

Two new species of *Pteroptrix* Westwood, 1833 (Hymenoptera: Aphelinidae) from Mexico

S.N. MYARTSEVA

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

Two new species of the genus *Pteroptrix* are described from Mexico: *P. gonzalesi* sp. n. from Chiapas and *P. mexicana* sp. n. from Baja California Sur. A key for identification of three species of *Pteroptrix* recorded from Mexico is presented. Data on the hosts and distribution of the Mexican *Pteroptrix* species are given.

Key words: *Pteroptrix*, Aphelinidae, Mexico, new species

INTRODUCTION

The genus *Pteroptrix* Westwood, 1833 belongs to the chalcidoid family Aphelinidae. It includes 65 species and has worldwide distribution (Noyes, 2007). In North and South America this genus is poorly known: 6 species were recorded in Neotropical region and in Nearctic – 5 species (Jung-Wook & Triapitsyn, 2003), whereas in China – 26 species (Viggiani & Ren, 1991), in South Africa – 16 species, including 13 recently described (Prinsloo & Naser, 1990), in Europe – 12 species (Noyes, 2007). In Argentina one species of *Pteroptrix* was found, that was the first known member of the family Aphelinidae with a reduction of the tarsus to three segments (Jung-Wook & Triapitsyn, 2003). All previously known species of *Pteroptrix* have four tarsal segments. Only one species of this genus was known till now from Mexico.

Species of *Pteroptrix* are primary parasitoids of armored scales (Homoptera: Diaspididae). Some species of *Pteroptrix* from China were introduced to control scale insects to several countries, including Mexico. For example, in Israel *P. smithi* (Compere, 1953) has gradually became the dominant parasitoid of the Florida red scale on citrus (Podoler *et al.*, 1988).

The present paper includes first data on three species of *Pteroptrix* from Mexico. One species was introduced into Mexico

earlier. Two other species were collected in the states of Chiapas and Baja California Sur and were found as new for science.

Genus *Pteroptrix* Westwood, 1833

Pteroptrix Westwood, 1833b: 344. Type species *Pteroptrix dimidiatus* Westwood, by monotypy.

[*Pterothrix* Nees, 1834: 409. Invalid emendation.]

[*Gyrolasia* Foerster, 1856: 145. Replacement name for *Pterothrix* Nees, considered preoccupied by *Pterothrix* de Candolle, in plants.]

Archenomus Howard, 1898: 136. Type species *Archenomus bicolor* Howard, by monotypy. Synonymized by Nowicki, in Mercet, 1928b: 507.

Casca Howard, 1907: 83. Type species *Casca chinensis* Howard, by original designation. Synonymized by Novitzky, 1962: 193.

Artas Howard, 1907: 85. Type species *Artas koebelei* Howard, by original designation. Synonymized by Hayat, 1983: 94.

Hispaniella Mercet, 1911: 511. Type species *Archenomus lauri* Mercet, by original designation. Implied synonym of *Pteroptrix* by Viggiani, in Viggiani & Garonna, 1993: 58.

Pteroptrichoides Fullaway, 1913: 27. Type species *Pteroptrichoides perkinsi* Fullaway, by original designation. Synonymized by Mercet, 1928b: 507.

Apteroptrix Girault, 1915: 65. Type species *Apteroptrix albifemur* Girault, by original designation. Implied synonym of *Pteroptrix* by Viggiani, in Viggiani & Garonna, 1993: 58.

- Pseudopteroptrix* Fullaway, 1918: 464. Type species *Pseudopteroptrix imitatrix* Fullaway, by monotypy. Synonymized by Mercet, 1928b: 507.
- Oa* Girault, 1929b: [4]. Type species *Archenomus biguttatus* Girault, by original designation. Implied synonym of *Pteroptrix* by Viggiani, in Viggiani & Garonna, 1993: 58.
- Aphelosoma* Nikolskaya, 1963: 186. Type species *Aphelosoma plana* Nikolskaya, by original designation. Synonymized by Viggiani, in Viggiani & Garonna, 1993: 58.
- Archenomiscus* Nikolskaya, in Nikolskaya & Yasnosh, 1966: 249. Type species *Pteroptrix maritimus* Nikolskaya (designated by Hayat, 1983: 77). Implied synonym of *Pteroptrix* by Viggiani, in Viggiani & Garonna, 1993: 58 (Described as a subgenus of *Archenomus*).

