New species of *Encarsia* Förster from Veracruz, Mexico (Hymenoptera: Chalcidoidea: Aphelinidae)

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Five new species of *Encarsia* from Mexico, state of Veracruz, are described: *E. catemaco* sp. n., *E. dmitrii* sp. n., *E. flaviceps* sp. n., *E. trilineata* sp. n. and *E. tuxtla* sp. n.

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Introduction

Encarsia Förster, 1878 is one of the largest genera in the family Aphelinidae. At present, about 280 species are described (Noyes, 2002). Species of *Encarsia* are considered the most important biocontrol agents of whiteflies (fam. Aleyrodidae) and armored scale insects (fam. Diaspididae). In Mexico, 30 species of *Encarsia* are known to occur (Myartseva & Ruí z-Cancino, 2000) and new species are frequently described and recognized. Several species of this genus were introduced into Mexico for biological control of homopteran insect pests of citrus and other agricultural crops. However, the Mexican fauna of the genus *Encarsia* remains still poorly known. Descriptions of five new species of this genus collected in the state of Veracruz are given below.

Material and methods

The general method of collecting of parasitoids was rearing method following to Noyes (1982).

Emerged parasitoids were preserved in 75% alcohol. For identification and permanent storage, some specimens of wasps were dissected and mounted on slides in Canada balsam. For identification of *Encarsia* species, several keys (Hayat, 1989, 1998; Huang & Polaszek, 1998; Heraty & Polaszek, 2000) and original descriptions of species were used. All type specimens are deposited at the Entomological Museum of University of California (Riverside, California, USA).

Encarsia catemaco sp. n.
(Figs 1-5)

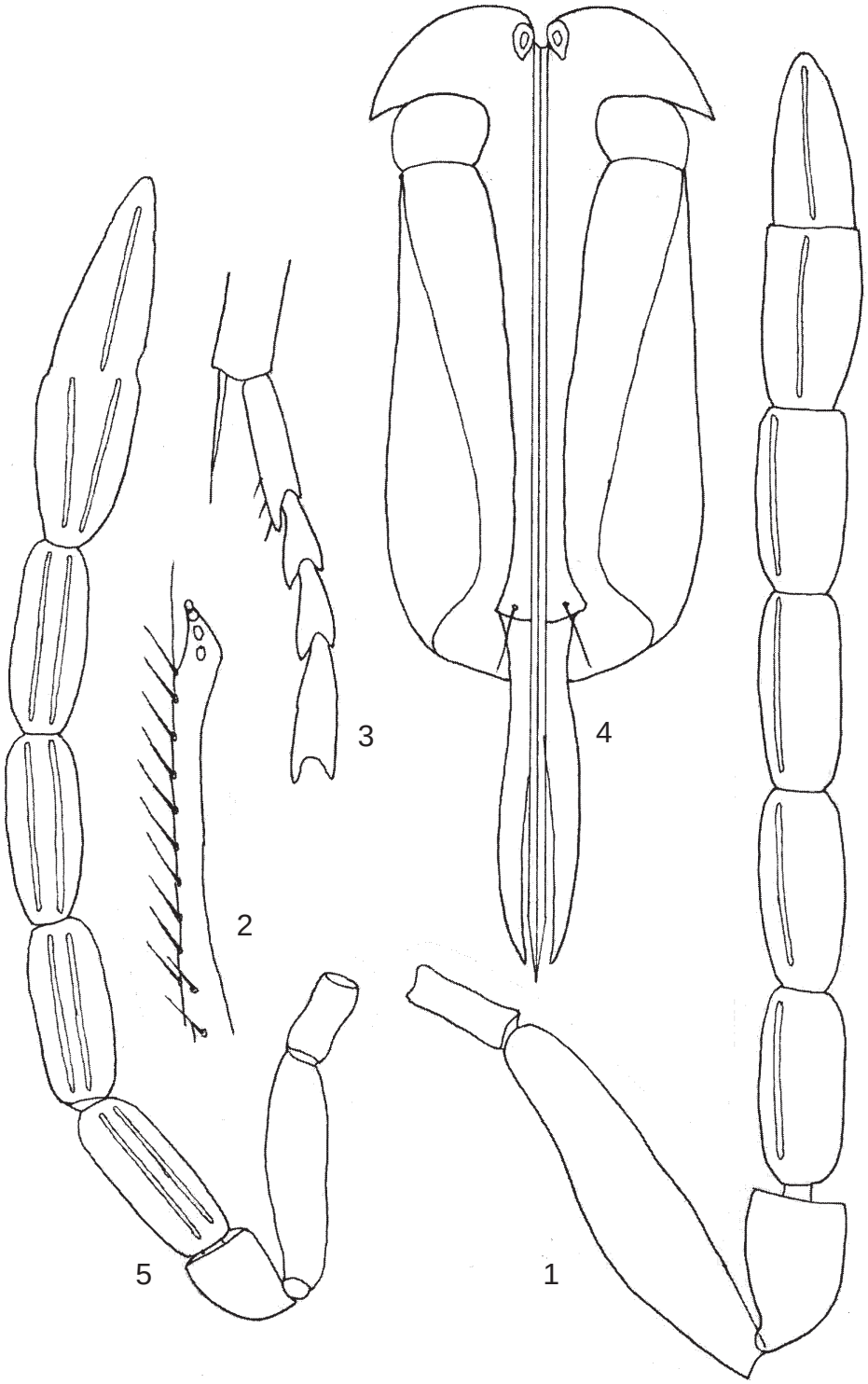
Holotype: ♀, **Mexico**, *Veracruz*, Catemaco, ex Aleyrodidae on undetermined tree, 8.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Paratype. 1 ♂, same data as holotype.

Description. Female. Body length about 1.0 mm.

Coloration. Head black; antennae light yellow with radicle black, dorsal margin of scape and apical segment of club infuscate. Mesosoma black; side lobes light yellow with dark apical spot. Scutellum light yellow; scutellar setae pale. Fore wings hyaline. Legs whitish yellow; hind coxae infuscate. Gaster black; third valvulae brownish; tips of stylets black.

