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Notes on a few Aphelinidae, with description of five new species of *Encarsia* Foerster (Hymenoptera, Chalcidoidea)

During the last several years I received interesting aphelinids for identification from several regions of the world, some of which represent undescribed species.

At the same time I accumulated some records, notes and comments on several genera and species. They are given in the present paper together with the description of five new species of *Encarsia* Foerster.

The type material will be deposited at the Institute of Entomology in Portici, University of Naples.

Encarsia britannica (Girault)

Coccophagus britannicus Girault, 1915. Entomologist 48: 217

The type material was previously reexamined by BOUČEK (BOUČEK & GRAHAM, 1978), who designated the lectotype and pointed out the affinity of *Encarsia britannica* with *Encarsia tricolor* Foerster, type-species of *Encarsia* Foerster.

The key characters of *E. britannica* are here originally illustrated from the same type material (Fig. I, 1-6) ⁽¹⁾. From some observed features (short first funicular segment, very few premarginal setae) it appears that this species is better placed in the group *aurantii* Howard rather than in that of *tricolor* Foerster. The presence of two linear sensoria on the first funicular segment, which is about 2/3 of F2, appears unique in *E. britannica*.

ERDOES (1961) described a male under *britannica*, but this record needs confirmation.

⁽¹⁾ The author thanks very much Dr. M.E. Schauff, U.S.D.A., Washington, for the loan.

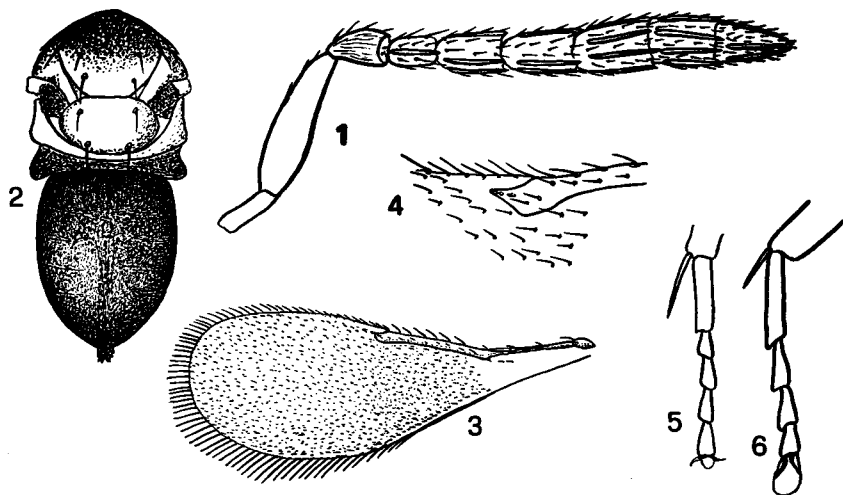


Fig. I - *Encarsia brittanica* (Girault), female. 1. Antenna. 2. Thorax and gaster. 3. Fore wing. 4. Particulars of marginal and stigmal veins. 5. Middle leg from distal part of tibia. 6. Hind leg from distal part of tibia.

Encarsia tabacivora nom. nov.

Encarsia bemisiae De Santis, 1981: Rev. Bras. Entom. 25: 37-39

Because the name *bemisiae* is preoccupied by ISHII (1938), this species is renamed *tabacivora*.

Encarsia desantisi nom. nov.

Encarsia bicolor De Santis, 1948. Rev. Mus. de La Plata, Sec. Zool., 5: 256

Encarsia bicolor De Santis, 1981. Rev. Bras. Entom. 25: 38-39

The name *bicolor* is preoccupied by TIMBERLAKE (1926).

Encarsia circumsculpturata sp. nov.

Female. - Brownish, with antennae, scutellum, metanotum, legs (except hind coxae and tibiae), yellowish; fore wings with infuscation below the marginal vein. Length: about 0.65 mm.

Head normal, as in many other species. Antenna (Fig. II, I) with F1 about twice as long as wide, slightly narrower and shorter than pedicel, without linear sensoria; F2 and F3 subequal, each larger than F1, and provided with 2-3 linear sensoria; club 3-segmented, slightly wider and distinct from funicle.

Thorax about as long as gaster; mesoscutum with sculpture well defined, centrally represented by normal polygonal net and marginally, beyond

of the 3-4 pairs of setae, by a typical circular pattern (Fig. II, 2); scutellum with 2+2 setae, posterior pair about twice as long as the first one. Fore wing (Fig. II, 3) about three times as long as wide, with a row of 4-5 small setae before the premarginal vein; discal cilia normally distributed; fringe short, about one fourth of the discal width. Legs with mid tibial spur a little shorter than the corresponding basitarsus.