Key to the species of *Pteroptrix* (females) recorded from Mexico

1. Antennal funicle 3-segmented. 2
- Antennal funicle 2-segmented. Second segment of funicle as wide as long or slightly wider than long; first segment with linear sensilla. Midlobe of mesoscutum with blackish coloration produced posteriorly in the V-form *P. smithi*
2. Antennal club 9-10 times as long as wide, its first segment 3.2 times as long as wide; fore wing 3.2 times as long as wide, with marginal fringe 0.5 times wing width; ovipositor 1.5 times as long as hind tibia *P. gonzalezi* sp. n.
- Antennal club 5-6 times as long as wide, its first segment 2 times as long as wide; fore wing 2.6 times as long as wide, with marginal fringe 0.3 times of wing width; ovipositor as long as hind tibia *P. mexicana* sp. n.

Pteroptrix smithi (Compere, 1953)

Casca smithi Compere, 1953: 43.

Pteroptrix smithi (Compere, 1953), new combination by Viggiani & Garonna, 1993: 61.

Hosts. Diaspididae: *Chrysomphalus aonidum* (L.), *Ch. ficus* Ashn., *Chrysomphalus* sp., *Unaspis* sp.

Distribution. Egypt, Israel (introduced), China, Philippines, Taiwan, USA (California) (introduced), Mexico – Morelos (introduced).

Mode of life. In Israel *Pteroptrix smithi* attacks the female stages of *Chrysomphalus aonidum* from the second instar stage. At 27°C, parasitoid completes one generation in 21-23 days (Bar & Gerling, 1971).

Comments. In the spring of 1957 a small colony of *Pteroptrix smithi* from Hong Kong was introduced to Mexico and released in the state of Morelos for biological control of Florida red scale *Chrysomphalus aonidum* (L.) (Rosen & De Bach, 1978). Publications of the Mexican authors on *P. smithi* include only information about this introduction (Myartseva & Ruíz-Cancino, 2000).

References. Jiménez-Jiménez & Smith, 1958: 10; Jiménez-Jiménez, 1961: 43; García-Martell, 1973: 18; Rosen & De Bach, 1978: 103-104; De Santis, 1979: 340; Monrreal et al., 1997: 46; Myartseva et al., 2004: 757.

Pteroptrix gonzalezi sp. n. (Figs 1-5)

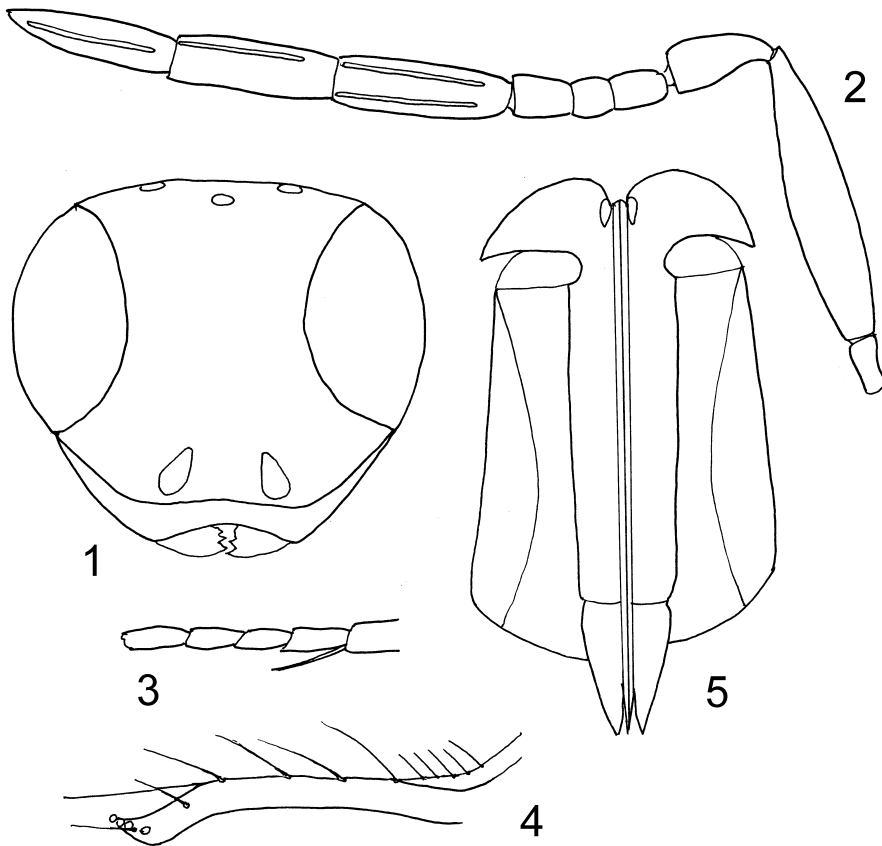
Holotype. Female, **Mexico**, *Chiapas*: Reserva El Triunfo, sendero Palo Gordo 97/049, 20-22 July 1997, T. agua, 6400 m asl, 5°39'22"N, 92°48'31"W; coll. A. González Hdz., J.B. Woolley, L. Montoya (CIB B 97-057).