Structure. Head 1.2 times as wide as high. Frontovertex transversely striate, about half as wide as head. Distance between posterior ocelli about 1.7 times distance from ocellus to eye margin. Eyes finely setose, about 1.6 times as long as cheeks. Mandible 3-dentate. Antennae (Fig. 1) inserted immediately under the level of lower margin of eyes; distance between antennal toruli subequal to distance to eyes and twice the distance to mouth margin. Radicle 2.5 times as long as wide; scape 4.5 times as long as wide; pedicel 1.5 times as long as wide. First funicle segment about 2.2 times as long as wide and 1.3 times as long as pedicel; second segment 2.4 times as long as wide; third segment 2.3 times as long as wide. Club 2-segmented, about as long as two preceding funicle segments combined. Each flagellar segment with one longitudinal sensillum. Midlobe of mesoscutum with 18 setae; side lobes each



Figs 1-5. *Encarsia catemaco* sp. n. **1**, antenna, female; **2**, marginal and stigmal veins; **3**, midtibial spur and tarsus; **4**, ovipositor; **5**, antenna, male.

with three setae; axillae each with one seta. Mesoscutum 1.2 times as wide as long. Scutellum as wide as mesoscutum, about 0.7 times as long as mesoscutum and about 1.8 times as wide as long. Scutellar placoid sensilla widely spaced. Distance between anterior pair of scutellar setae slightly less than distance between posterior pair of setae (25 : 28). Both pairs of setae subequal in length, which is 0.6 of scutellum length. Fore wing uniformly setose, 2.3 times as long as wide; base with 9 setae under apical part of submarginal vein; marginal fringe about 0.2 of maximum width of wing. Marginal vein (Fig. 2) with 10 setae along anterior margin; submarginal vein as long as marginal vein; stigmal vein close to wing margin. Hind wing about 8 times as long as wide, its marginal fringe slightly longer than maximum width of wing (7 : 8). Tarsal formula 5-4-5. Midtibial spur (Fig. 3) about 0.9 times as long as basitarsus; basitarsus longer than next two tarsal segments combined (25 : 20). Ovipositor (Fig. 4) exerted, about 1.8 times as long as middle tibia; third valvula about 0.6 times as long as second valvifer.

Male. Body length 0.64 mm.

Coloration. Head as in female. Mesosoma black; side lobes (except apical dark spot), lateral and posterior margins of midlobe of mesoscutum yellow. Scutellum yellow with two longitudinal dark markings. All coxae, femora and dorsal margin of hind tibiae in basal half infuscate.

Structure. Head 1.4 times as wide as high. Frontovertex as in female. Antennae (Fig. 5) inserted at the level of lower margin of eyes; distance between antennal toruli half the distance to eyes and twice the distance to mouth margin. Radicle twice as long as wide; scape 3.5 times as long as wide; pedicel 1.2 times as long as wide. All flagellar segments about 2.5 times as long as wide and subequal in length, each with two longitudinal sensilla. Club with segments fused, as long as two preceding funicle segments combined. Midlobe of mesoscutum 1.5 times as wide as long, largely reticulate, with 14 setae. Scutellum largely reticulate, 0.8 times as long as mesoscutum and 1.6 times as wide as long. Distance between placoid sensilla 4 times the diameter of one sensillum. Scutellar setae situated as in female, but anterior pair slightly shorter than posterior pair. Fore wing 2.5 times as long as wide; its marginal fringe about 0.25 times maximum width of wing; base with 5 setae; marginal vein with 7 setae along anterior margin. Hind wing 9.5 times as long as wide; its marginal fringe about 1.7 times as long as maximum width of wing. Midtibial spur 0.8 times as long as basitarsus. Second-seventh metasomal tergites with 2, 2, 2, 4, 4 and 4 setae, respectively.

Comparison. *Encarsia catemaco* sp. n. is very close to *E. guadeloupae* Viggiani described from Guadeloupe in Central America (Viggiani, 1987), especially in the coloration, but can be readily distinguished by the following characters: in *E. catemaco* female, hind femora whitish yellow, fore wing 2.3 times as long as wide, with 9 setae at base, ovipositor strongly exerted, 1.8 times as long as middle tibia, metasomal second-fourth tergites with 2 setae each, fifth with 4 setae; in *E. guadeloupae*, hind femora brown, fore wing 2.6 times as long as wide, with 3-5 setae at base, ovipositor very slightly exerted, 0.95 times as long as middle tibia, metasomal second-fifth tergites with 6 setae each.

Encarsia dmitrii sp. n.
(Figs 6-10)

