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A checklist of ants (Hymenoptera: Formicidae) of the state of Tlaxcala, Mexico

Список муравьев (Hymenoptera: Formicidae) штата Тлакскала, Мексика

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Key words: Hymenoptera, Formicidae, ants, new records, altitudinal distribution, Tlaxcala, Mexico.

Ключевые слова: Hymenoptera, Formicidae, муравьи, новые находки, высотное распределение, Тлакскала, Мексика.

Abstract. The first checklist of ants of the Mexican state of Tlaxcala, which includes information about 25 species of ants, is given. Twenty two ants species are recorded for the first time for the state of Tlaxcala. *Lasius latipes* (Walsh, 1863) at the first is reliably indicated for the fauna of Mexico.

Резюме. Составлен список видов муравьев мексиканского штата Тлакскала, включающий 25 видов, 22 из которых приведены для штата впервые. *Lasius latipes* (Walsh, 1863) впервые достоверно указан для фауны Мексики.

The state of Tlaxcala is one of the smallest of 32 federative entities of Mexico (about 4,061 km²) and is bordered by the states of Hidalgo, Puebla and Estado de México (Fig. 1). It is located in eastern part of Trans-Mexican Volcanic Belt including the northwestern slope of La Malinche volcano (the fifth-highest peak in Mexico, 4461 m a.s.l.).

At the same time, it is one of the most poorly studied states of Mexico myrmecologically. Before our work, only three species of ants from Tlaxcala were known (*Liometopum apiculatum* Mayr, 1870, *Formica resecta* Francoeur, 1973 and *Pogonomyrmex barbatus* (Smith, 1858)) [Vásquez-Bolaños, 2011].

One of purpose of this study was to learn more about altitudinal distribution of ants in Mexico. To study the taxonomic diversity of ants at altitudes above 2600 meters and determine the altitudinal limit of ant distribution, the first author made special investigations in the states of Tlaxcala (La Malinche volcano, in the range of altitudes 2600–3900 m), Estado de México (Nevado de Toluca volcano, 3000–4350 m) and Tamaulipas (mountains of the Sierra Madre Oriental, municipality of Miquihuana, 2600–3070 m).

We present below the first checklist of ants of the state of Tlaxcala, included 25 species of ants, 22 of them are recorded for the first time for the state. Mention of *Lasius latipes* (Walsh, 1863) from the state of Tlaxcala is the first record of this species for Mexico based on the specimens.

Material and methods

The material was collected during two short field trips in Tlaxcala in September 2014 and September 2016. Most of the collection was made on the northern slope of the La Malinche volcano (Parque Nacional La Malinche) (Fig. 2b). In 2014, the collections took place in the altitude range from 3000 m a.s.l. to 3800 m a.s.l. along the vertical transect (Fig. 2, localities 6–12) for the purpose to determining the altitudinal limit of the distribution of ants (for more details, see the discussion). In 2016, the collections of ants were taken along a horizontal transect on the same slope of the volcano at altitudes of about 3000 m a.s.l. (Fig. 2, localities 4, 5, 7) and at altitudes of about 2600 m a.s.l. (Fig. 2, localities 2, 3). Also, we studied material from the state of Tlaxcala stored in the National Collection of Insects of the Institute of Biology of National Autonomous University of Mexico (CNIN), which was collected in the western municipality of Nanacamilpa at altitude of 2884 m a.s.l. (Fig. 2a).

Studied specimens of ants are stored in the following museums:

CNIN – Colección Nacional de Insectos, Universidad Nacional Autónoma de México (Mexico City, Federal District, Mexico);

MIFA – Museo de Insectos, Facultad de Agronomía, Universidad Autónoma de Tamaulipas (Ciudad Victoria, Tamaulipas, Mexico);



Fig. 1. Geographical location of the state of Tlaxcala, Mexico.
Рис. 1. Географическое положение штата Тлакскала, Мексика.

ZISP – Zoological Institute of the Russian Academy of Science (St. Petersburg, Russia).

To denote various castes of ants, we use the following abbreviations here: w – worker/s, s – soldier/s, q – queen/s, m – male/s.

When quoting labels, the following abbreviations are accepted:

Mpio. – municipality;

PN – National park.

Genera and species marked an asterisk * in the list below, are recorded for the first time for Tlaxcala. Specific distribution in Mexico is given as in the list of Mexican ant species by Vásquez-Bolaños [2011], new records for other Mexican states, based on our data, are also marked by asterisk *.