Holotype is preserved in Entomological Museum of the California University in Riverside, State of California, U.S.A.

Description. Female. Length of body: 0.7 mm.

Coloration. Head brown, frontovertex and upper part of face dark-yellow. Antennae yellow, radicle, scape, and base of pedicel infuscate. Mesosoma brown, side lobes of mesoscutum, metanotum and propodeum except sides yellow, midlobe of mesoscutum along lateral margins and scutellum yellow, scutellar setae white. Fore wings infuscate under marginal vein, which is also infuscate. Legs brown, fore and hind tibiae and apical part of middle tibia whitish-yellow. Gaster brown, third valvulae pale.

Structure. Head slightly wider than height (Fig. 1); frontovertex striate and about 0.6 times of head width. Transverse sulcus on occiput placed well above the lower margin of eyes and not continuous with



Figs 1-5. *Pteroptrix gonzalezi* sp. n., female: 1, head, front view; 2, antenna; 3, marginal and stigmal veins; 4, middle tarsus and midtibial spur; 5, ovipositor.

the sulcus on the front of the head. Upper part of face in middle striate. Eyes setose, about 1.5 times as long as cheeks. Distance between hind ocelli 2 times as long as distance from hind ocellus to eye. Cheeks with strong malar sulcus. Antennae inserted immediately under the level of lower margin of eyes (Fig. 1); distance between toruli 0.7 times as long as distance from torulus to eye and 1.5 times as long as to mouth margin. Antennae (Fig. 2) with radicle about 2.3 times as long as wide. Scape about 5 times as long as wide. Pedicel about 2.2 times as long as wide. Funicle 3-segmented. First funicle segment about 1.5 times as long as wide; second segment distinctly shorter and slightly longer than wide (9:8); third segment about as long as first segment and about 1.4 times

as long as wide. First segment of club very slightly wider than funicle, about 3.2 times as long as wide and about as long as funicle; second segment about 3.3 times as long as wide and slightly shorter than first segment; third segment as long as second segment and about 4.3 times as long as wide. Segments of funicle without sensilla, segments of club with 2, 1 and 1 longitudinal sensilla, respectively. Midlobe of mesoscutum with 4 pairs of setae, situated symmetrically. Axillae with one seta; lateral lobes with one seta each. Scutellum about 2.0 times as wide as long and with 2 pairs of setae widely separated. Fore wing 3.2 times as long as wide, uniformly setose, but with small asetose area in front of stigma vein; its marginal fringe 0.5 times as long as maximum wing

width. Submarginal vein with one long seta. Marginal vein (Fig. 3) with 4 long setae along anterior margin and about 0.7 times as long as submarginal vein. Costal cell with 5 short setae towards to marginal vein. Stigmal vein not sessile, with one long seta apically. Hind wing 7 times as long as wide, its marginal fringe 1.5 times maximum width of wing. Tarsal formula 4-4-4.

Midtibial spur slightly longer than basitarsus (Fig. 4). Gastral tergites from second to seventh with 2, 2, 2, 4, 2 and 4 setae, respectively. Ovipositor (Fig. 5) slightly exerted, 1.2 times as long as middle tibia and about 1.5 times as long as hind tibia; third valvulae about 0.3 times as long as second valvifer.

Male. Unknown.

Comments. *Pteroptrix gonzalezi* sp. n. is close to European species *P. maritima* Nikolskaya.

Female of new species was compared with descriptions and figures of *P. maritima* (Nikolskaya, 1952; Nikolskaya & Yasnosh, 1966; Viggiani & Garonna, 1993).