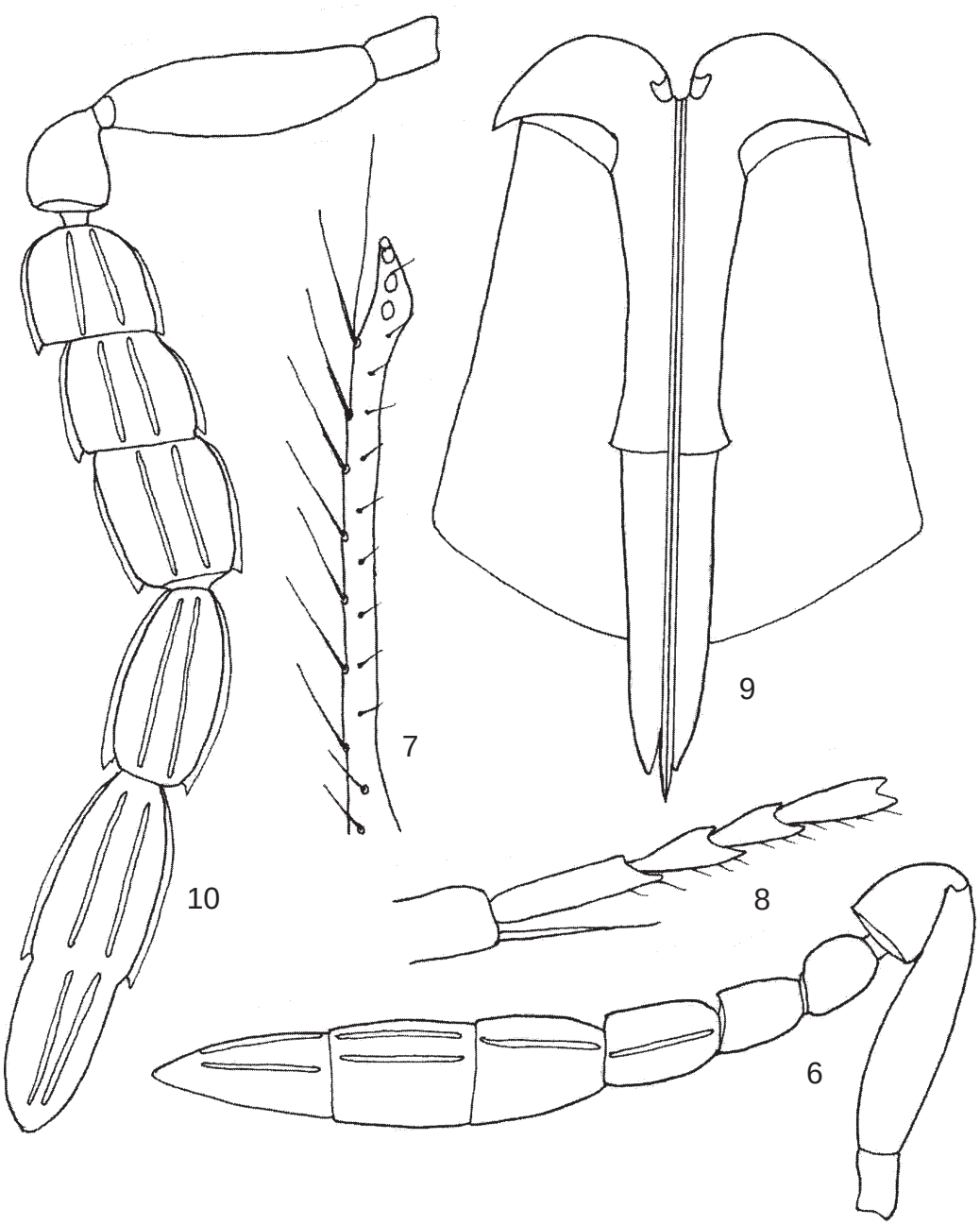
Holotype: ♀, **Mexico**, *Veracruz*, Los Tuxtlas, 30 km N Catemaco, Estación de Biologí a Tropical de Instituto de Biologí a, UNAM [18°35´N, 95°05´W], ex Aleyrodidae on *Pleuranthodendron lindellii*, 11.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Paratypes. **Mexico**, *Veracruz*: 1 ♀, 4 ♂, same data as holotype; 3 ♀, Catemaco, ex Aleyrodidae, 8.I.2007 (coll. S. Myartseva and D. Kasparyan).

Description. *Female*. Body length 0.70-0.72 mm.

Coloration. Head brown; face yellow; postocellar bars, clypeus and cheeks black; occiput around foramen and above, also behind postocellar bars darkened. Antennae whitish yellow. Mesosoma yellow; pronotum and anterior half of midlobe of mesoscutum brownish black. Fore wings hyaline. Legs whitish yellow. Petiolus brownish black with yellowish posterior margin. Metasoma largely brownish black; seventh tergite completely yellow; first tergite completely black; central part of second-sixth tergites yellow, forming a large triangular spot.

Structure. Head 1.4 times as wide as high. Frontovertex about half as wide as head. Ocellar triangle transversely striate. Ocelli forming an obtuse apical triangle; distance between posterior ocelli slightly less than distance to eye margin. Eyes 1.5 times as long as cheeks. Mandible 3-dentate. Antennae (Fig. 6) inserted immediately under the level of lower margin of eyes; distance between antennal toruli subequal to distance to eye and about 1.5 times the distance to mouth margin. Radicle about 1.5 times as long as wide; scape about 4.4 times as long as wide; pedicel about 1.3 times as long as wide. First and second funicle segments subequal in length and width, 1.2-1.3 times as long as wide each; third segment slightly longer and 1.5 times as long as wide. Club 3-segmented, subequal in length to funicle and pedicel combined. First-second flagellar segments without sensilla; third-sixth segments with one sensillum each. Midlobe of mesoscutum with



Figs 6-10. *Encarsia dmitrii* sp. n. **6**, antenna, female; **7**, marginal and stigmal veins; **8**, midtibial spur and tarsus; **9**, ovipositor; **10**, antenna, male.

5 pairs of setae, slightly wider than long (50 : 45). Scutellum about 0.8 times as wide as long. Scutellar placoid sensilla ovoid and widely spaced, distance between them about 4 times diameter of sensillum. Distance between anterior pair of scutellar setae about 0.8 times the distance between posterior pair of setae. Fore wing uniformly setose, 2.4 times as long as wide; base with 4-6 setae; marginal fringe about 0.2 maximum width of wing. Marginal vein (Fig. 7) about as long as submarginal vein, with 6-7 setae along anterior margin; stigmal vein very close to wing

margin. Hind wing about 8 times as long as wide; its marginal fringe longer than maximum width of wing (27 : 20). Tarsal formula 5-4-5. Midtibial spur (Fig. 8) as long as basitarsus; basitarsus as long as next two plus half of fourth tarsal segments combined. Second-seventh metasomal tergites with 2, 2, 2, 6, 6 and 4 setae, respectively. Sides of first-fourth tergites widely reticulate; sides of fifth-sixth tergites with longitudinal punctate sculpture. Ovipositor (Fig. 9) arising at the level of fourth tergite, about 1.2 times as long as middle tibia; third valvula 0.8-0.9 times as long as second valvifer.

Male. Body length 0.62-0.70 mm.

Coloration. Head as in female. Mesosoma brown; pronotum and middle part of midlobe of mesoscutum black; lateral and posterior margins yellow; scutellum and metanotum yellow; side lobes of mesoscutum yellow with dark apical spot. Petiolus yellow posteriorly. Wings and legs as in female. Metasoma brownish black.