Synonymic and nomenclature data are given according to “An online catalog of the ants of the world” [Bolton, 2016].

Subfamily Dolichoderinae Forel, 1878

Genus *Dorymyrmex* Mayr, 1866*

Dorymyrmex bicolor Wheeler, 1906*

(Fig. 2, locality 2)

Dorymyrmex pyramicus var. *bicolor* Wheeler, 1906: 342 (w, q), USA.

Material. More than 50 w from different nests (MIFA, ZISP), “México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1”.

Distribution in Mexico. States of Baja California, Baja California Sur, Chihuahua, Hidalgo, Jalisco, Puebla, Sonora, Tamaulipas [Vásquez-Bolaños, 2011] and Chiapas*, Colima*, Coahuila*, Michoacán*, Nuevo León*, Oaxaca*, San Luis Potosí*, Veracruz*.

Note. This species is common in open dry areas or along roads in Mexico.

Dorymyrmex smithi Cole, 1936*

(Fig. 2, locality 2)

Dorymyrmex pyramicus var. *smithi* Cole, 1936: 120 (w), USA.

Material. More than 100 w from different nests (MIFA, ZISP), “México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg., Tla16-1”.

Distribution in Mexico. Before present study this species was known in Mexico only from Veracruz [Vásquez-Bolaños, 2011]. We also recorded this species from Chiapas*, Oaxaca*, Tamaulipas* and San Luis Potosí*.

Genus *Liometopum* Mayr, 1861

Liometopum apiculatum Mayr, 1870

Liometopum apiculatum Mayr, 1870: 961 (w), Mexico.

Note. This species is one of the three species, which were recorded for Tlaxcala before our study. This species was observed with hemipterans in northern municipality Tlaxco [Velasco-Corona et al., 2007].

Genus *Tapinoma* Foerster, 1850**Tapinoma* cf. *litorale* Wheeler, 1905*

(Fig. 2, locality 1)

Tapinoma litorale Wheeler, 1905: 109 (w, q, m), Bahamas.**Material.** 2 w (CNIN), "México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19°28'19.24"N 98°35'22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras, TlaUNAM1".**Note.** The studied specimens undoubtedly belong to the group *litorale* of the genus *Tapinoma*, but Mexican species (and not only Mexican!) of this group needs a modern revision. Based on original description, comparative materials collected in Mexico by the first author and data from AntWeb [http://www.antweb.org], in present level of knowledge we identified those specimens as *T. litorale*. "Typical" *T. litorale* was known in Mexico from Tabasco [Del Toro et al., 2009], we also observed nests material of this species from Colima* and Tamaulipas*.**Subfamily Formicinae Latreille, 1809****Genus *Camponotus* Mayr, 1861****Camponotus pudorosus* Emery, 1925*

(Fig. 2, localities 2, 3)

Camponotus picipes var. *pudorosus* Emery, 1925: 81 (s, w, q, m), Mexico.**Material.** 20 w (MIFA, ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg., Tla16-1"; 1 q, 2 w (ZISP), "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4".**Distribution in Mexico.** Before present study this species was known in Mexico from states of Hidalgo, Jalisco and Michoacán [Vásquez-Bolaños, 2011]. We also recorded this species from Tamaulipas*, where it's common at the same altitude.**Note.** We found two nests of this species under stones in pine forests at the same altitude (~2600 m a.s.l.). One of them was one young queen with two workers.**Genus *Formica* Linnaeus, 1758***Formica browni* Francoeur, 1973*

(Fig. 2, localities 1, 5–8)