In *P. maritima* sensu Nikolskaya, 1952 and Nikolskaya & Yasnosh, 1966: first and second funicle segments subequal in length and slightly longer than wide; funicle distinctly setose; club about 7 times as long as wide; midlobe of mesoscutum with 3-4 pairs of setae. In *P. gonzalezi*: second funicle segment distinctly shorter than first segment (9:12) and about subquadrate; funicle without distinct setae; club about 9-10 times as long as wide; midlobe of mesoscutum with 4 pairs of setae.

In *P. maritima* sensu Viggiani & Garonna, 1993: antennal scape about 4 times as long as wide; pedicel 1.5 times as long as first funicle segment; funicle segments longer than wide. In *P. gonzalezi*: antennal scape about 5 times as long as wide; pedicel 1.7 times as long as first funicle segment; second funicle segment subquadrate.

Etymology. New species is named in honour of Dr. Alejandro González-Hernández (Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, Monter-

rey, México), who studies Hymenoptera of Mexico during many years and has collected this species.

***Pteroptrix mexicana* sp. n.**

(Figs 6-9)

Holotype. Female, **Mexico**, *Baja California Sur*. Las Barracas, pan trap, 5 May 1985; coll. P. De Bach (UCR ENT 54251).

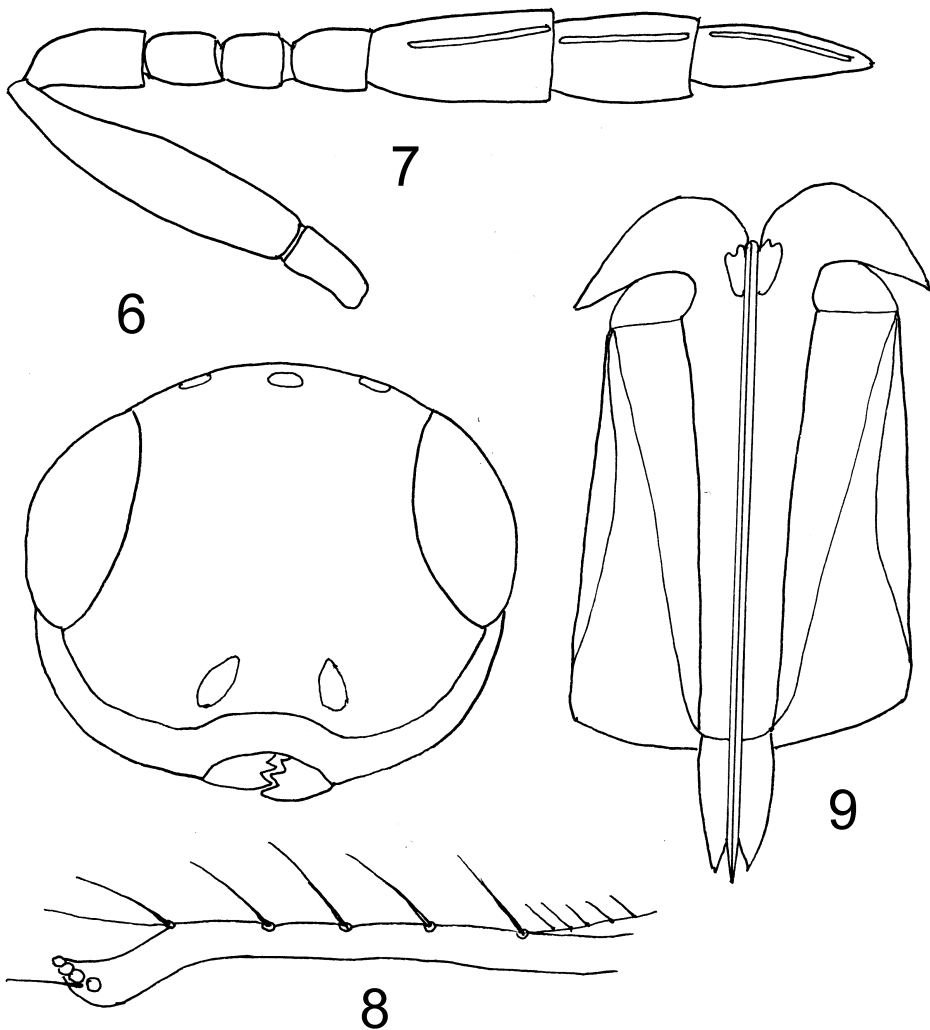
Paratypes. **Mexico**, *Baja California Sur*. Las Barracas, pan trap, 1 female, 8 Apr. 1985; coll. P. De Bach (UCR ENT 54247); *Michoacan*: 3 km Capirio, 1 female, 12 July 1981; coll. La Salle, (UCR ENT 54255).