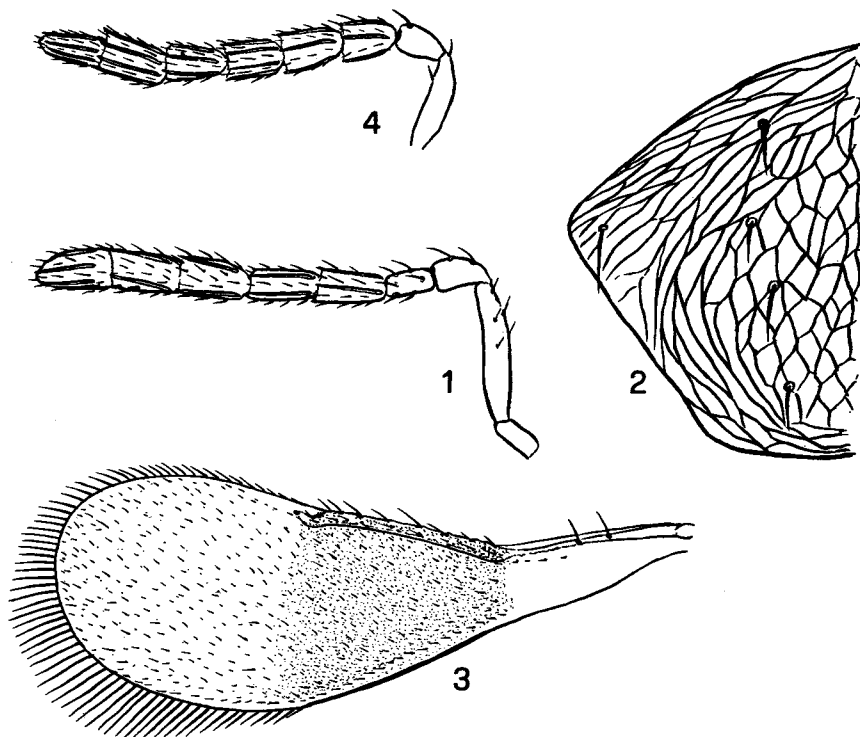


Fig. II - *Encarsia circumsculpturata* sp. nov. Female. 1. Antenna. 2. Part of mesoscutum. 3. Fore wing. Male. 4. Antenna.

Ovipositor developed in the distal two third of the gaster, as long as the middle tibia and not extruded.

Male. - Similar to female, but antenna (Fig. II, 4) with a 6-segmented flagellum, each segment slightly longer than wide and provided with 3-4 linear sensoria, visible on one side.

Material examined. - 1 ♀, holotype, on slide, ex *Bemisaleyrodes* sp. on *Harrisonia abyssinica*, Kenya, Matuga, X.1983, coll. Robertson; 1 ♂, allotype, same slide and data; 2 ♂♂, paratypes, on a second slide, same data.

Comment. - This species is unique because of the sculpture pattern on the mesoscutum.

Encarsia dialeuroporae sp. nov.

Female. - Body yellowish, with brown on the 3rd valvulae of the ovipositor. Length: about 0.50 mm.

Head normal. Antenna (Fig. III, 1) with F1 slightly longer than wide, about one third shorter than F2 and one half of the pedicel, without linear sensoria; F2 and F3 subequal, each about one third longer than wide and provided with 1-2 linear sensoria; club distinct, longer than funicle (40:30), first two segments subequal, wider than F2, third segment longer than the second, each with 3-4 linear sensoria.

Thorax about as long as gaster. Mesoscutum and scutellum with 4+2+2 and 2+2 setae, respectively. Fore wing (Fig. III, 2) rather large, without row of setae before the premarginal vein, marginal vein with 7-9 setae, stigmal vein rather wide and sessile; fringe about one half of the discal width. Legs with middle and hind tibial spurs slightly shorter and about one half of the basitarsus, respectively.

Gaster conical, ovipositor developed in the distal two thirds of the gaster, as long as the hind tibia.

Male. - Similar to the female, but with brown on the occipital area, pronotum, prosternum, axillae, metanotum, propodeum, and gaster, except the last two apparent segments.

Antenna (Fig. III, 3) with scape 2.5 times as long as the pedicel; first two flagellar segments larger than the subsequent segments; F1 about as long as wide, with 3 linear sensoria; F2 longer than wide (14:11), ventrally with a deep concavity in which at least 15-20 small sensilla, hardly visible under light microscope magnification, are located; on the same segment, as on the subsequent ones, 3-4 linear sensoria are present (Fig. III, 4); F3 and F4 subequal, about as long as F2, but narrower; F5 as long as F3 and F4 combined.