Structure. Head and frontovertex with ocelli about as in female. Eyes slightly longer than cheeks (40 : 35). Antennae (Fig. 10) inserted close to mouth margin. Radicle 1.6 times as long as wide; scape 4 times as long as wide; pedicel 1.2 times as long as wide. First and second funicle segments subequal in length, both subquadrate or slightly wider than long; third segment about 1.2 times as long as wide; first-third segments forming an enlarged sensory-glandular complex; fourth segment twice as long as wide; club segments fused, subequal in length to two preceding funicle segments combined. Flagellar segments with four linear sensilla each. Midlobe of mesoscutum about 1.5 times as wide as long, with three pairs of setae; each side lobe with one seta; axillae each with one seta situated close to inner margin of axilla. Midlobe of mesoscutum widely reticulate, along sides and posterior margin longitudinally striate. Scutellum longitudinally reticulate, 1.8 times as wide as long. Scutellar placoid sensilla separated by distance about 7 diameters of one sensillum. Distance between anterior pair of scutellar setae 1.5 times the distance between posterior pair of setae. Fore wing 2.5 times as long as wide; base with 2 setae; marginal fringe about 0.4 maximum width of wing; disc scatterly setose, with small bare spot in front of stigmal vein and narrow bare area along posterior margin. Hind wing 9.6 times as long as wide; its marginal fringe about 1.6 times as long as maximum width of wing. Second-seventh metasomal tergites with 2, 2, 2, 6, 6 and 4 setae, respectively. Seventh tergite transversely wrinkled.

Comparison. *Encarsia dmitrii* sp. n. belongs to the *luteola* species group. The female is close to those of two species in this species group, *E. guadeloupae* Viggiani and *E. variegata* Howard, the latter described from Florida, USA (Howard, 1908). It can be easily distinguished from both species by the following characters: in *E. dmitrii*, mesoscutum largely yellow, all legs whitish yellow, club 3-segmented, first-second funicle segments without sensilla, midlobe of mesoscutum with 5 pairs of setae, midtibial spur as long as basitarsus, ovipositor 1.2 times as long as middle tibia; in *E. guadeloupae*, mesoscutum dark brown to black, hind coxae and femora brown, club 2-segmented, first-second funicle segments with sensilla, midlobe of mesoscutum with 9-11 pairs of setae, midtibial spur shorter than basitarsus, ovipositor shorter than middle tibia. In *E. dmitrii*, metasoma brownish black with large triangular yellow spot centrally, ovipositor 1.2 times as long as middle tibia, first-fifth flagellar segments not more than 1.5 times as long as wide, in male first-third funicle segments fused in a special complex; in *E. variegata*, metasomal tergites with small lateral brownish black spots, ovipositor 1.7 times as long as middle tibia, first-fifth funicle segments more than 2.5 times as long as wide, in male first-third funicle segments elongate, twice as long as wide (Myartseva & Varela-Fuentes, 2007). First-third funicular segments forming an enlarged, specialized sensory-glandular complex and fifth-sixth segments fused have also *E. lutea* (Masi) and *E. davidi* Viggiani & Mazzone belonging to the *lutea* species group, but females of these species have the tarsal formula 5-5-5 and the metasoma largely yellow.

Etymology. The new species is named in honour of Russian entomologist Dr Dmitri Rafaelevich Kasparyan (Zoological Institute of Russian Academy of Sciences, St. Petersburg), who many years worked in Mexico, for his friendly advice, help in collecting Homoptera and active support of this work.

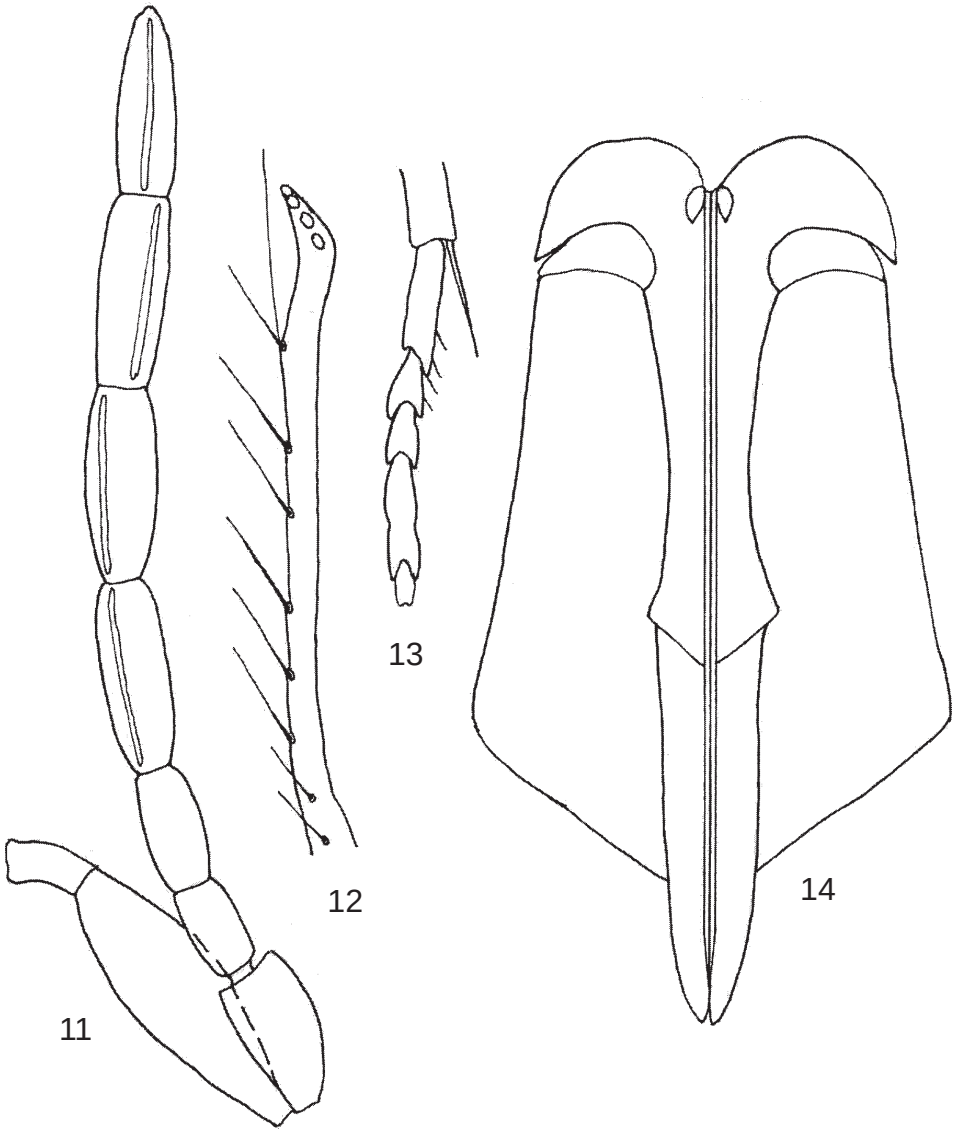
Encarsia flaviceps sp. n.
(Figs 11-14)

