

## Three new species of *Coccophagus* Westwood from Tamaulipas, Mexico (Hymenoptera: Aphelinidae)

S.N. Myartseva

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Three new species of *Coccophagus* from Mexico, state of Tamaulipas are described: *C. bimaculatus* sp. n., *C. propodealis* sp. n. and *C. ruizi* sp. n.

S.N. Myartseva, *División de Estudios de Postgrado e Investigación, UAM Agronomía y Ciencias, Universidad Autónoma de Tamaulipas, Cd. Victoria, Tamaulipas 87149, Mexico. E-mail: smyartse@uat.edu.mx*

The genus *Coccophagus* Westwood, 1833 comprises over 200 described species and has a cosmopolitan distribution. Females of *Coccophagus* species are endoparasitoids of homopteran insects mainly from the family Coccidae, rarely Pseudococcidae. Males are generally hyperparasitoids on other primary parasitoids, including females of their own species. Several species are of value in agriculture, because have been used in the biological control of pests (Clausen, 1978; Greathead, 1986).

The Mexican fauna of *Coccophagus* is poorly studied. Ten species were recorded from Mexico (Myartseva & Ruiz-Cancino, 2000; Myartseva & Coronado-Blanco, 2003), whereas 59 species are known to occur in the New World (Noyes, 2002). The author collected and reared females and males of some new species of this genus in Mexico. Descriptions of three new species of *Coccophagus* collected in the state of Tamaulipas are given below. All type specimens are deposited at the Entomological Museum of University of California (Riverside, USA).

### ***Coccophagus bimaculatus* sp. n.** (Figs 1-6)

*Holotype*. ♀, **Mexico, Tamaulipas**, Cd. Victoria, Huerta 21 Blv. López M., ex Coccidae on *Citrus sinensis*, 18.X.1996 (M.R. Thompson F.).

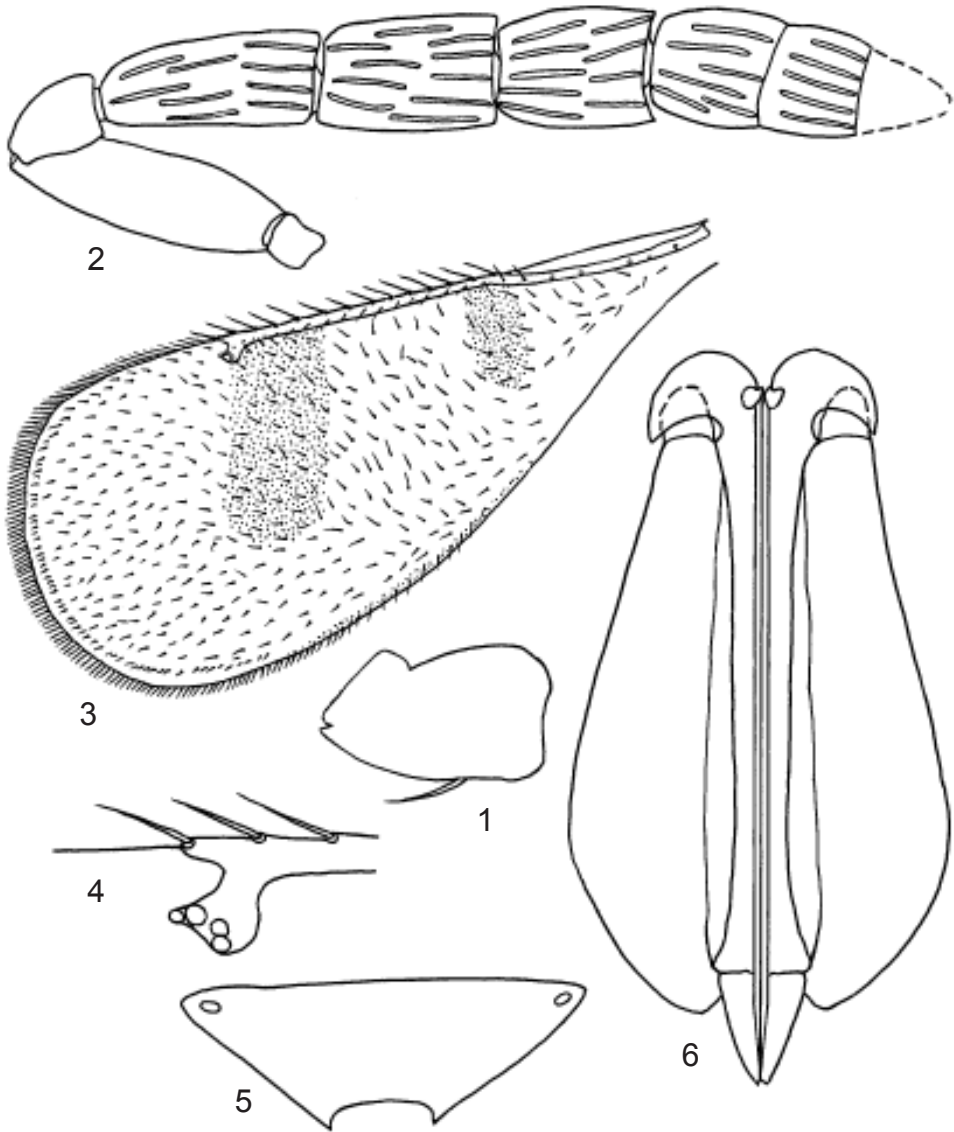
*Description. Female*. Body length about 1.20 mm.