Material examined. - 1 ♀, holotype, on slide, ex *Dialeuropora decempunctata* on *Rosa indica*, Pashawar, X.81, Pakistan; 1 ♀, paratype, same slide; 1 ♂, allotype and 4 ♂♂, paratypes, same data.

Comment. - The new species is very near *E. lutea* (Masi) in the female sex, but without a group of 2-3 setae before the premarginal vein and with the fringe of the fore wing longer, one half of the discal width. The male sex is unique in the features of the second flagellar segment.

Encarsia elegans Masi

Encarsia elegans Masi, 1911. Boll. Lab. Zool. Gen. Agr. Portici 5: 147

The following notes are added to the original description. Antenna with pedicel a little shorter than F1 and with linear sensoria distributed

as represented in Fig. IV, 1. Ovipositor longer than hind tibia (36 : 30), with 3rd valvulae very short, about one fourth length of the ovipositor.

Material examined. - 1 ♀, paratype, ex *Aleyrodes olivinus*, Massafra V, Silvestri collection.

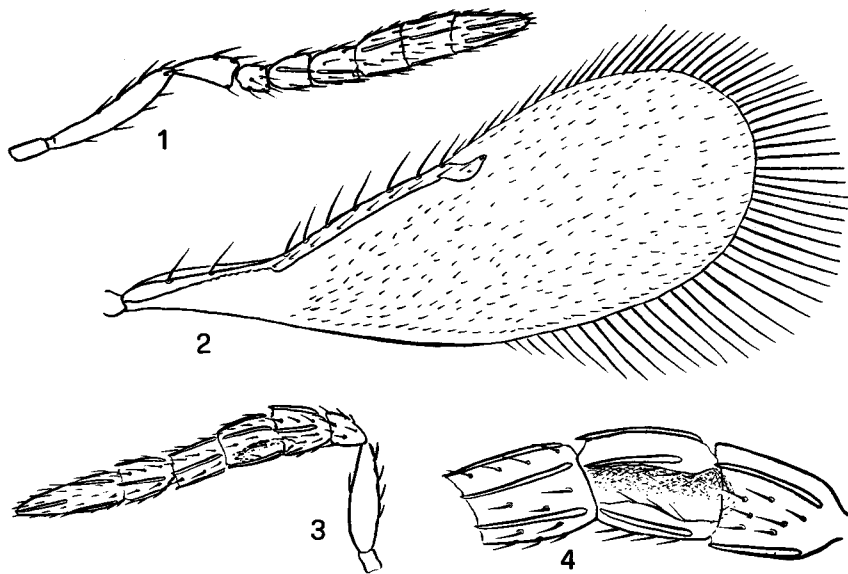


Fig. III - *Encarsia dialeuroporae* sp. nov. Female. 1. Antenna. 2. Fore wing. Male. 3. Antenna. 4. First three funicular segments.

Encarsia longivalvula sp. nov.

Female. - Body entirely yellowish, except eyes and ocelli which are normal reddish. Length: about 0.65 mm.

Head and mouthparts without peculiar features. Antenna (Fig. IV, 2) with scape 3.5 times as long as wide; pedicel about as long as F1; F2 about twice as long as wide, subequal to F3 and without linear sensoria; F3 and F4 subequal, each with 2-3 linear sensoria; club 2-segmented, as long as the first two funicular segments and half F3 combined, first segment as long as F4, second segment 1/4 longer, each club segment with 3-4 linear sensoria.

Thorax shorter than gaster (30 : 35). Mesoscutum with 4+2 setae and very weak reticular sculpture; scutellum with 2+2 setae. Fore wing (Fig. IV, 3) about 3 times as long as wide, with 3-4 setae before the pre-marginal vein, longest cilia of marginal fringe slightly more than one third width of the disc. Hind wing with one complete row of cilia along the poste-

rior margin and a few additional setae, longest marginal fringe about twice the width of disc. Mid-tibial spur leg slightly shorter the corresponding basitarsus.

Gaster slightly longer than thorax; ovipositor robust, extended in the distal two-thirds of the gaster, longer than hind tibia (37 : 25), clearly exerted and with 3rd valvulae narrow and long, about 4/10 of the total length of the ovipositor.