Holotype: ♀, **Mexico**, *Veracruz*, Los Tuxtlas, 30 km N Catemaco, Estación de Biologí a Tropical de Instituto de Biologí a, UNAM [18°35´N, 95°05´W], ex Aleyrodidae on *Pleuranthodendron lindellii*, 11.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Paratypes. **Mexico**, *Veracruz*: 1 ♀, same data as holotype; *San Luis Potosí* : 2 ♀, Xilitla, ex Aleyrodidae, 13.IV.2002 (coll. S.N. Myartseva).

Description. Female. Body length 0.60-0.80 mm.

Coloration. Head light yellow with very slightly infuscate areas behind postocellar bars and on sides of foramen; clypeus, dorsal margin of mouth and malar sulcus dark; antennae whitish yellow with slightly infuscate tip of club. Mesosoma yellowish brown; side lobes of mesoscutum yellow; scutellum, metanotum and some-



Figs 11-14. *Encarsia flaviceps* sp. n. **11**, antenna, female; **12**, marginal and stigmal veins; **13**, midtibial spur and tarsus; **14**, ovipositor.

times lateral and posterior margins of midlobe of mesoscutum with more yellowish tinge. Fore wings hyaline. Legs whitish yellow. Petiolus yellow with dark anterior margin. Metasoma light yellow with anterior margin of first tergite dark.

Structure. Head 1.4-1.5 times as wide as high. Frontovertex about 0.5-0.6 times as wide as head. Ocellar triangle transversely striate. Distance between posterior ocelli about 0.5-0.7 times the distance to eye margin. Eyes finely setose, 1.4-1.5 times as long as cheeks. Mandible 3-dentate. Antennae (Fig. 11) inserted at the level of lower margin of eyes; distance between toruli about 0.5-0.7 times the distance to eye margin and about 1.4-1.7 times the distance to mouth margin. Radicle 2.0-2.2 times as long as wide; scape 3.3-3.4 times as long as wide; pedicel 1.7-1.8 times as long as wide. First funicle segment shorter than pedicel, 1.7-2.0 times as long as wide; second segment slightly longer and 2.1-2.3 times as long as wide; third-fourth segments subequal in length, about 1.4 times as long as second segment and

about 2.8 times as long as wide each. Club not clearly 2-segmented, subequal in length to two preceding funicle segments combined. Each flagellar segment, except for first and second, with one linear sensillum. Midlobe of mesoscutum with 5 pairs of setae; side lobes each with three setae; axillae each with one seta near inner margin of axilla. Sculpture of midlobe of mesoscutum largely reticulate in central part and with elongate cells along sides and posterior margin. Mesoscutum 1.2-1.3 times as wide as long; scutellum 1.7-2.0 times as wide as long. Scutellar placoid sensilla ovoid, widely spaced, separated by distance about 5-6 diameters of a sensillum. Distances between anterior and posterior pairs of scutellar setae subequal. Fore wing uniformly setose, 2.5-2.8 times as long as wide; base with 3 setae; marginal fringe 0.3-0.4 times maximum width of wing. Marginal vein (Fig. 12) with 5-6 long setae along anterior margin, subequal to submarginal vein. Hind wing 10-11 times as long as wide, its marginal fringe about twice as long as maximum width of wing. Tarsal formula 5-4-5. Midtibial spur (Fig. 13) as long as basitarsus; basitarsus subequal to next two tarsal segments combined. Second-seventh metasomal tergites with 2, 2, 2, 4, 4 and 4 setae, respectively. Ovipositor (Fig. 14) arising at the level of second tergite, 1.4 times as long as middle tibia; third valvula 0.6-0.7 times as long as second valvifer.

Male. Unknown.

Comparison. *Encarsia flaviceps* sp. n. belongs to the *luteola* species group. It is close to *E. formosa* Gahan and *E. luteola* Howard of this species group in having the metasoma yellow, tarsal formula 5-4-5, scutellar placoid sensilla widely spaced, and fore wing uniformly setose. However, in *E. flaviceps* the head is light yellow with small very slightly infuscate areas, marginal vein with 5-6 setae along anterior margin, midlobe of mesoscutum with 5 pairs of setae, midtibial spur as long as basitarsus, ovipositor 1.4 times as long as middle tibia, eyes 1.4-1.5 times as long as cheeks, scape 3.3-3.4 times as long as wide.