Formica browni Francoeur, 1973: 229, figs 398–404 (w, q), Mexico.**Material.** More than 50 w (MIFA, ZISP), "México, Tlaxcala, volcano La Malinche, N19 17 17.9 W98 02 31.0, 3023m, 05.09.2014, Dubovikoff leg. Tla1"; "México, Tlaxcala, volcano La Malinche, N19 16 10.3 W98 02 24.7, 3255m, 05.09.2014, Dubovikoff leg. Tla2"; "Mexico, Tlaxcala, 15 km SSE Apizaco, north slope of La Malinche volcano, 2550–3000m, 1–2.X.2016, A. Khalaim"; "México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2"; "México, Tlaxcala, Mpio. Huamantla, PN La Malinche, 19.28855N 98.03154W, 3022m, 02.10.2016, Dubovikoff leg., Tla16-5". 4 w (CNIN), "México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19° 28' 19.24"N 98° 35' 22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras TlaUNAM1".**Distribution in Mexico.** In Mexico this species was known from Federal District and the states of México, Puebla and Veracruz, where specimens were collected at the altitudes 2758 and 3060 m a.s.l. in the state of México, and 3333 m a.s.l. in Veracruz (Pico Orizaba) [Francoeur, 1973]. This species was found at 2800–3255 m a.s.l. in Tlaxcala (see also discussion below).***Formica densiventris* Viereck, 1903***

(Fig. 2, localities 5–8)

Formica fusca var. *densiventris* Viereck, 1903: 74 (w), USA.**Material.** More than 50 w (MIFA, ZISP), "México, Tlaxcala, La Malinche volcano, N19 17 17.9 W98 02 31.0, 3023m, 05.09.2014, Dubovikoff leg. Tla1"; "México, Tlaxcala, La Malinche volcano, N19 16 10.3 W98 02 24.7, 3255m, 05.09.2014, Dubovikoff leg. Tla2"; "México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2"; "México, Tlaxcala, Mpio. Huamantla, PN La Malinche, 19.28855N 98.03154W, 3022m, 02.10.2016, Dubovikoff leg., Tla16-5".**Distribution in Mexico.** Before present study this species was known in Mexico only from Hidalgo [Quiroz-Robledo, Valenzuela-González, 1993]. We also studied 3 workers of this species from Morelos* (CNIN) which were determined as *F. browni* by W. MacKay. This species, in La Malinche National Park, is common at nearly 3000 m a.s.l.***Formica moki* Wheeler, 1906***

(Fig. 2, localities 1, 3, 5)

Formica moki Wheeler, 1906: 343 (w), USA.**Material.** 20 w (MIFA, ZISP), "México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2"; "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4". 4 w (CNIN), "México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19° 28' 19.24"N 98° 35' 22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras TlaUNAM1".**Distribution in Mexico.** In Mexico, "true" *F. moki* was known only from Baja California [Johnson, Ward, 2002]. We found this species in Tlaxcala at 2600–3055 m a.s.l.***Formica propatula* Francoeur, 1973***

(Fig. 2, locality 2)

Formica propatula Francoeur, 1973: 101, figs 150–165 (w, q, m), Mexico.**Material.** 15 w and 1 q (MIFA, ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1".**Distribution in Mexico.** This species was described from the states of Hidalgo and México [Francoeur, 1973]. We found only one young nest of *F. propatula* with one queen and few workers. As additional material we studied 3 workers of *F. propatula* from Federal District* (CNIN).***Formica pulla* Francoeur, 1973***

(Fig. 2, locality 2)

Formica pulla Francoeur, 1973: 80, figs 107–113 (w, q), Mexico.**Material.** 1 q (ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1".**Distribution in Mexico.** This species was described from Mexican states of Guanajuato and Veracruz [Francoeur, 1973]. We found only one queen under stone.***Formica resecta* Francoeur, 1973**

(Fig. 2, localities 5–7)

Formica resecta Francoeur, 1973: 245, figs 405–408 (w, q), Mexico.**Material.** 20 w (MIFA, ZISP), "México, Tlaxcala, volcano La Malinche, N19 17 17.9 W98 02 31.0, 3023m, 05.09.2014, Dubovikoff