Male. - Similar to female, but brownish on prothorax, mesoscutum, axillae, metathorax, propodeum and gaster. Antenna (Fig. IV, 4) with F1

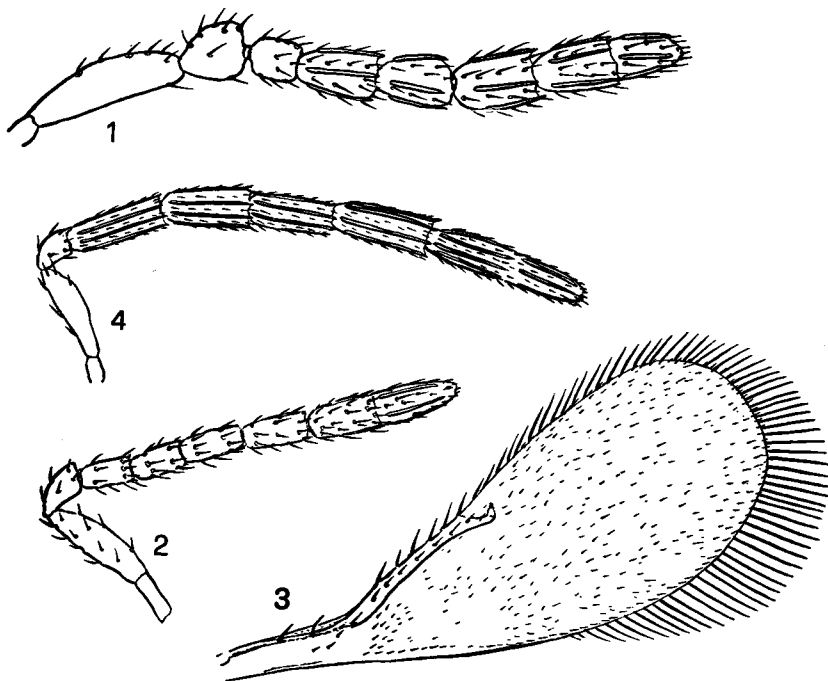


Fig. IV - *Encarsia elegans* sp. nov., female. 1. Antenna. *Encarsia longivalvula* n. sp. 2. Female. 3. Fore wing. Male. 4. Antenna.

about three times as long as wide, subsequent three segments slightly shorter, last two flagellar segments fused and both combined a little shorter than F3 + F4, each flagellar segment provided with 3-5 linear sensoria on each side.

Material examined. - 1 ♀, holotype, ex *Dialeuropora decempunctata* on *Rosa indica*, Peshawar, X.81, Pakistan; 1 ♂, allotype, and 1 ♀, paratype, same data.

Comment. - *E. longivalvula* can be placed in the group *coryli* Viggiani. Among the Oriental species it is unique to have a yellowish body in combination with the described characters of antenna, fore wing and ovipositor.

Encarsia macroptera sp. nov.

Female. - Body yellowish, with faint brown on the last club segment, occipital region, pronotum, anterior part of axillae, lateral parts of propodeum, fore wing venation and 2-3 segments preceding the cercoids on the gaster. Length: about 0.65 mm.

Head with normal features. Antenna (Fig. V, 1) rather long; scape about twice length of pedicel; funiculum 4-segmented, with pedicel longer than F1 (14 : 10) and slightly shorter and narrower than F2; subsequent funicular segments increasing a little in size; club two-segmented, slightly longer than last two funicular segments combined; 2 linear sensoria on each of F3 and F4, 3-4 on each club segments.

Mesoscutum rather long, with 4+2+2 setae; scutellum with 2+2 setae, first pair about one half length of the second one. Fore wing (Fig. V, 2) rather long, about 3.5 times as long as wide, without setae on the premarginal area, longest fringe setae about one half of the discal width. Legs with middle spur slightly shorter than basitarsus.

Gaster conical, about one fourth longer than thorax; ovipositor present in the distal one-half and slightly exserted, 3rd valvulae one third as long as the entire ovipositor.

Male. - Unknown.

Material examined. - 1 ♀, holotype, ex *Aleurolobus barodensis*, Peshawar, VII.81, Pakistan, and 2 ♀ paratypes, same data.

Comment. - *E. macroptera* is very near *E. ochai* Viggiani, but with pedicel longer than F1, fore wing without a group of setae before the premarginal vein, fringe about one half of the discal width and other different characters.

Encarsia margaritiventris (Mercet)

Trichaporus margaritiventris Mercet, 1931. Boll. Soc. Esp. Hist. Nat. 31: 565

Encarsia margaritiventris, Ferrière, 1965. Faune de l'Europe et du Bassin Méditerranéen 1: 136-137

According to Ferrière the type material, deposited in the Mercet's collection in Madrid, is in poor condition (body crushed, no wing present or not well prepared, female antennae broken). For this reason the entire female antenna has not been hitherto described.