Encarsia trilineata sp. n.
(Figs 15-19)

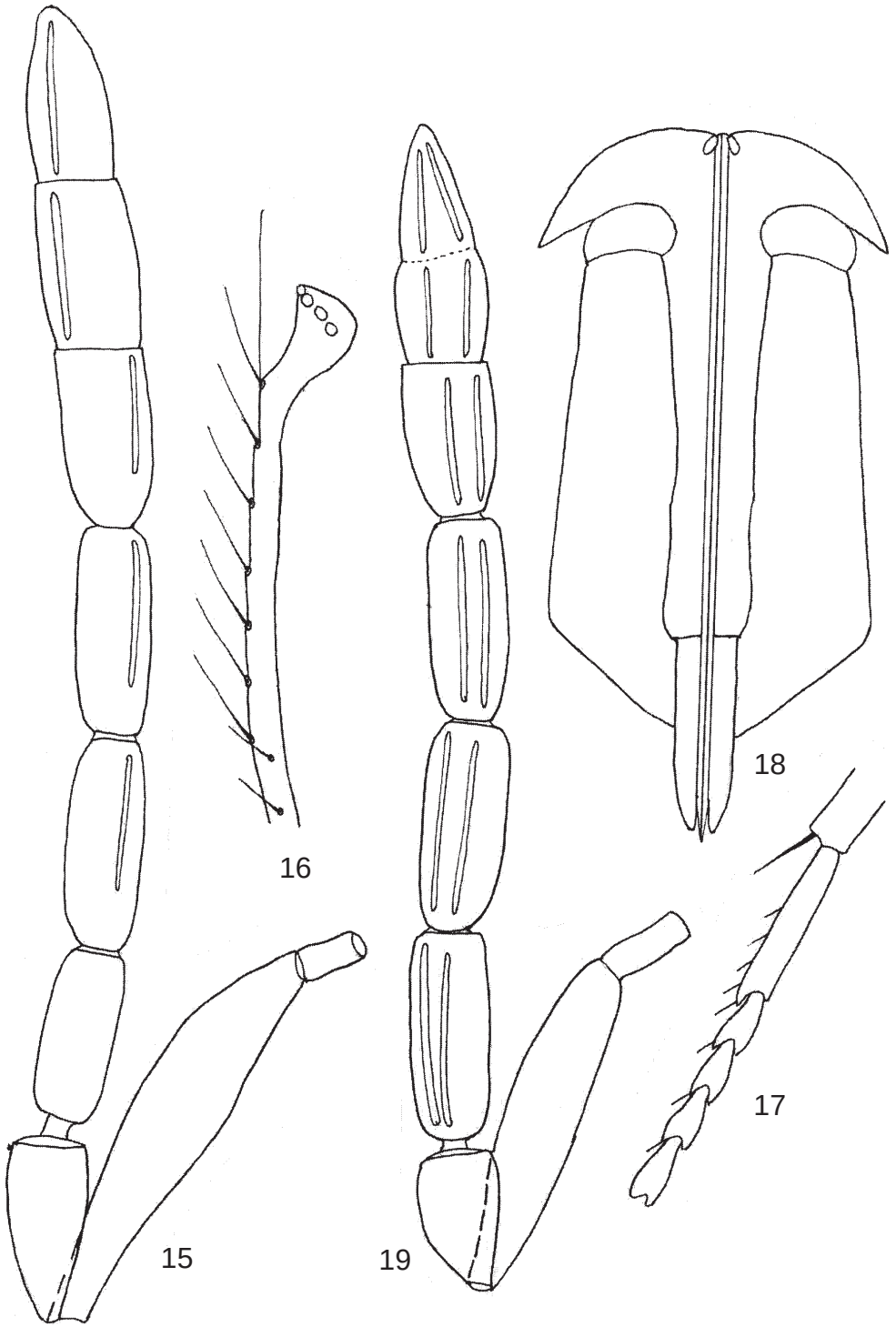
Holotype: ♀, **Mexico**, *District Federal*, Mexico City, Botanical Garden, ex *Trialeurodes vaporariorum* on *Ruta graveolens*, 13.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Paratypes. **Mexico**, *District Federal*: 6 ♀, same data as holotype; 1 ♀, 2 ♂, Mexico City, Chapultepec, ex Aleyrodidae on tree, 21.VI.2000 (coll. D.R. Kasparyan); *Veracruz*: 1 ♀, Los Tuxtlas, 30 km N Catemaco, Estación de Biologí a Tropical de Instituto de Biologí a, UNAM [18°35´N, 95°05´W], ex Aleyrodidae on *Piper hispidum*, 8.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Description. *Female*. Body length 0.90-0.97 mm.

Coloration. Head light yellow; frontovertex dark yellow. Antennae brownish; radicle whitish; pedicel with yellowish tinge. Ocelli reddish; eyes dark brown. Pronotum dark brown. Mesosoma yellow with infuscate longitudinal band along middle of midlobe of mesoscutum, median spot on apical part of side lobes, and lateral margins of propodeum. Fore wings hyaline, venation infuscate. Legs whitish yellow; apices of last tarsal segments of all legs infuscate. Metasoma yellow; first-fifth tergites with brownish black lateral spot.

Structure. Head as wide as mesosoma, 1.1-1.2 times as wide as high. Frontovertex about half as wide as head, transversely striate behind posterior ocelli. Ocelli forming slightly obtuse apical triangle; distance between posterior ocelli subequal to distance to eye margin. Eyes very finely setose, 1.1-1.2 times as long as cheeks. Mandible 3-dentate. Antennae (Fig. 15) inserted closely to mouth margin; distance between toruli about half the distance to eye margin. Radicle about 2.4 times as long as wide; scape 5.0-5.5 times as long as wide; pedicel about 2.4 times as long as wide. First funicular segment shorter than pedicel (18 : 22) and about 2.2 times as long as wide; second and third segments slightly longer than first segment and subequal in length, both about 2.7 times as long as wide, respectively. Club 3-segmented, slightly shorter than funicle and each segment about twice as long as wide. Each flagellar segment with one linear sensilla. Midlobe of mesoscutum with 5 pairs of setae, about 1.4 times as wide as long; side lobes with 3 setae each; axillae with two setae situated close to inner margin in middle of axilla, second seta short and thin. Scutellum 0.7 times as long as mesoscutum and about 1.7 times as wide as long. Scutellar placoid sensilla closely spaced, separated by distance not more than one diameter of sensilla. Distance between anterior pair of scutellar setae about 0.6-0.7 times the distance between posterior pair of setae. Fore wing uniformly setose, about 2.8 times as long as wide; base with 12-14 setae; marginal fringe about 0.3 maximum width of wing. Apex of costal cell with 4-5 long setae; disc along posterior margin of wing with small area of longer setae. Marginal vein (Fig. 16) with 6-7 setae along anterior margin, 0.8 times as long as submarginal vein. Stigmal vein bulbous, with one long seta. Hind wing about 10.7 times as long as wide; its marginal fringe about twice as long as maximum width of wing. Tarsal formula 5-5-5. Midtibial spur (Fig. 17) about 0.4 times as long as basitarsus; basitarsus about as long as next three tarsal segments combined. Fifth and seventh metasomal tergites with 4 setae each; between cerci, two setae. Ovipositor (Fig. 18) with base arising at the level of third tergite, 1.1-1.3 times as long as middle tibia; third



Figs 15-19. *Encarsia trilineata* sp. n. **15**, antenna, female; **16**, marginal and stigmal veins; **17**, midtibial spur and tarsus; **18**, ovipositor; **19**, antenna, male.

valvula 0.3-0.4 times as long as second valvifer.

