). CHINA: Jiangxi: Neiliang, 6 ♀, 21.viii.1985, Coll. Li Chang-Fang; CHINA: Tibet: Co Ngoin, 1 ♀, 7.viii.1974, Coll. Li Tie-Shen.

*Host*: *Mayetiola destructor* (Say).

*Distribution*: CHINA (Jianxi, Tibet); Britain, Ireland, Sweden, France, Yugoslavia.

#### 7. *Semiotellus diversus* (Walker)

*Semiotus diversus* Walker, 1834. Ent. Mag., 2: 294.

*Semiotellus diversus* (Walker): Graham, 1969. Bull. British Mus. Nat. Hist. Ent., Suppl., 16: 254, 256.

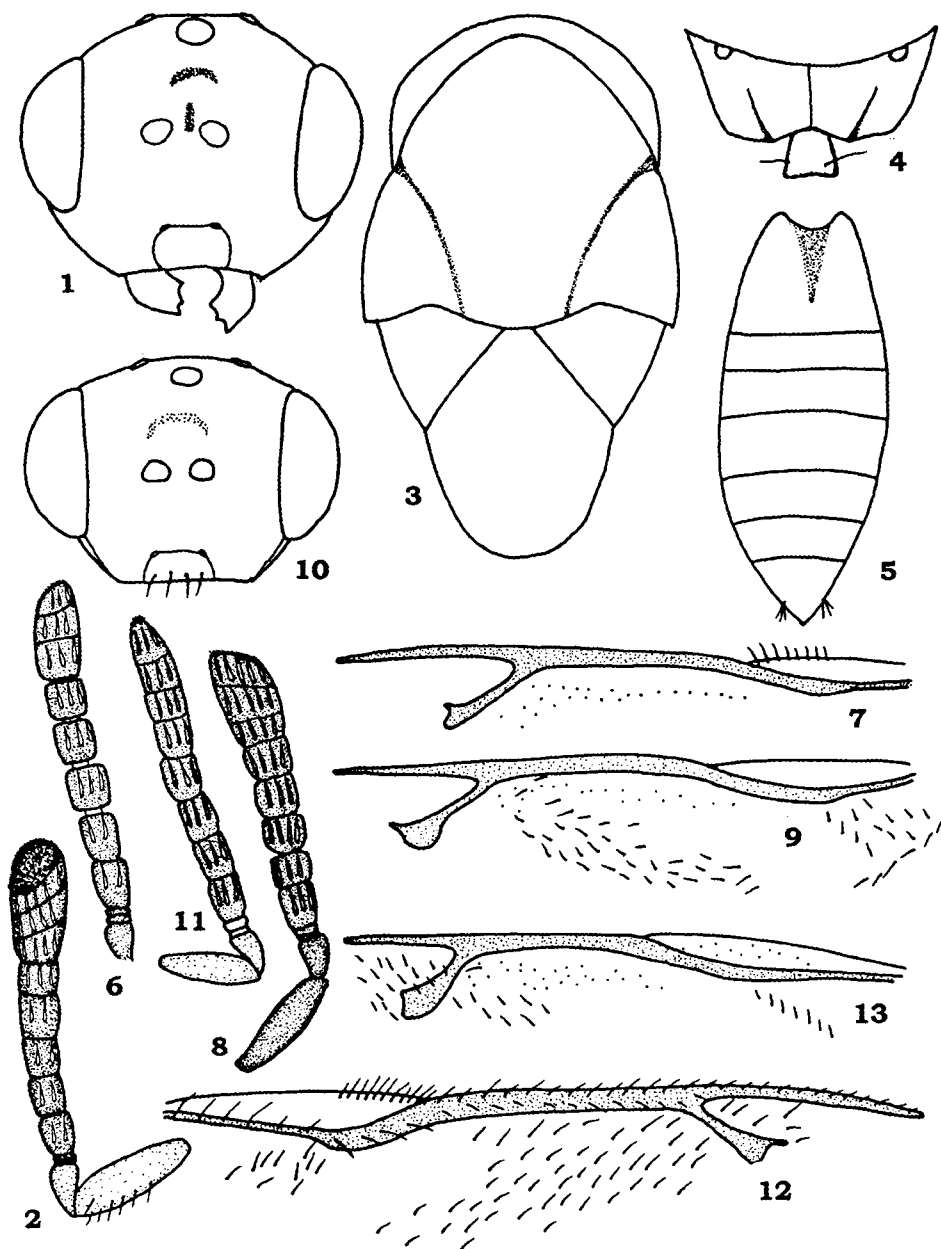
*Specimens examined*: CHINA: Heilongjiang: Da Hinggan Mts, 1 ♀, 23.vii.1970.