One female and one male, cotypes, of this species, which are in much better condition, have been found in the Silvestri collection. They are mounted on a slide labelled « *Encarsia margaritiventris* Now. cotypi! ex *Aleurochiton aceris* Skierniewice ». The following additional notes and illustrations have been based on this material.

Female. - Antenna (Fig. V, 3) with 4-segmented funicle, each segment cylindrical, about twice longer than wide with 0, 1, 2, 3 linear sensoria respectively visible on one side; club two-segmented, slightly wider than funicle, with each segment as long as the last funicle segment and provided with 3-4 linear sensoria. Fore wing rather large, with a row of 8-10 setae before the premarginal vein and rather short discal fringe (about one fifth of the discal width). Mid-tibial spur about one half length of the corresponding basitarsus. Ovipositor extended in the distal half of the gaster, as long as the hind tibia.

Male. - Antenna as in Fig. V, 4.

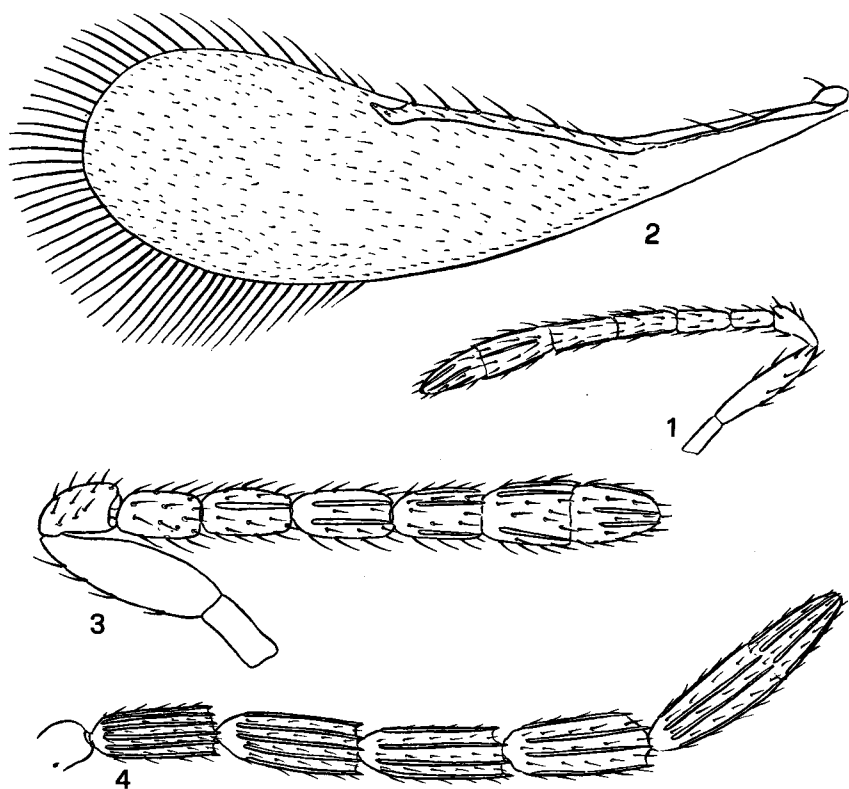


Fig. V - *Encarsia macroptera* sp. nov., female. 1. Antenna. 2. Fore wing. *Encarsia margaritiventris* (Mercet). Female. 3. Antenna. Male. 4. Antenna.

Comment. - *E. margaritiventris* is rather similar to *Encarsia partenopea* Masi and allied species, but is distinct in body coloration in the female sex and in the two-segmented club, at least partially fused, in the male.

Recently *E. margaritiventris* has been found a rather common parasite of *Aleurotuba jelineki* (Frauenf.) in Italy (LAUDONIA & VICCIANI, 1984).

Encarsia protransvena sp. nov.

Female. - Body yellowish, antennae and legs pale, wings hyaline. Length: about 0.70 mm.

Head as wide as thorax, about one fourth wider than high; mandible 3-dentate, maxillary palpi unisegmented, but rather long, labial palpi very short. Antenna (Fig. VI, 1) with pedicel a little shorter than F1; funicle 3-segmented, shorter than club, with subequal segments each 2.3 - 2.4 times as long as wide, with F3 slightly larger; club conical, with first segment longest, basally a little wider than the last funicular segment; only F3 and club segments each provided with 2-3 linear sensoria.

