



<http://dx.doi.org/10.11646/zootaxa.3619.2.7>

<http://zoobank.org/urn:lsid:zoobank.org:pub:5CF3C08B-F190-4B4F-B38C-3360353BA936>

A new species of *Megarhyssa* Ashmead (Hymenoptera: Ichneumonidae: Rhyssinae) from tropical Mexico with a key to Mexican species

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Abstract

A new species of ichneumon wasp, *Megarhyssa gratiosa* **sp. nov.**, is described from Chiapas province in the tropical part of Mexico. This is a southern most record of the genus in the New World. The new species is one of the largest and most spectacular ichneumonid species in the Mexican fauna. *Megarhyssa gratiosa* **sp. nov.** differs from its North American congeners primarily by the conspicuous colour pattern of the metasoma which is yellow with broad dorsal black stripe extending along its entire length, and the longer ovipositor. A key to three Mexican species of *Megarhyssa* is also provided.

Key words: Chiapas, Neotropical region, taxonomy

Resumen

Se describe una nueva especie de ichneumónido, *Megarhyssa gratiosa* **sp. nov.**, del Estado de Chiapas, el cual está situado en la porción tropical de México. Este es el registro más meridional del género en el Nuevo Mundo. La nueva especie es una de las especies de ichneumónidos de mayor tamaño en la fauna mexicana. *Megarhyssa gratiosa* **sp. nov.** difiere de sus congéneres de Norteamérica principalmente en el patrón de color del metasoma, el cual es amarillo con una línea dorsal negra que se extiende en toda su longitud, y en su ovipositor, el cual es más largo. Se presenta una clave para las tres especies de *Megarhyssa* presentes en México.

Palabras clave: Chiapas, región Neotropical, taxonomía

Introduction

Rhyssinae is a worldwide subfamily comprising eight genera with about 240 species (Yu *et al.* 2012). Previously the subfamily was considered as a tribe within the Pimplinae (Townes & Townes 1960; Townes 1969), but later it was treated as a separate subfamily (Gauld 1991; Wahl & Gauld 1998). Some members of the subfamily, especially species of *Megarhyssa*, are the largest and most spectacular among the Ichneumonidae, with body with variable amount of yellow, red and black, and body length (including ovipositor) up to 150 mm.

The genus *Megarhyssa* Ashmead comprises 36 species occurring predominantly in the Holarctic and Oriental regions (Yu *et al.* 2012), and is most species rich in East and South Asia (Kasparyan 2002). Four species of *Megarhyssa* occur in the U.S.A. and Canada, and only one of them, *M. macrura* (L.), has been recorded from northern Mexico (Chihuahua province) (Townes & Townes 1960). Another species, *M. verae* Kasparyan, has been described from a single female from the State of Mexico in Central Mexico (Kasparyan 2002). In Mexico this genus is very rarely collected, but in the U.S.A. and Canada it seems to be more abundant in forests.

Megarhyssa are known as idiobiont ectoparasitoids of the concealed larvae of Siricidae (Hymenoptera) and occasionally beetles (Coleoptera) on deciduous and sometimes on coniferous trees (Townes 1969; Kasparyan 2002).

The aim of this work is to describe a new species of *Megarhyssa* from tropical Mexico and provide a key for identification of three species known to occur in Mexico.

Material and methods

Among a large number of ichneumonids examined in many Mexican (Universidad Autónoma de Tamaulipas, Cd. Victoria; Instituto de Biología, Universidad Nacional Autónoma de México, D.F.; Universidad Autónoma de Nuevo León, Monterrey; Universidad Autónoma de Estado Morelos, Cuernavaca; Instituto Politécnico Nacional, Oaxaca) and some United States collections (Texas A&M University; Essig Museum of Entomology, University of California, Berkeley), only one specimen of *Megarhyssa*, belonging to a new species, was found. The holotype of the new species is deposited in the Essig Museum of Entomology, University of California, Berkeley, California, U.S.A. (EMEC). It was collected north of Ocozocoautla de Espinosa, in a low mountainous area with altitudes varied from 300 to 800 m.