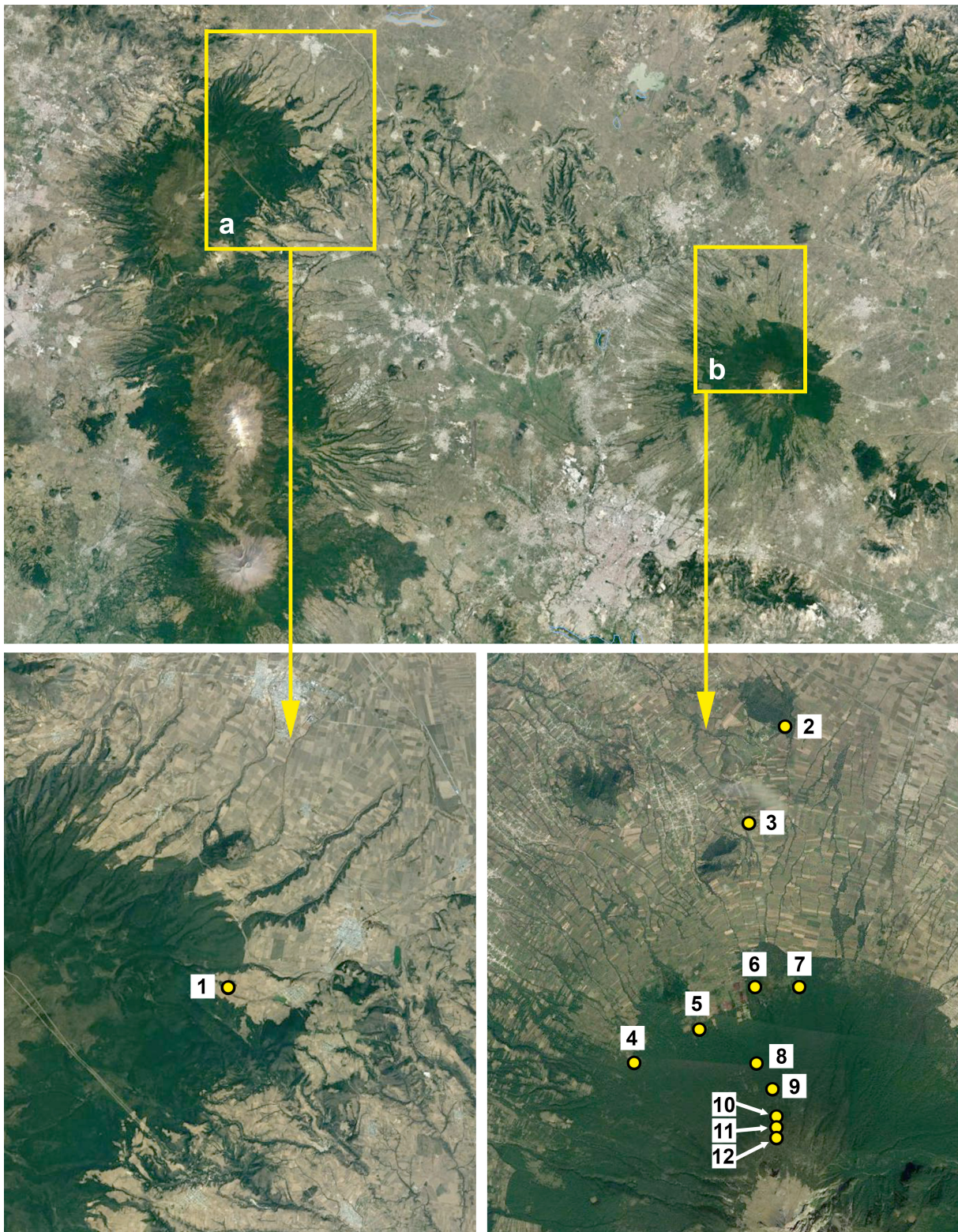


Fig. 2. Places of collecting material in the state of Tlaxcala, a – municipality of Nanacamilpa, b – La Malinche volcano.
 Рис. 2. Места сбора материала в штате Тлакскала, а – муниципалитет Нанакамильпа, б – вулкан Ла-Малинче.

leg. Tla1"; "México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2"; "México, Tlaxcala, Mpio. Huamantla, PN La Malinche, 19.28855N 98.03154W, 3022m, 02.10.2016, Dubovikoff leg., Tla16-5".

Distribution in Mexico. This species was described from Mexican states of Guerrero, Jalisco and Tlaxcala [Francoeur, 1973], where specimens were found in oak and

pine forests at the altitudes 2150–2500 m a.s.l. In Tlaxcala, we found three nests of *F. retecta* on altitudes nearly 3000 m a.s.l.

Formica xerophila Smith, 1939*
(Fig. 2, locality 2)

Formica moki xerophila Smith, 1939: 583 (w), USA.

Material. 5 w (MIFA, ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1".

Distribution in Mexico. *Formica xerophila* was known only from the state of Baja California [Johnson, Ward, 2002]. We collected only five workers of this species on the road in pine forest.