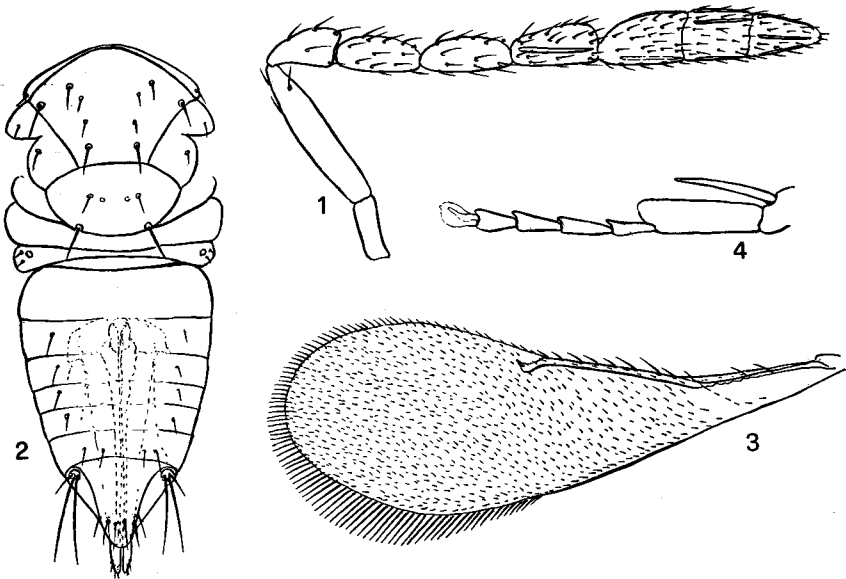


Fig. VI - *Encarsia protransvena* sp. nov., female. 1. Antenna. 2. Thorax and gaster. 3. Fore wing. 4. Middle leg from distal part of tibia.

Thorax about one third shorter than gaster (Fig. VI, 2). Mesoscutum without well evident sculpture and with 5+4 or 4+4 setae; scutellum with 2+2 setae; metanotum and propodeum very short. Fore wing (Fig. VI, 3) rather narrow, about three times as long as wide, with a curved row of 6-7 setae before the premarginal vein; discal setae normal; fringe about one fourth width of disc. Mid-tibial spur slightly shorter than the corresponding basitarsus (Fig. VI, 4).

Gaster conical; ovipositor robust, inserted near base of gaster, clearly exerted and about one fourth longer than the middle tibia (Fig. VI, 2).

Material examined. - 1 ♀, holotype, ex *Dialeurodes kirkaldyi*, U.S.A., Florida, Broward Co. Ft. Lauderdale, Sept. 84, coll. C.R.R. Thompson; 6 ♀, paratypes, same data. Paratypes will be deposited at the U.S.N.M., Washington.

Comment. - Very similar to *transvena* Timberlake, but antenna with F1 and F2 without linear sensoria, club shorter than funicle, fringe of fore wing about one fourth of the discal width.

Encarsia africana (Hill) comb. nov.

Hispaniella africana Hill, 1970. Bull. Entom. Res. 60: 97-99

SUBBA RAO (1984) had studied the type material of *Hispaniella africana* and concluded that the « whole mounted specimen and the dissected and mounted in Gum Damar on slides show the legs of *africana* with five-segmented tarsi ». On this and other characters he placed *H. africana* in synonymy with *Encarsia lounsburyi* (Berlese and Paoli).

Recently, before knowing the conclusion of Dr. SUBBA RAO, I asked for study the type material of *H. africana* because of some uncommon features described by HILL (1970) for this species. From the study of the same material examined by Dr. SUBBA RAO I conclude that the species is correctly placed under *Encarsia*, but the synonymy with *E. lounsburyi* cannot be accepted because the tarsi are in fact heteronomous, five segmented in the fore and hind legs and 4-segmented in the middle legs. For this and other reasons (e.g., presence of males) I propose the new combination *Encarsia africana* (HILL).

Encarsia transvena (Timberlake) n. comb.

Prospaltella transvena Timberlake, 1926. Proc. Entom. Soc. Haw. 6: 312

Prospaltella sublutea Silvestri, 1931. Boll. Soc. Ent. It. 63: 20 syn. nov.

? *Encarsia flava* Shafee, 1973. Entomophaga 18: 254

The original description of *E. transvena* is rather detailed and correct. The following corrections and additions are presented: antennal length 0.6-0.7 of thorax and abdomen combined (not « about as long as thorax and abdomen combined »); scape 0.6-0.8 of the combined length of pedicel, F1 and F2 (not « as long as pedicel and first two funicle joints combined »); other antennal characters as in figure VII, 1. Thorax shorter than abdomen (25 : 40) (not « abdomen as long as thorax »); mesoscutum with 4 + 2 + 2 setae; legs normal, mid-tibial spur slightly shorter than basitarsus; hind tibial spur about one half of basitarsus (Fig. VII, 3-4). Abdomen distally rather pointed (not « rounded »); ovipositor inserted at the level of 3rd tergite, longer than hind tibia (75 : 65), 3rd valvula about one fourth length of ovipositor.