Coloration. Head brownish yellow, frontovertex between ocelli black; face above toruli till fore ocellus infuscate; mediofrontal line yellow. Maxillary palpi infuscate. Antennal radicle and scape yellowish, with dorsal margin apically infuscate; pedicel and flagellum black. Fore wings

with two oval infuscations below marginal vein: a small one beneath its basal part and a large one beneath its apical third, both not reaching hind margin of wing; marginal vein slightly infuscate. Hind legs black, tarsi white (fore and middle legs are lost). Mesosoma and gaster black.

Structure. Head as wide as mesosoma and 1.2 times as wide as high. Frontovertex width about half head width. Ocelli forming an obtuse apical triangle; posterior ocellus separated from eye by about 1.5 diameters of an ocellus. Eyes finely setose, about 1.5 times as long as cheeks. Mandible (Fig. 1) with a ventral notch and straight dorsal truncation. Antennae (Fig. 2) inserted at the level of lower margin of eyes; distance between antennal toruli about two-thirds the distance from toruli to eyes and mouth margin. Frontovertex, face and cheeks shortly setose, setae on frontovertex and clypeus longer. Scape about 3 times as long as wide; pedicel 1.5 times as long as wide; first funicle segment the longest, 2.3 times as long as wide and about twice as long as pedicel; second segment 1.7 times as long as wide; third segment slightly shorter and 1.4 times as long as wide; 1st and 2nd club segments subquadrate. Funicle and club segments with many longitudinal sensilla.

Mesosoma with mesoscutum and scutellum densely setose, scutellum also with a pair of long slender apical bristles. Side lobes of mesoscutum each with four setae, axillae each with two setae. Propodeum divided medially, with longitudinal carinae laterad to spiracles and a few slender setae on sides. Mesonotum with fine reticulate sculpture. Mesoscutum about 1.5 times as wide as long. Scutellum slightly shorter and about 1.3 times as wide as long. Fore wing (Fig. 3) 2.2 times as long as wide; submarginal vein about