Morphological terminology follows Gauld (1991). Photographs (except Fig. 1) were taken at Instituto de Biología, Universidad Nacional Autónoma de México with a Leica DFC295/DFC290 HD digital camera attached to a Leica Z16 APO-A stereoscopic microscope, and partly focused images were combined using Leica Application Suite program.

Taxonomy

Megarhyssa Ashmead, 1900

Thalessa Holmgren, 1859: 122. Preoccupied by *Thalessa* Adams, 1853 (Mollusca). Type species: *Ichneumon clauatus* Fabricius, 1798 (= *perlatus* Christ, 1791), by subsequent designation (Ashmead 1900).

Megarhyssa Ashmead, 1900: 368. Replacement name for *Thalessa* Holmgren.

Megalorhyssa Schulz, 1906: 115. Unjustified emendation for *Megarhyssa*.

Eurhyssa Derksen, 1941: 721. Type species: *Ichneumon superbus* Schrank, 1781, by subsequent designation (Townes & Townes 1951).

Key to species of *Megarhyssa* occurring in Mexico

1. Metasoma laterally yellow, with broad dorsal longitudinal black stripe extending entire length of metasoma (Fig. 7). Fore wing hyaline with conspicuous subapical dark mark at apex of the radial cell (Fig. 8). Flagellum of antenna blackish with broad sub-apical pale band (Fig. 2). Ovipositor sheath 3.4× as long as fore wing (Fig. 1). *M. gratiosa* sp. nov.
- Metasoma with variable amount of yellow, reddish orange and black; tergites often transversely banded or with dorsal and/or lateral marks, but never with continuous median black stripe extending along entire length of metasoma. Fore wing without apical dark mark, or with radial cell darkened only at base (Townes & Townes 1960: Fig. 319, *d-g*). Flagellum of antenna more or less entirely black, sometimes somewhat lighter in the apical half, never with contrasting pale band. Ovipositor sheath about 1.9–3.0× as long as fore wing 2
2. Hind leg with coxa and tarsus entirely black, femur and tibia black in basal 0.8 and yellow in apical 0.2. Head and mesosoma black with yellow markings (Kasparyan 2002: Figs 1, 2). Metasoma extensively black, tergites 1 and 2 with pre-apical dorso-medial yellow marks, tergites 3+ with lateral yellow markings (Kasparyan 2002: Figs 1, 3). Malar space 1.4× as long as apical width of mandible. Ovipositor sheath 1.9× as long as fore wing. [Distribution: Central Mexico (State of Mexico)] *M. verae* Kasparyan, 2002
- Hind leg predominantly brownish orange with yellow marks. Head and mesosoma predominantly yellow and brown. Metasoma yellow to reddish brown, with more or less distinct transverse pre-apical yellow bands on tergites. Malar space about 0.7× as long as apical width of mandible. Ovipositor sheath about 3.0× as long as fore wing. [Distribution: southern U.S.A. from Texas to Georgia and Florida, northern Mexico (Chihuahua).] *M. macrura macrura* (Linnaeus, 1771)

***Megarhyssa gratiosa* Khalaim & Ruíz-Cancino, sp. nov.**

Figs 1–8.

Material examined. **Holotype** female (EMEC) “Mexico, Chiapas, 27 mi. [= 43.5 km] N. Ocozocoautla [de Espinosa], 21 July, 1965”, “D.R. Pauson collr.”, “California State Univ., Long Beach 1996 Donation Calif. Acad. Sci.”

Description. *Female.* Body length including ovipositor about 105 mm, without ovipositor 28 mm. Fore wing length 23 mm.

Head, in dorsal view, slightly prominent just behind eyes and then roundly narrowed (Fig. 5). Antenna with 55–56 flagellomeres; flagellum almost 1.1× as long as fore wing; flagellomeres 1–5 combined 1.4× as long as hind basitarsus. Malar space 0.57× as long as basal width of mandible (Fig. 4). Mandible robust, longitudinally striate in basal half; upper tooth roundly pointed, longer than lower tooth; lower tooth obtuse, much broader than upper tooth, uniformly rounded ventrally. Clypeus with strong transverse carinae. Labrum greatly exposed, widely rounded ventrally. Face with large and very dense (sometimes almost touching) punctures. Frons with high longitudinal crest between antennal sockets. Vertex and gena smooth and shining, with fine and sparse punctures; lower part of gena with distinct punctures and shallow longitudinal striae. Occipital carina developed only ventrally, completely absent dorsally and dorsolaterally.