Male antenna with pedicel about one third longer than wide (not « one half »); other characters as in figure VII, 5.

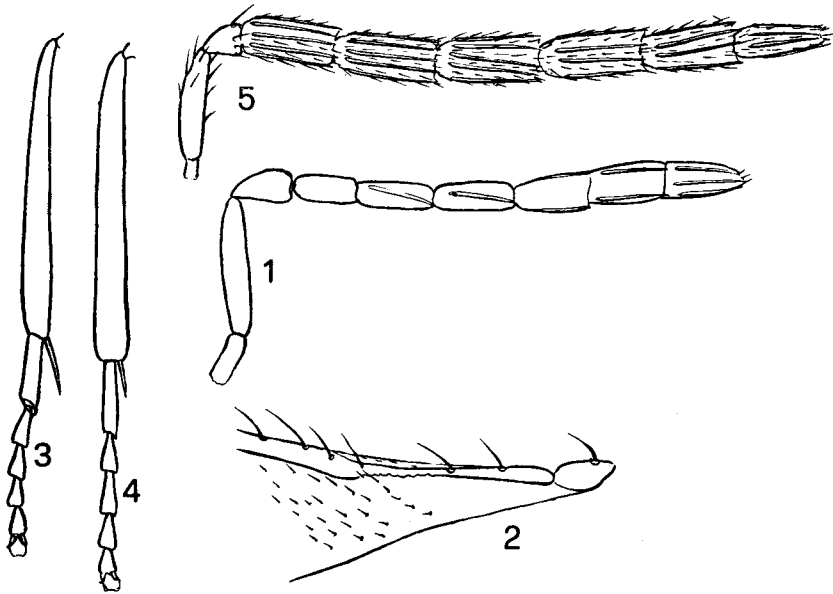


Fig. VII - *Encarsia transvena* (Timberlake). Female. 1. Antenna. 2. Basal part of fore wing. 3. Middle leg from tibia. 4. Hind leg from tibia. Male. 5. Antenna.

After comparison of *E. transvena* with the type material of *Prospaltella sublutea* Silvestri it is proposed the synonymy of the latter species with *transvena* (1).

Encarsia flava Shafee is probably another synonymy of *E. transvena*.

Material examined. - 1 ♀, holotype; and 1 ♀, paratype, slide 5690, reared from « *Aleyrodes vaporariorum* » on tomato, Honolulu, Oahu, Hawaii, 14252a, June 20, 1916, P.H. Timberlake; 1 ♂, allotype, same data, on slide 5690, A. coll. Bernice Bishop Museum, Honolulu, Hawaii; 8 ♀ and 1 ♂, paratypes, ex *Aleyrodes hibisci* on *Hibiscus*, Nov. 1923, W.M. Biffard coll., U.S.N.M., Washington n. 29067; 2 ♀ cotypes, *Prospaltella sublutea* Silvestri, parassiti Aleyrodidi, Fagiuoli, Somalia, IX.26; 1 ♀, ex *Bemisia tabaci*, 12.II.82, Entomology Station, Alger; 1 ♀ and 1 ♂, ex *Bemisia tabaci* on cotton, March 1982, coll. Musuma, Zimbabwe; 2 ♀ and 2 ♂, ex *Bemisia tabaci* on *Manihot esculentum*, Jan. 14.83, coll. Robertson, Kenia; several females and males ex *Bemisia tabaci* on gardenia, Rawalpindi, VI.80, Pakistan. Several specimens from Hawaii, Africa and Japan.

Comment. - *E. transvena* can be recognized by the combination of antennal and fore wing characters. The species has a wide distribution in areas of Neotropical, Ethiopian, Palaearctic and Oriental regions.

(1) The part of this paper under *transvena* is to be attributed to the present author in collaboration with Dan Gerling and Tova Rivnay, Department of Zoology, Tel Aviv University, Israel.

Eretmocerus delhiensis Mani

Eretmocerus delhiensis Mani, 1941. Indian J. Entom. 3: 29,35

According to MANI (1941) the types of this species were two males, but his fig. 2d of the antenna refers to a female; probably, the type material represents the female sex. *E delhiensis* was obtained from *Neomaskiella bergii* on sugar-cane.

I tentatively identify the same species from *Neomaskiella* sp. on sugar-cane in Pakistan (Several males and females, Peshawar, IX.81).

Genus *Centrodora* Foerster

Oolathron De Santis, 1981. Rev. Museo de La Plata, ns. 12: 246 syn.n.