Genus *Lasius* Fabricius, 1804*

Lasius latipes (Walsh, 1863)*
(Fig. 2, localities 2, 3)

Formica latipes Walsh, 1863: 311 (w, q, m), USA.

Material. More than 100 w from different nests (MIFA, ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1"; "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4".

Distribution in Mexico. This species had not been recorded for Mexico before. *Lasius laticeps* is present in the list of Mexican ant species on AntWeb [www.antweb.org], but this record is not based on specimens from Mexico. We record this species for the first time for Mexico, based on materials collected by the first author in the states of Tamaulipas* and Tlaxcala*. *Lasius laticeps* in Mexico has the same biology which was observed for this species in USA [Wing, 1968]. Nests are located under stones in pine or pine-oak forests into range of altitudes 2600–2800 m a.s.l.

Lasius sitiens Wilson, 1955*
(Fig. 2, locality 3)

Lasius (Lasius) sitiens Wilson, 1955: 108 (w, q, m.), USA.

Material. 50 w from two nests (MIFA, ZISP), "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4".

Distribution in Mexico. The species was known from states of Chihuahua, Hidalgo and Nuevo León [Vásquez-Bolaños, 2011]. *Lasius sitiens* was also found by us in the state of Tamaulipas* into range of altitudes 2700–2900 m a.s.l.

**Subfamily Myrmicinae Lepeletier de Saint-Fargeau,
1835**

Genus *Crematogaster* Lund, 1831*

Crematogaster opaca Mayr, 1870*
(Fig. 2, locality 1)

Crematogaster opaca Mayr, 1870: 992 (w), Mexico.

Material. 2 w (CNIN), "México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19° 28' 19.24"N 98° 35' 22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras, TlaUNAM1".

Distribution in Mexico. This species is distributed in the states of Baja California, Hidalgo, Nayarit, Querétaro [Vásquez-Bolaños, 2011], Tamaulipas* and Tlaxcala*.

Genus *Myrmica* Latreille, 1804*

Myrmica mexicana Wheeler, 1914*
(Fig. 2, locality 3)

Myrmica mexicana Wheeler, 1914: 52 (w, q, m), Mexico.

Material. More than 50 w, 5 q (MIFA, ZISP), "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4".

Distribution in Mexico. This species was known from the states of Hidalgo, Nuevo León and Veracruz [Vásquez-Bolaños, 2011]. We also found *M. mexicana* in the states of Querétaro*, Tamaulipas* and Tlaxcala*, where this species was collected at 2500–3000 m a.s.l.

Myrmica striolagaster Cole, 1953*
(Fig. 2, localities 1, 3)

Myrmica striolagaster Cole, 1953: 34 (w), USA.

Material. 10 w (MIFA, ZISP), "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4". 2 w (CNIN): "México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19° 28' 19.24"N 98° 35' 22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras, TlaUNAM1".

Distribution in Mexico. This species was known only from Chihuahua [Vásquez-Bolaños, 2011].

Genus *Pheidole* Westwood, 1839*

Pheidole calens Forel, 1901*
(Fig. 2, locality 7)

Pheidole carbonaria r. *calens* Forel, 1901: 130 (s, w), Mexico.

Material. 20 w (MIFA, ZISP), "México, Tlaxcala, Mpio. Huamantla, PN La Malinche, 19.28855N 98.03154W, 3022 m, 02.10.2016, Dubovikoff leg., Tla16-5".

Distribution in Mexico. This species was known from Aguascalientes and Hidalgo [Vásquez-Bolaños, 2011]. We collected this species in Estado de México* (Nevado de Toluca) and Tlaxcala* (La Malinche) at the altitudes 3125 and 3022 m a.s.l., respectively.

Pheidole hyatti Emery, 1895*
(Fig. 2, locality 2)

Pheidole hyatti Emery, 1895: 295 (s, w), USA.

Material. 30 w, 10 s (MIFA, ZISP), "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1".

Distribution in Mexico. This species is also known from the states of Baja California, Baja California Sur, Chihuahua, Durango, Hidalgo, Jalisco, Morelos, Nayarit, Nuevo León, Querétaro, Sonora [Vásquez-Bolaños, 2011] and Tamaulipas*.

Pheidole polymorpha Wilson, 2003*
(Fig. 2, localities 2, 3)

Pheidole polymorpha Wilson, 2003: 592 (s, w), Mexico.