Mesosoma predominantly smooth, partly finely punctate. Mesopleuron centrally with fine and dense setiferous punctures, ventrolaterally impunctate. Scutellum with two arcuate transverse wrinkles in its posterior half. Postscutellum with one arcuate transverse wrinkle. Metapleuron anteriorly sparsely punctate. Pleural carina well developed. Propodeum smooth, virtually impunctate, with one complete transverse carina, complete lateral longitudinal carina and lateromedian longitudinal carina present as vestige only anteriorly in front of transverse carina; area basalis slightly transverse, distinctly impressed. Fore wing with large areolet with moderately short stalk anteriorly (anterior corner of areolet not touching *R*; Fig. 8). Vein *2m-cu* slightly arcuate toward base of the wing. Hind wing with distal abscissa of *Cu1* meeting *cu-a* very close to *M*, almost touching this vein (Fig. 8). Hind coxa at base ventrally with conspicuous crest. First tergite 2.2× as long as posteriorly broad. Apical edge of first sternite slightly in front of spiracle of first tergite. Laterotergites 1–5 large. First and second tergites smooth, weakly polished, impunctate, mostly glabrous. Tergites 3+ more or less smooth, impunctate, with short pubescence. Ovipositor sheath almost 3.4× as long as fore wing and 2.8× as long as body (Fig. 1).

Colour pattern. Head yellow, with a pair of black lateral marks on frons, black interocellar area and with a blackish mark extending from lateral ocellus to margin of eye. Antenna black, scape and pedicel yellowish beneath, flagellum basally brownish, with a contrast subapical yellow-orange band that covers flagellomeres about 33 to 49. Mandible yellow in basal half and black in apical half. Vertex posteromedially and upper part of occiput black.

Mesosoma yellow with black markings (Figs 4, 5). Anteromedian part and narrowly hind margin of pronotum, large O-shaped mark on mesoscutum, scuto-scutellar groove, about 70% of prepectus, dorsoposterior mark on mesopleuron, anterior margin of metapleuron and its lower part in anterior 0.6, area around the propodeal spiracle, dorsobasal part and median longitudinal stripe on propodeum black.

Wings hyaline, fore wing with conspicuous dark spot at apex of radial cell (Fig. 8). Fore and mid legs predominantly yellow. Mid leg with femur and basitarsus slightly reddish, tarsomeres 2–4 fuscous and the apical tarsomere black (Fig. 3). Hind leg with coxa yellow basally to reddish brown apically, first trochanter reddish brown, second trochanter and femur red-brown, tibia and tarsomeres 1–4 reddish brown, and apical tarsomere black (Fig. 3).

Metasoma yellow with broad longitudinal dorsal black mark extending from its base to apex (Figs 6, 7); tergites 1–6 laterally narrowly black on crease separating laterotergites, and tergite 7 with oblique blackish mark from its base to spiracle (Fig. 6). Ovipositor black with reddish tinge; sheath black with extreme apex (less than 0.02 of entire sheath length) yellow.

Male. Unknown.

Etymology. From the Latin *gratiosa* (agreeable, enjoying favor).