I studied some type material of the generotype, *O. mireyae* De Santis, kindly sent to me by Prof. Luis De Santis, University of La Plata, Argentina.

After comparison with several species of *Centrodora* Foerster and the study of the male genitalia (VIGCIANI & BATTAGLIA, 1984) I propose the synonymy of *Oolathron* De Santis under *Centrodora* Foerster.

Genus *Coccophagus* Westwood

Prococcophagus Silvestri, 1915. Boll. Lab. Zool. Gen. Agr. Portici 9: 359-360 syn.n.

The genus *Prococcophagus* Silvestri was separated mainly on the basis of the flattened and expanded antennal scape in the female sex.

After the discovery of the male sex and several new species it appears that the genus *Prococcophagus* does not merit a separate status and may better be treated as a species group of *Coccophagus* (HAYAT, 1983). Hayat's view is supported by other morphological (i.e., type of male genitalia) and biological data (primary larval development in both sexes) (MAZZONE & VIGCIANI, 1984; VIGCIANI & BATTAGLIA, 1984). For these reasons I support the synonymy of *Prococcophagus* Silvestri under *Coccophagus* Westwood.

Genus *Marlattiella* Howard

Two species are at present included in this genus: *M. prima* Howard, recorded from China, Japan and the Soviet Far East, and *M. maculata* Hayat from India.

The African species *Marlattiella secunda* Compere has been transferred to *Aphytis* (ROSEN and DE BACH, 1970).

Recently I received for identification some chalcidoids collected by sticky traps by Dr. Robertson Kenya, Matuga Research Station, December 1982. Among them I identified two females of *Marlattiella*, very similar to the generotype, *M. prima*, probably a new species. This record extends the distribution of *Marlattiella* to the Ethiopian region.

SUMMARY

The name *Encarsia desantisi* nom. nov. for *Encarsia bicolor* De Santis and *Encarsia tabacivora* nom. nov. for *Encarsia bemisiae* De Santis are proposed.

Additional notes to the original descriptions are given for the following species of *Encarsia*: *E. brittanica* (Girault), *E. elegans* Masi and *E. margaritiventris* (Mercet).

Prospaltella sublutea Silvestri is synonymized under *Encarsia transvena* (Timberlake), comb. nov.

Hispaniella africana Hill is recognized as a valid species of *Encarsia*.

Five new species are described: *Encarsia circumsculpturata*, sp. nov., ex *Bemisialeurodes* sp. from Kenya; *E. dialeuroporae*, sp. nov., ex *Dialeuropora decempunctata*, from Pakistan; *E. longivalvula*, sp. nov., ex *Dialeuropora decempunctata*, from Pakistan; *E. macroptera*, sp. nov., ex *Aleurolobus barodensis* from Pakistan, and *E. protransvena* sp. nov., ex *Dialeurodes kirkaldyi* from Florida, U.S.A.

New records are given for *Eretmocerus delhiensis* Mani and *Marlattiella* Howard.

The following new synonymies are proposed: *Oolathron* De Santis under *Centrodora* Foerster, and *Prococcophagus* Silvestri under *Coccophagus* Westwood.

RIASSUNTO

Sono proposti i nomi nuovi *Encarsia desantisi* nom. nov. ed *Encarsia tabacivora* nom. nov., rispettivamente per *Encarsia bicolor* De Santis ed *Encarsia bemisiae* De Santis.

Note aggiuntive alle descrizioni originali sono date per le seguenti specie di *Encarsia*: *E. brittanica* (Girault), *E. elegans* Masi ed *E. margaritiventris* (Mercet).

Prospaltella sublutea Silvestri è sinonimizzata con *Encarsia transvena* (Timberlake), comb. nov.

Hispaniella africana è riconosciuta valida specie di *Encarsia*.

Cinque nuove specie sono descritte: *Encarsia circumsculpturata*, sp. nov., da *Bemisialeurodes* sp. in Kenia; *E. dialeuroporae*, sp. nov., da *Dialeuropora decempunctata* in Pakistan; *Encarsia longivalvula*, sp. nov., da *Dialeuropora decempunctata* in Pakistan; *E. macroptera*, sp. nov., da *Aleurolobus barodensis* in Pakistan, ed *E. protransvena*, sp. nov., da *Dialeurodes kirkaldyi* in Florida U.S.A.

Nuovi dati sono forniti per *Eretmocerus delhiensis* Mani e *Marlattiella* Howard.

Le seguenti nuove sinonimie sono proposte: *Oolathron* De Santis in *Centrodora* Foerster e *Prococcophagus* Silvestri in *Coccophagus* Westwood.

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