Male. Body length 0.60-0.70 mm.

Coloration. Head and mesosoma as in female; apex of axillae infuscate; metasomal tergites, except for seventh, completely brownish.

Structure. Frontovertex about 0.6 times as wide as head. Antennal radicle about 3 times as long as wide; scape about 4.4 times as long as wide; pedicel about twice as long as wide. Funicular segments subequal in length; fourth-fifth segments slightly wider; first-third segments about 2.5-2.6 times as long as wide, fourth segment about twice as long as wide, fifth and sixth segments fused (Fig. 19). Each flagellar segment with 2 linear sensilla. Setation of mesosoma as in female. Midlobe of mesoscutum and scutellum subequal in width. Fore wing about 2.6 times as long as wide; its marginal fringe and setation of disc as in female; base with 8-11 setae; apex of costal cell with 2-3 long setae. Midtibial spur about half basitarsus length.

Comparison. *Encarsia trilineata* sp. n. possibly belongs to the *strenua* species group. It is close to *E. costaricensis* Evans & Angulo described from Costa Rica (Evans & Angulo, 1996), but can be easily recognized by the following characters: in *E. trilineata*, body with some dark markings, first-fifth metasomal tergites with lateral spot each, antennal scape 5.0-5.2 times as long as wide, midlobe of mesoscutum with 5 pairs of setae, fore wings hyaline and with small area of longer setae along posterior margin of disc; in *E. costaricensis*, body yellow, antennal scape 3.8 times as long as wide, midlobe of mesoscutum with 4 pairs of setae, fore wings slightly infuscate basally and without small area of longer setae along posterior margin of disc.

From another close species, *E. bimaculata* Heraty & Polaszek described from Florida, USA, and known also from Mexico (Heraty & Polaszek, 2000), the new species is readily distinguished by the following characters: in *E. trilineata*, mesoscutum anteriorly, axillae, propodeum submedially yellow, first-second tergites yellow with dark spot laterally, midlobe of mesoscutum with 5 pairs of setae, first-second funicular segments with one sensilla each, midtibial spur 0.4 times as long as basitarsus, costal cell of fore wing with 4-5 long marginal setae apically, base of fore wing with 12-14 setae posterior to submarginal vein, and disc with small area of long setae along posterior margin; in *E. bimaculata*, mesoscutum anteriorly, axillae, propodeum submedially, first-second tergites brown, midlobe of mesoscutum with 4 pairs of setae, first-second funicular segments without sensilla, midtibial spur 0.6-0.8 times as long as basitarsus, costal cell of fore wing with one long marginal seta apically, wing base with 5-6 setae posterior to submarginal vein, and disc without small area of long setae along posterior margin.

From other species of the *strenua* group distributed in the New World, *E. protransvena* Viggiani, *E. sophia* (Girault & Dodd), *E. strenua* (Silvestri), the new species differs, first of all, by the spotted metasomal tergites and longitudinal dark band along middle of midlobe of mesoscutum (see the key for the *strenua* species group of the New World in Heraty & Polaszek, 2000). Only *E. sophia* shares with *E. trilineata* the transversely striate ocellar triangle and a patch of longer setae in the posterior half of the wing disc.

Encarsia tuxtla sp. n.
(Figs 20-23)