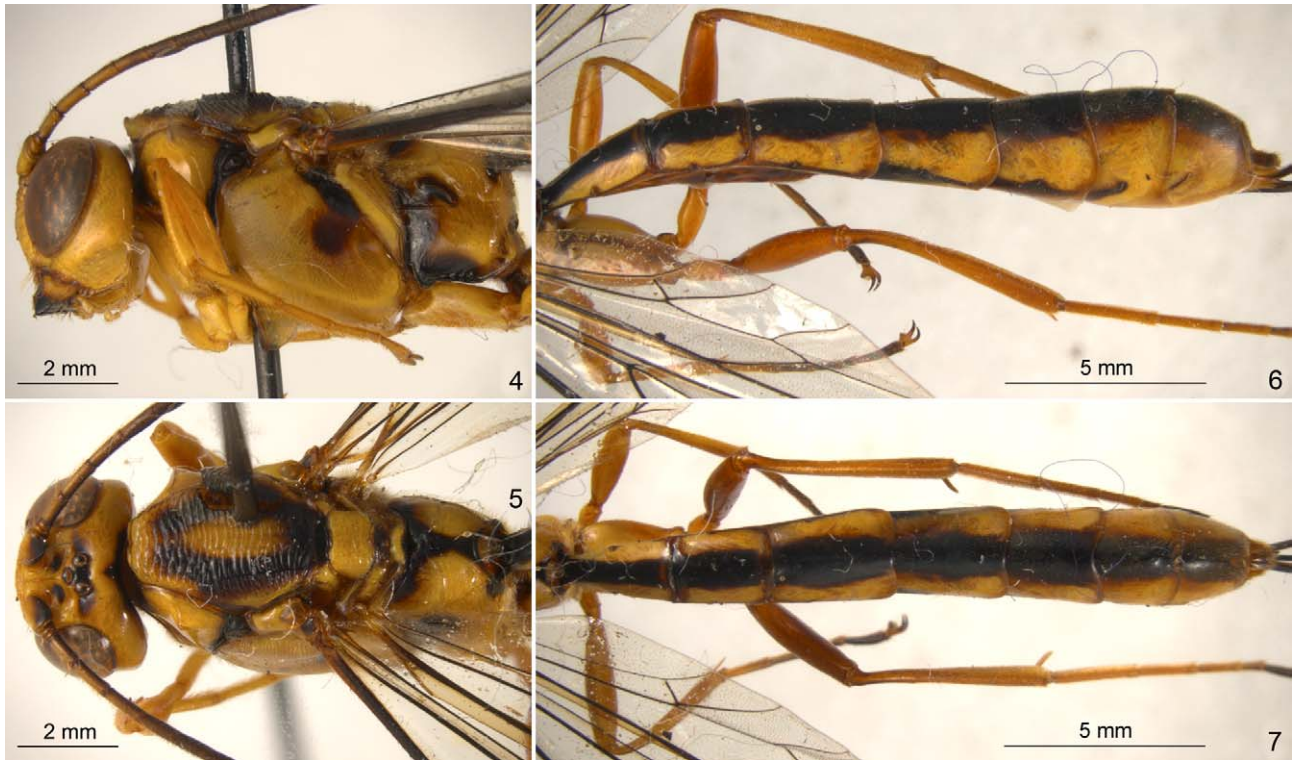
Distribution. Southern Mexico (Chiapas). Southernmost record of the genus in the New World.

Comments. The new species may easily be recognized by the characteristic colour pattern of the metasoma which is yellow with broad dorsal black stripe extending along its entire length (Fig. 7), and the ovipositor which is longer than in the other two Mexican species (Fig. 1). It also differs from *M. verae* and *M. macrura* by having a

hyaline fore wing with a conspicuous dark spot at apex of the radial cell (Fig. 8), and from *M. verae*, also in having 56 flagellomeres (only 36 flagellomeres in *M. verae*) and a shorter malar space.



FIGURES 1–3. *Megarhyssa gratiosa* sp. nov., holotype, ♀: 1—habitus, dorsal; 2—antenna, dorso-lateral; 3—mid and hind legs, ventro-lateral.



FIGURES 4–7. *Megarhyssa gratiosa* sp. nov., holotype, ♀: 4—head and mesosoma, left; 5—head and mesosoma, dorsal; 6—metasoma, left; 7—metasoma, dorsal.



FIGURE 8. *Megarhyssa gratiosa* sp. nov., holotype, ♀: wings, dorsal.

Acknowledgements

We are thankful to Dr Peter T. Oboyski (EMEC) for loan of valuable material, Dr A. Zaldívar-Riverón and Susana Guzmán (Instituto de Biología, Universidad Nacional Autónoma de México, Mexico) for their help with taking high quality photographs, and Dr D.R. Kasparyan (Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia) and Dr John T. Jennings (The University of Adelaide, Australia) for their important comments, suggestions and language corrections. This work was supported by the the PROMEP Project “Taxonomía y ecología de fauna y micobiota en comunidades forestales y cultivos” and the grant no. 10-04-00265 of the Russian Foundation for Basic Research.

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