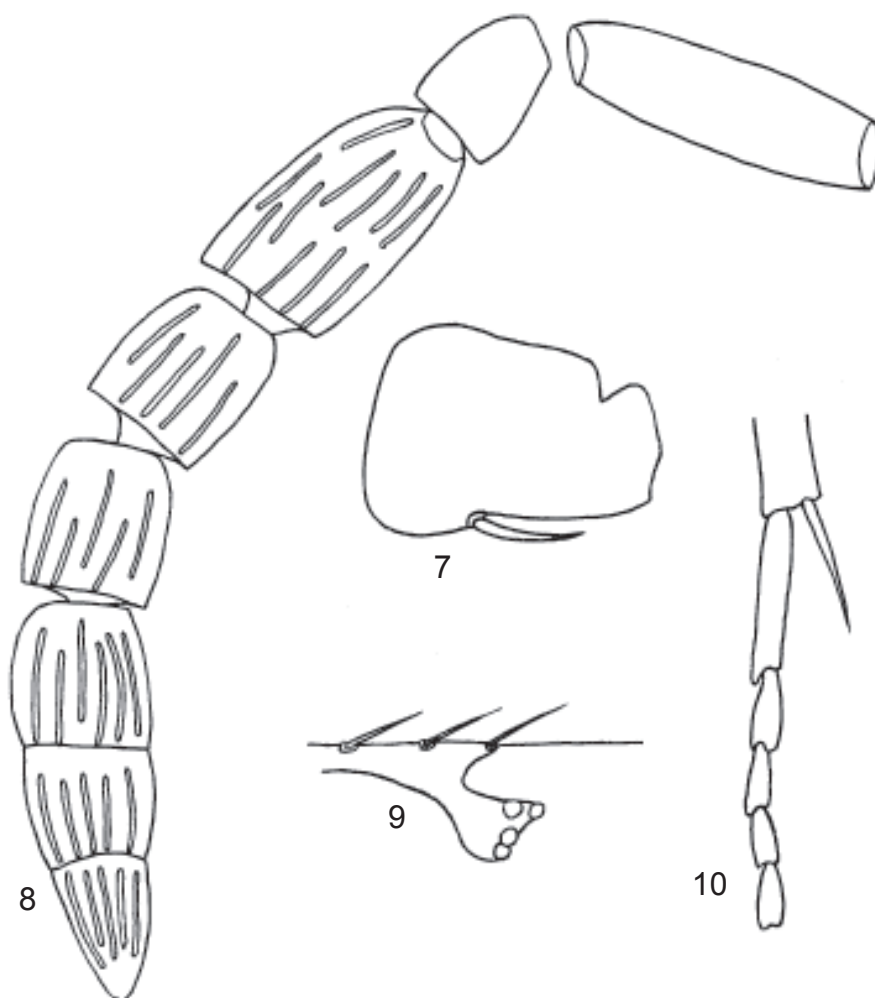


**Figs 1-6.** *Coccophagus bimaculatus* sp. n., female. 1, mandible; 2, antenna; 3, fore wing; 4, stigmal and postmarginal veins; 5, seventh gastral tergite; 6, ovipositor.

0.9 times as long as marginal vein; postmarginal vein distinct (Fig. 4). Hind tibia with erected strong setae along dorsal margin in apical half and with two setae of equal length at apex. Seventh gastral tergite about 3.2 times as wide as long (Fig. 5). Ovipositor not exerted, 7.5 times as long as third valvula; third valvula about 0.2 times as long as second valvifer (Fig. 6).

*Male.* Unknown.

*Comments.* *Coccophagus bimaculatus* sp. n. is readily recognized by two infuscate oval spots on fore wing beneath the marginal vein. Similar infuscation of fore wing is known only in *C. pallidiceps* Compere described from Brazil and recorded also for Argentina and Mexico (De Santis, 1989). In the original description of *C. pallidiceps*, only coloration and figures of antenna and fore wing are given (Compere, 1939). *C. bi-*



**Figs 7-10.** *Coccophagus propodealis* sp. n., female. 7, mandible; 8, antenna; 9, stigmal and postmarginal veins; 10, midtibial spur and middle tarsus.

*maculatus* sp. n. differs from *C. pallidiceps* in the elongated funicle segments of antenna: in *C. bimaculatus*, the 1st, 2nd and 3rd funicle segments are 2.3, 1.7 and 1.4 times as long as wide, respectively; in *C. pallidiceps*, the 1st funicle segment is 1.5 times as long as wide, 2nd and 3rd segments not longer than wide, approximately subquadrate.