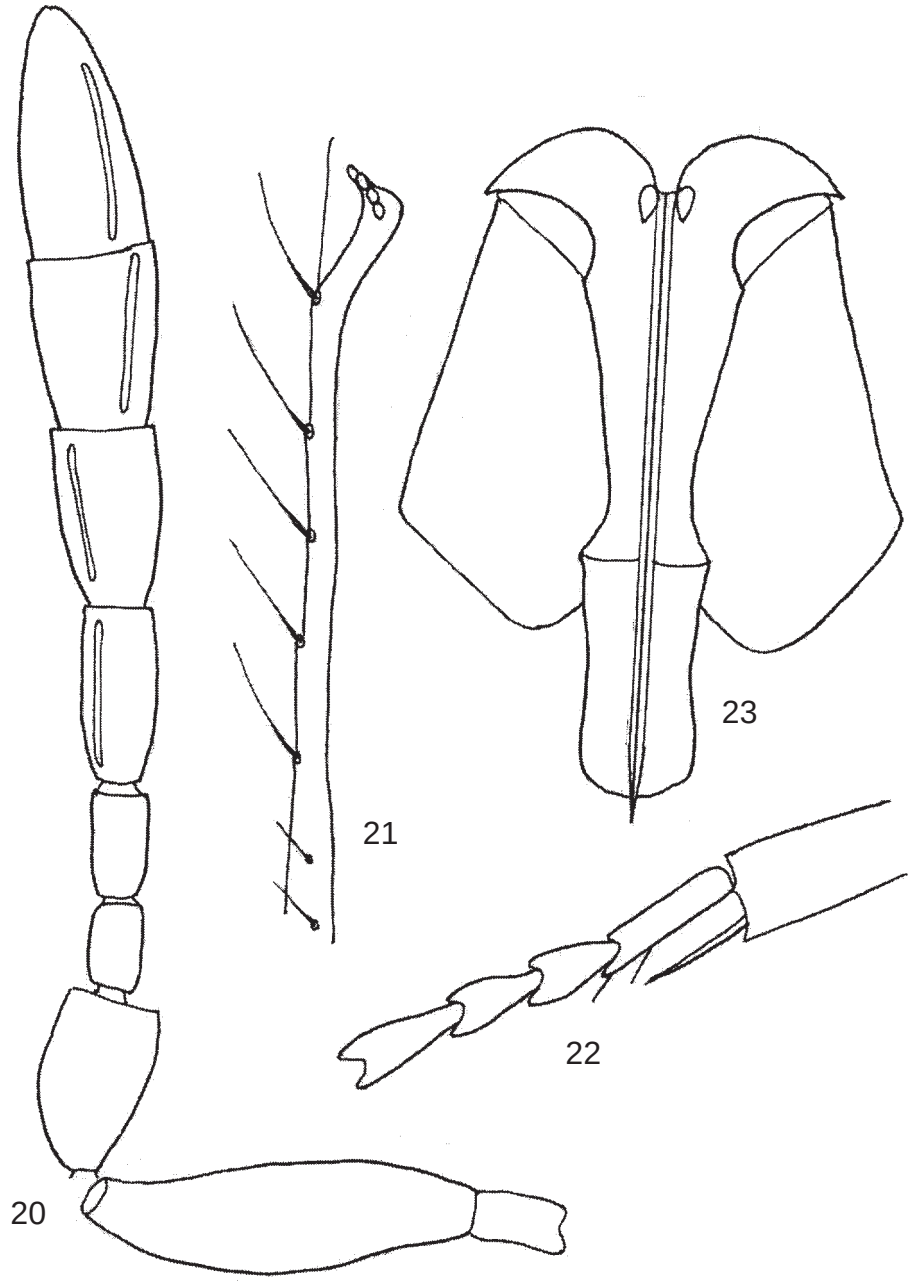
Holotype: ♀, **Mexico**, *Veracruz*, Los Tuxtlas, 30 km N Catemaco, Estación de Biologí a Tropical de Instituto de Biologí a, UNAM [18°35´N, 95°05´W], ex Aleyrodidae on *Pleuranthodendron lindellii*, 11.I.2007 (coll. S.N. Myartseva & D.R. Kasparyan).

Paratypes. **Mexico**, *Veracruz*: 2 ♀, same data as holotype; *Chiapas*: 1 ♀, Jaltenango, Reserva El Triunfo, Mirador Santa Rita, scree-sweeping (22), 22.VII.1997 (coll. A. González H.).

Description. *Female*. Body length 0.50-0.60 mm.

Coloration. Head brown black; antennae whitish yellow with apical club segment slightly infuscate. Mesosoma brownish black, with lateral and posterior margins of midlobe of mesoscutum and also scutellum yellowish brown; side lobes yellow with dark apical spot; propodeum, except for apices and metanotum, light yellow. Fore wings hyaline. Legs whitish yellow. Metasoma light yellow, tips of stylets dark.

Structure. Head about 1.2 times as wide as high. Frontovertex about half as wide as head, transversely striate in ocellar triangle. Ocelli forming slightly obtuse apical triangle; distance between posterior ocelli slightly less than distance to eye margin. Eyes setose, about 1.7 times as long as cheeks. Mandible 3-dentate. Antennae (Fig. 20) inserted immediately under the level of lower margin of eyes; distance between toruli slightly less than distance to eye margin and about twice the distance to mouth margin. Radicle twice as long as wide; scape 3.8-3.9 times as long as wide; pedicel 1.5 times as long as wide. First-second funicle segments shorter than pedicel, 1.6 and 2.0 times as long as wide, respectively. Third-fifth segments subequal in length, 1.9, 1.7 and 1.3 times as long as wide, respectively. Club 3-segmented, its last segment longer and twice as long as wide. Club subequal in length to funicle and pedicel combined. Third-sixth flagellar segments with one sensillum each. Midlobe of mesoscutum with 3 pairs of setae, with large reticulate sculpture in central part and longitudinal cells on sides and posterior margin. Side lobes with one seta each;



Figs 20-23. *Encarsia tuxtla* sp. n. **20**, antenna, female; **21**, marginal and stigmal veins; **22**, midtibial spur and tarsus; **23**, ovipositor.

axillae each with one short seta situated near anterior margin medially. Mesoscutum about 1.4 times as wide as long. Scutellum about 0.7 times as long as mesoscutum and about 1.8 times as wide as long. Scutellar placoid sensilla ovoid and widely spaced, separated by distance about 6 diameters of one sensillum. Anterior pair of scutellar setae 0.6 times as long as posterior pair of setae; distance between anterior setae about 1.3 times the distance between posterior setae. Fore wings 2.6 times as long as wide; base with 2 setae, marginal fringe about 0.4 maximum width of

wing; disc sparsely setose, with bare areas along posterior margin and anterior margin from stigmal vein to apex of wing. Marginal vein (Fig. 21) with 6 long setae along anterior margin; submarginal vein as long as marginal vein. Hind wing 8 times as long as wide; its marginal fringe 1.4 times as long as maximum width of wing. Tarsal formula 5-4-5. Midtibial spur (Fig. 22) about as long as basitarsus; basitarsus about as long as next two tarsal segments combined. Second-seventh metasomal tergites with 2, 2, 2, 4, 4, and 4 setae, respectively. Ovipositor (Fig. 23) arising at the level of fourth tergite, about 0.9 times as long as middle tibia; third valvula 0.5-0.6 times as long as second valvifer.

Comments. *Encarsia tuxtla* sp. n. possibly belongs to the *luteola* species group. It can be easily distinguished from two close species of this group, *E. formosa* Gahan and *E. luteola* Howard, which are very similar in morphology and also have brown black head and mesosoma and yellow metasoma, by the following characters: in *E. tuxtla*, club 3-segmented, midlobe of mesoscutum with 3 pairs of setae, midtibial spur as long as basitarsus; in *E. formosa* and *E. luteola*, club 2-segmented, midlobe of mesoscutum with 6-9 pairs of setae, midtibial spur shorter than half of basitarsus.

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