*Distribution*: CHINA (Heilongjiang); Britain, Sweden.

## References

- ASKEW, R. R., KENNAUGH, J. H., 1992. A review of the British species of *Semiotellus* Westwood (Hym., Pteromalidae). Ent. Monthly Mag., 128: 215-218.
- BOUČEK, Z., 1972. On European Pteromalidae (Hymenoptera): A revision of *Cleonymus*, *Eunotus* and *Spaniopus*, with descriptions of new genera and species. Bull. British Mus. (Nat. Hist.) Ent., 27(5):267-315.
- BOUČEK Z., 1988. Australasian Chalcidoidea (Hymenoptera), A Biosystematic revision of Genera of Fourteen Families, with a Reclassification of species. C. A. B. International, Wallingford, 832pp.
- FÖRSTER, A., 1856. Hymenopterologische Studien. 2. Heft. Chalcidiae und Proctotrupii. 152pp., Aachen.
- GIRAULT, A. A., 1915a. Australian Hymenoptera Chalcidoidea IV. Supplement. Mem. Queensland Mus., 3: 180-299.
- GIRAULT, A. A., 1915b. Australian Hymenoptera Chalcidoidea - IX. The family Cleonymidae with descriptions of new genera and species. Mem. Queensland Mus., 4: 203-224.
- GRAHAM, M. W. R. de V., 1969. The Pteromalidae of North-Western Europe (Hymenoptera: Chalcidoidea.) Bull. British Mus. Nat. Hist. (Ent). Suppl., 16: 1-908.
- HERTING, B., 1978. Neuroptera, Diptera, Siphonaptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy. 5: 156pp. Commonwealth Agricultural Bureaux, Commonwealth Institute of Biological Control.
- KAMIJO, K., 1977. A new genus and three new species of Ormocerini (Hymenoptera, Pteromalidae) from Japan. Kontyu, Tokyo, 45(4): 531-537.
- PECK, O., BOUČEK Z. & HOFFER, A., 1964. Key to the Chalcidoidea of Czechoslovakia (Insecta: Hymenoptera). Mem. Ent. Soc. Canada, No. 34: 1-170, 289 figs.
- SCHMIEDEKNECHT, O., 1909. Hymenoptera fam. Chalcididae. In Wytzman, P. Genera Insectorum, 97: 550 pp., 8 pls. Brussels.
- THOMSON, C. G., 1876. Hymenoptera Scandinaviae. 4. Pteromalus (Svederus), pp. 193-259. Lund.
- WALKER, F., 1834. Monographia Chalciditum. Ent. Mag., 2: 148-179, 286-309, 340-369.
- WALKER, F., 1839. Monographia Chalciditum, 1: 222. London.
- WALKER, F., 1848. List of the specimens of Hymenopterous insects in the collection of the British Museum, part II. iv+273pp. London.
- WESTWOOD, J. O., 1839. Synopsis of the genera of British insects, pp. 49-80. An introduction to the modern classification of insects, No. 13. London.





Figs. 1-13. 1-5, *Semiotellus plagiotropus*, sp. nov., ♀: 1, face in front view; 2, antenna; 3, thorax in dorsal view; 4, propodeum; 5, gaster. 6-7, *S. electrus*, sp. nov., ♀: 6, antenna; 7, fore wing. 8-9, *S. tumidulus*, sp. nov., ♀: 8, antenna; 9, fore wing. 10-12, *S. longispinus*, sp. nov., ♀: 10, head in front view; 11, antenna; 12, fore wing. 13, *S. nudus*, sp. nov., ♀, fore wing.