***Coccophagus propodealis* sp. n.**  
(Figs 7-10)

*Holotype.* ♀, **México**, *Tamaulipas*, Gomez Farías, Estación Los Cedros, 340 m, 23°03'00" N, 99°09'03" W, 14.IV.2002 (coll. A.Córdoba-Torres M.T.).

*Description. Female.* Body length 1.20 mm.

*Coloration.* Head brownish black; frontover-  
tex brownish orange with brown band between  
posterior ocelli; transverse band above scrobes  
dusky yellow. Maxillary and labial palpi white;  
second maxillary palpus infuscate. Scape yellow-  
ish brown; pedicel and flagellum dark brown.  
Mesosoma black. Fore wings almost hyaline, only  
with very faint infuscation beneath stigmal vein  
and apical third of marginal vein; venation in-  
fuscate. Legs black; apices of fore and middle  
femora and fore tibiae yellowish; all trochanters,  
hind coxae and all tarsi white, last segment of  
hind tarsi slightly infuscate. Propodeum between  
carinae medially black, laterally contrastingly  
white. Gaster black.

Structure. Head slightly wider than mesosoma and slightly wider than high. Frontoververtex about half as wide as head and 1.2 times as wide as long (measured across fore ocellus). Ocelli forming an obtuse apical triangle of slightly more than 90°; posterior ocelli arranged at a distance of about one diameter of ocellus from occipital margin and about 2.5 diameters, from eye margin. Eyes finely setose, about twice as long as cheeks. Mandible as in Fig. 7. Upper limits of antennal toruli at about lower eye level; toruli about equidistant from eyes and mouth margin, and slightly closer to each other; scrobes abruptly angled on to face, interscrobal prominence continuing narrowly upward between them. Frontoververtex reticulate, with numerous setigerous punctures; cheeks and entire face save scrobes punctate-reticulate, rather shortly densely setose; mouth margin with longer tapering spines. Antennal scape (Fig. 8) about 4 times as long as wide, with fine reticulate sculpture; pedicel about 1.3 times as long as wide; first funicle segment the longest, 1.6 times as long as wide and as pedicel; second and third segments subequal in length, each slightly longer than wide, together slightly shorter than club; club about 2.4 times as long as wide. Funicle and club segments with many longitudinal sensilla.

Mesosoma with mesoscutum and scutellum densely setose; scutellum also with a pair of long, slender apical bristles. Side lobes of mesoscutum each with four setae; axillae each with two setae. Propodeum divided medially, with longitudinal carinae laterad to spiracles and a few slender setae on sides. Mesonotum with fine reticulate sculpture. Mesoscutum slightly wider than long; scutellum about 1.6 times as wide as long. Fore wing about twice as long as wide, with short marginal fringe. Submarginal vein with 7 setae, about 0.7 times as long as marginal vein; postmarginal vein short, but distinct (Fig. 9). Hind wing about 3.6 times as long as wide, with marginal fringe about 1/7 of maximum wing width; setation of disc very short and fine, basal third without discal setae. Midtibial spur (Fig. 10) slightly shorter than basitarsus; basitarsus slightly shorter than following three tarsal segments combined. Gaster slightly longer than mesosoma. Ovipositor not exerted, a little (1.3x) longer than middle tibia; third valvula about 0.2 times as long as second valvifer.

*Male.* Unknown.

*Comments.* *Coccophagus propodealis* sp. n. is readily recognized by the white propodeal sides, hind coxae and all trochanters contrasting to the black coloration of body. It closely resembles *C. albicoxa* Howard, but can be distinguished by the following characters: in *C. propodealis*, the scutellum is entirely black, apices of fore and

middle femora yellowish, fore wings with faint infuscation, stigmal vein not widened, last abdominal tergite not elongate, body length 1.20 mm; in *C. albicoxa*, the apical half of scutellum is yellow, all femora black, fore wings distinctly hyaline, stigmal vein broad, last abdominal tergite elongate, body length 2.50 mm.