Material. More than 50 w, 20 s from two nests (MIFA, ZISP): "México, Tlaxcala, Mpio. Tzompantepec, 19.35692N 98.03568W, 2614m, 01.10.2016, Dubovikoff leg. Tla16-1"; "México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4".

Distribution in Mexico. This species was described from Estado de México and also was known from the state of Sonora [Vásquez-Bolaños, 2011].

Genus *Pogonomyrmex* Mayr, 1868
Pogonomyrmex barbatus (Smith, 1858)

Myrmica barbata Smith, 1858: 130 (q), Mexico.

Distribution in Mexico. This species is one of the most common species in Mexico, it is known from 19 states of Mexico including Tlaxcala [Vásquez-Bolaños, 2011]. We did not find this species during our collections in the range of altitudes from 2600 to 3750 m a.s.l.

Genus *Stenamamma* Westwood, 1839*
Stenamamma ignotum Branstetter, 2013*

(Fig. 2, locality 5)

Stenamamma ignotum Branstetter, 2013: 133, figs 96–99 (w, q, m), Mexico.

Material. 5 w (MIFA, ZISP), “México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2”.

Distribution in Mexico. This species was described from the state of Chiapas, where was found at the altitudes 1520 and 1700 m a.s.l. [Branstetter, 2013]. We found one nest of *S. ignotum* at 3055 m a.s.l.

Genus *Temnothorax* Mayr, 1861*
Temnothorax brevispinosus (Mackay, 2000)*

(Fig. 2, localities 5, 7)

Leptothorax (Myrafant) brevispinosus Mackay, 2000: 323, figs 24, 95 (w, q, m), Mexico.

Material. 10 w, 4 q (MIFA, ZISP), “México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2”; “México, Tlaxcala, Mpio. Huamantla, PN La Malinche, 19.28855N 98.03154W, 3022m, 02.10.2016, Dubovikoff leg., Tla16-5”.

Distribution in Mexico. This species was described from the state of Michoacán [Mackay, 2000], and here we give another record of *T. brevispinosus* from Mexico.

Temnothorax manni (Wheeler, 1914)*

(Fig. 2, locality 3)

Leptothorax manni Wheeler, 1914: 53 (w, q, m.), Mexico.

Material. 10 w, 1 q (MIFA, ZISP), “México, Tlaxcala, Mpio. San Jose Teacalco, 19.33317N 98.07208W, 2675m, 01.10.2016, Dubovikoff leg., Tla16-4”.

Distribution in Mexico. Before, this species was known from the states of Guerrero, Hidalgo and Morelos [Vásquez-Bolaños, 2011].

Temnothorax punctithorax (Mackay, 2000)*

(Fig. 2, localities 1, 5)

Leptothorax (Myrafant) punctithorax Mackay, 2000: 392, figs 31, 151, 152 (w), Mexico.

Material. 20 w, 2 q (MIFA, ZISP), “México, Tlaxcala, Mpio. San Francisco Tetlanohcan, PN La Malinche, 19.27649N 98.05837W, 3055m, 01.10.2016, Dubovikoff leg., Tla16-2”. 1 w (CNIN), “México, Tlaxcala, Nanacamilpa, San Felipe Hidalgo, 2884 m, 19° 28' 19.24"N 98° 35' 22.5"W, 01.VIII.2016, Y. Marquez, A. Conteras, TlaUNAM1”.

Distribution in Mexico. This species was described from Estado de México and was also known from Puebla [Vásquez-Bolaños, 2011].

Results

Most of the species (23) were collected in the range of altitudes 2600–3055 m a.s.l. Almost all species listed above (excluding *Tapinoma* cf. *litorale* Wheeler, 1905) belong to Nearctic faunistic elements.

In La Malinche ants were not found at altitude of over 3255 m, in Nevado de Toluca none above 3152 m, and in Tamaulipas none above 3070 m. In all cases, only 1–2 species of ants were found at these heights. According to the literature data, *Formica browni* is known at the altitude of 3333 m in Veracruz (Pico Orizaba) [Francoeur, 1973], the same species was found by us with *Formica densiventris* at the altitude of 3255 m on the La Malinche volcano. Probably, those two species have the highest altitudinal distribution in Mexico. Based on those findings, we state of “altitude boundary” for ants in Mexico at about 3300 m a.s.l. (i.e. Formicidae were not found in localities 9–11 (Fig. 2)).

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