Holotype and one paratype are preserved in Entomological Museum of the California University in Riverside, State of California, U.S.A., one paratype – in Entomological Museum of University of Tamaulipas, Mexico.

Description. Female. Length of body: 0.75 mm.

Coloration. Head brownish, frontover-
tex except middle part dark yellow. Antennae whitish yellow, radicle, scape and base of pedicel along upper margin infuscate. Mesosoma brown, side lobes of mesoscutum and midlobe along lateral margins yellow, scutellum whitish yellow. Fore wings with disc infuscated under marginal vein, which is also infuscate. Legs brown, apical half of all tibiae whitish. Gaster dark brown, third valvulae brownish.

Structure. Head 1.2 times as wide as high (Fig. 6); frontoververtex striate and about 0.6 times head width. Transverse sulcus extends across the entire occiput. Upper part of face in the middle striate. Eyes setose, slightly longer than cheeks. Distance between hind ocelli about 1.8 times as long as distance from hind ocellus to eye. Cheeks with malar sulcus. Antennae inserted slightly below the level of lower margin of eyes (Fig. 6); distance between toruli distinctly shorter than distance from torulus to eye (24:30). Antennae (Fig. 7) with radicle about 2.0 times as long as wide. Scape about 4.7 times as long as wide. Pedicel 2 times as long as wide. Funicle 3-segmented. First funicle segment



Figs 6-9. *Pteroptrix mexicana* sp. n., female: **6**, head, front view; **7**, antenna; **8**, marginal and stigmal veins; **9**, ovipositor.

about 1.4 times as long as wide; second segment subquadrate; third segment as long as first segment and about 1.2 times as long as wide. First segment of club about 2 times as long as wide, about 1.5 times wider than funicle and slightly longer than two preceding funicle segments; second segment about 1.7 times as long as wide; third segment about 3 times as long as wide. Each club segment with one longitudinal sensilla. Midlobe of mesoscutum with 9-11 setae. Axillae with one seta; side lobes with one seta each.

Scutellum about 2.0 times as wide as long. Fore wing 2.6 times as long as wide, uniformly setose, but with small asetose area in front of stigma vein; its marginal fringe about 0.3 times as long as maximum wing width. Submarginal vein with one long seta. Marginal vein (Fig. 8) with 5 long setae along anterior margin and about 0.6 times as long as submarginal vein. Costal cell with 5 short setae towards to marginal vein. Stigmal vein not sessile, with one long seta apically. Hind wing about 6.5 times as long

as wide, its marginal fringe slightly shorter than maximum width of wing. Tarsal formula 4-4-4. Midtibial spur slightly longer than basitarsus. Gastral tergites from second to seventh with 2, 2, 2, 4, 2 and 4 setae, respectively. Ovipositor (Fig. 9) slightly exerted, about as long as hind tibia; third valvulae about 0.25 times as long as second valvifer.

Male. Unknown.

Comments. *Pteroptrix mexicana* sp. n. was compared with descriptions and figures of *P. bicolor* (Howard), *P. opaca* Erdős in Viggiani and Garonna, 1991, and *P. albifemur* (Girault) in Hayat, 1998 and Polaszek & Prinsloo, 2000, which are more closed in different keys with new species.

From *P. bicolor*, widely distributed in the world, including Nearctic and Neotropical Regions, the new species differs in pedicel slightly shorter than two first funicle segments combined; second funicle segment quadrate; club 1.8 times as long as funicle; midlobe of mesoscutum with 9-11 setae; stigma vein not sessile, 0.3 times as long as marginal vein; ovipositor as long as hind tibia.

From European species *P. opaca* it differs in radicle about 2 times as long as wide; pedicel 1.6 times as long as first funicle segment; first funicle segment about 1.4 times as long as wide; club 1.8 times as long as funicle; ovipositor as long as hind tibia.

From Australasian species *P. albifemur*, distributed also in Neotropis (Polaszek & Prinsloo, 2000) it differs in whitish-yellow flagellum; legs predominantly brown; second funicle segment subquadrate; midlobe of mesoscutum with 9-11 setae; funicle about 0.6 times as long as club; fore wing with small asetose area in front of stigma vein; marginal fringe of hind wing slightly shorter than maximum wing width; lateral lobes of mesoscutum yellow; fore wings distinctly infusate under marginal vein.

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