### ***Coccophagus ruizi* sp. n.**

(Figs 11-16)

*Holotype.* ♀, México, Tamaulipas, Tampico, ex *Sais-setia* sp., 27.III.2001 (coll. S. Myartseva).

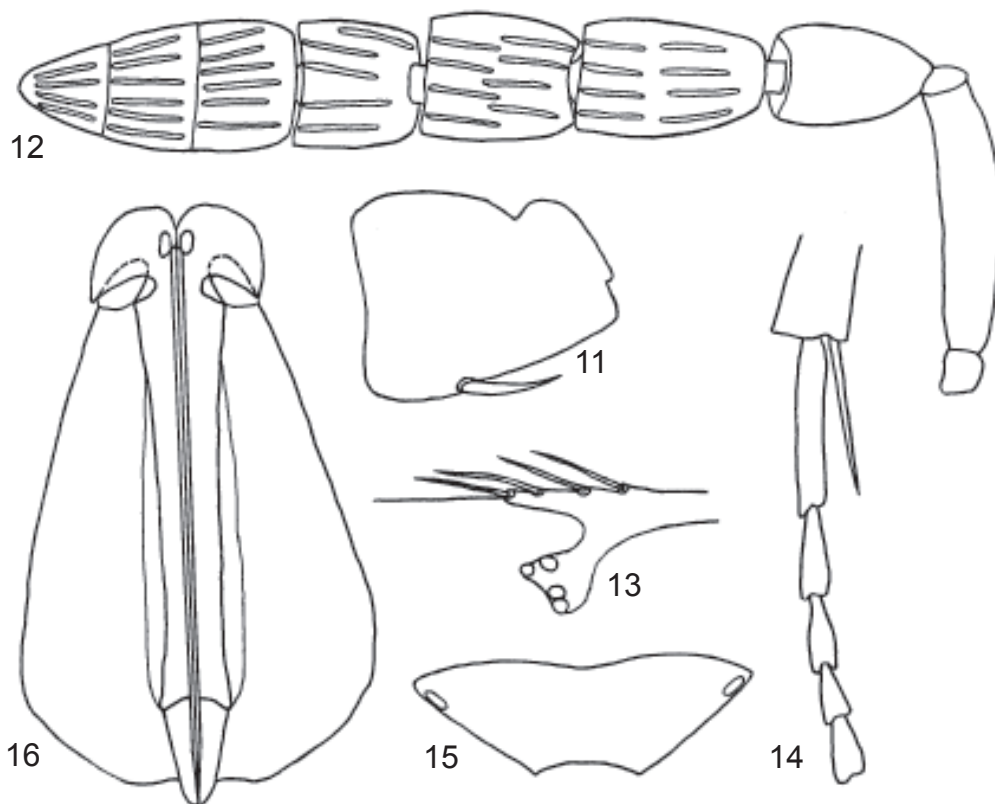
*Paratype.* México, Tamaulipas: 1 ♀, Gomez Fariás, Estación Los Cedros, 340 m, 23°03'00" N, 99°09'03" W, 14.IV.2002 (coll. A. Córdoba-Torres M.T.).

*Description.* *Female.* Body length 1.20-1.30 mm.

Coloration. Head brownish black; frontoververtex around posterior ocelli, below toruli, along inner margin of eyes and on interantennal prominence brownish yellow. Antennal scape brownish yellow; pedicel and flagellum black. Maxillary and labial palpi white; second maxillary palpus infuscate. Mesosoma black. Fore wings infuscate beneath stigmal and apical half of marginal vein. Legs black; fore tibiae brownish yellow; hind coxae white, with base and outer margin slightly infuscate; all tarsi white, except for apical segment; midtibial spur very slightly infuscate. Propodeum black. Gaster black.

Structure. Head slightly wider than mesosoma and slightly wider than high. Frontoververtex very slightly longer than wide (19 : 17) and slightly more than half as wide as head. Ocelli forming slightly obtuse apical triangle; posterior ocelli separated from occipital margin by distance subequal to diameter of ocellus and from eye margin, by about two diameters of ocellus. Eyes finely setose, about twice as long as cheeks. Mandible as in Fig. 11. Antennae (Fig. 12) inserted immediately at the level of lower margin of eyes. Antennal toruli placed closer to mouth margin than to eye margins. Face above scrobes and frontoververtex reticulate, with numerous setigerous punctures; cheeks and face setose, reticulate; mouth margin with long spines. Scape about 4.5 times as long as wide; pedicel 1.5 times as long as wide; first funicle segment the longest, 1.7-1.8 times as long as wide and about 1.5 times as long as pedicel; second segment 1.3 times as long as wide; third segment slightly shorter, slightly longer than wide or subquadrate; club twice as long as wide and subequal to or very slightly shorter than two preceding funicular segments combined. Funicle and club segments with many longitudinal sensilla.

Mesosoma with mesoscutum and scutellum densely setose, scutellum also with a pair of long, slender apical bristles. Side lobes of mesoscu-



**Figs 11-16.** *Coccophagus ruizi* sp.n., female. **11**, mandible; **12**, antenna; **13**, stigmal and postmarginal veins; **14**, midtibial spur and middle tarsus; **15**, seventh gastral tergite; **16**, ovipositor.

tum each with four setae; axillae each with two setae. Propodeum divided medially, with longitudinal carinae laterad to spiracles and a few slender setae on sides. Mesonotum with fine reticulate sculpture. Mesoscutum 1.4-1.5 times as wide as long. Scutellum slightly longer and 1.3-1.4 times as wide as long. Fore wing 2.0-2.2 times as long as wide; submarginal vein 0.8 times as long as marginal vein; postmarginal vein present, as long as stigmal vein (Fig. 13). Hind wing 3.5 times as long as wide, with marginal fringe about 1/6 of maximum width of wing; disc beneath submarginal vein only with a few short, thin setae. Midtibial spur (Fig. 14) very slightly shorter than basitarsus; basitarsus shorter than next three tarsal segments combined. Outer margin of hind tibiae in apical half with strong erected short bristles. Seventh gastral tergite (Fig. 15) 3.3 times as wide as long. Ovipositor not exerted, a little (1.1x) longer than middle tibia; third valvula about 0.2 times as long as second valvifer (Fig. 16).

*Male.* Unknown.

*Comments.* *Coccophagus ruizi* sp. n. is close to *C. nigritus* Compere described from South Africa (Compere, 1931), but can be distinguished by the following characters: in *C. ruizi*, the first funicle segment less than twice as long as wide and about 1.5 times as long as pedicel, third segment as long as wide or very slightly longer, ovipositor arises slightly higher than the middle of gaster and is 1.1 times as long as middle tibia, gaster with seventh tergite not elongate, hind coxae mostly white; in *C. nigritus*, the first funicle segment more than twice as long as wide and about twice as long as the pedicel, third segment distinctly, about 1.3 times as long as wide, ovipositor arises near the base of gaster and is 1.8-2.4 times as long as middle tibia, gaster with seventh tergite elongate, hind coxae fully black.

*C. ruizi* is similar also to *C. coracinus* Compere reared from *Saissetia oleae* in Africa (Compere, 1940), but can be distinguished by the fol-

lowing characters: in *C. ruizi*, the basitarsus of middle and hind legs entirely white and slightly longer than two next segments combined, third valvula 0.6 times as long as midtibial spur; in *C. coracinus*, basitarsus of middle and hind legs is black in basal half and almost as long as four next segments combined, third valvula 0.8 times as long as midtibial spur.

*Etymology.* The new species is named in honour of the Mexican entomologist, hymenopterist Dr. Enrique Ruíz Cancino (División de Estudios de Postgrado e Investigación, UAM Agronomía y Ciencias, Universidad Autónoma de Tamaulipas, Cd. Victoria, México), who created the Entomological Research Collection of some families of Hymenoptera in the University of Tamaulipas.

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