Some Fungus-Growing Ants (Hymenoptera: Formicidae) from Northeastern Mexico

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SOME FUNGUS-GROWING ANTS
(HYMENOPTERA: FORMICIDAE) FROM NORTHEASTERN MEXICO

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ABSTRACT


Key Words: fungus, symbiosis, ants, Tamaulipas, attine ants

RESUMEN


Translation provided by the author.

Fungus-growing ants of the tribe Attini are important model systems in studies on behavioral ecology, coevolution, mutualism, parasitism and biogeography (Currie et al. 2003; Munkacsi et al. 2004; Mikheyev et al. 2007). Attine ants are a predominantly Neotropical group with few successful extensions into the Nearctic ecozone (Weber 1972). Species of *Cyphomyrmex, Atta texana* (Buckley) and particularly *Trachymyrmex septentrionalis* (McCook) are the northernmost distributed of all attine ants (Weber 1972). Northeastern (NE) Mexico (states of Coahuila, Nuevo León, San Luis Potosí, and Tamaulipas) includes the distribution limits of several attines; this region, and particularly the state of Tamaulipas encompasses the contact of the Nearctic and Neotropical realms. The attines of NE Mexico are poorly known. Along the Gulf of Mexico coastal plain, the northernmost colonies of the Mexican leaf-cutting ant, *Atta mexicana* (Smith) have been reported in Tamaulipas, in San Fernando, and in the state of Nuevo León at Sabinas Hidalgo and Cerralvo, at the piedmont of the Sierra Madre Oriental (Sánchez-Peña 2005). In Tamaulipas state, Flores-Maldonado et al. (1999) reported *Apterostigma pilosum* Mayr and *Trachymyrmex turrifex* Wheeler in Cañón del Novillo, near Ciudad Victoria. *Trachymyrmex saussurei* (Forel) a neotropical species, exists in Gómez Farías, Tamaulipas (Rabeling et al. 2007). The present paper includes distribution records and habitat observations for attine species, some of which were not expected to occur or are not frequently reported in NE Mexico.

MATERIALS AND METHODS

With the exception of some specimens of *Cyphomyrmex rimosus* Spinola from Matamoros caught with pitfall traps, all specimens were collected by hand by the author during directed searches for workers. Descriptions used for identification are listed with each species. Records are reported by state (uppercase) and municipality (municipio); more specific localities are mentioned when pertinent. Voucher specimens are deposited at the Entomological Collection of Universidad Autónoma Agraria Antonio Narro, (UAAN), Saltillo, Coahuila, Mexico. Specimens of taxa marked with an asterisk (*) have been deposited at the Bohart Museum of Entomology, University of California at Davis (UCDC).

RESULTS AND DISCUSSION

Table 1 is a summary of collected attine ants. These are detailed below.


*Trachymyrmex saussurei* (Forel) a neotropical species, exists in Gómez Farías, Tamaulipas (Rabeling et al. 2007). The present paper includes distribution records and habitat observations for attine species, some of which were not expected to occur or are not frequently reported in NE Mexico.

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canum were collected on soil in extensive clearing in medium-tall rainforest that included the trees Brosimum alicastrum Sw. (ojite, ramón), Bursera simaruba (L.) Sarg. (chaká, gumbo-limbo), Ficus cotinifolia H.B.K. (higuerón, strangler fig) near the transition to cloud forest. Apparently previously known from 5 specimens, all from tropical forest in Veracruz state, near Córdoba (Lattke 1997).

Atta texana (Buckley) (*). COAHUILA: Municipio of Jiménez, town of Jiménez. 22.IX.2006. 29°03'04"N, 100°40'11"W, 240 masl. Municipio of Múzquiz, town of Múzquiz, Sabinas River. 5.VII.2008. 27°58'09", W 101°34'53", 490 masl. At Jiménez town, the Texas leaf-cutting ant was collected within 200 m from the Rio Grande (Rio Bravo) river, and also 15 km to the south, down the river. In both sites A. texana lives on the deeper soil flats (“vegas”) along the river, in woods and clearings with pecans ([Carya illinoinensis (Wangenh.) K. Koch]), walnut (Juglans sp.), and huisache, (Acacia farnesiana (L.) Willd.). Mature colonies form nest mounds 5-10 m in diameter. At Múzquiz, A. texana was in a riparian forest of baldcypress (Taxodium cf. mucronatum Ten.), willow (Salix nigra Marshall) and sycamore (Platanus sp.). The Múzquiz locality is near the southwestern distribution limit for A. texana. There are few reports of this ant in Mexico, and no recent records of the reported populations of A. texana along the Gulf of Mexico, in the states of Tamaulipas, Veracruz, and Tabasco (Smith 1963). There is an unexpected, extremely disjunct record from Tehuacán, central Mexico (Ríos-Casanova et al. 2004). Coronado-Padilla et al. (1972) reported it from Allende, Coahuila (about 100 km NE from Múzquiz). The distribution of Atta spp. is quite fragmented in Northeastern Mexico; the factors responsible are possibly lack of moisture and soil type.


<table>
<thead>
<tr>
<th>Ant species</th>
<th>Locality/State</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apterostigma mexicanum</td>
<td>200 m above Pit of Swallows/ San Luis Potosí</td>
<td>Clearing, former tropical rainforest</td>
</tr>
<tr>
<td>Atta texana</td>
<td>Jiménez/ Coahuila</td>
<td>Temperate gallery forest of Taxodium, Platanus, Salix</td>
</tr>
<tr>
<td>Cyphomyrmex rimosus</td>
<td>Many localities/ Tamaulipas</td>
<td>Springs, temperate gallery forest, mesic habitats</td>
</tr>
<tr>
<td>Mycetosoritis hartmanni</td>
<td>Escape, Cadereyta/Nuevo León</td>
<td>Under cover crop of organic farm</td>
</tr>
<tr>
<td>Mycocepurus smithii</td>
<td>Guadalupe/Nuevo León</td>
<td>Temperate gallery forest of Platanus and Juglans</td>
</tr>
<tr>
<td>Sericomymrnx aztecs</td>
<td>Tamul/San Luis Potosí</td>
<td>Medium height tropical forest with Bursera and Ficus</td>
</tr>
<tr>
<td>Trachymyrmex smithi</td>
<td>Zapalínamé, Saltillo/Coahuila</td>
<td>Xerophilous temperate oak forest</td>
</tr>
<tr>
<td>Trachymyrmex turritex</td>
<td>Santa María, Pesquería/Nuevo León</td>
<td>Garden; desert scrub area with Parkinsonia texana</td>
</tr>
<tr>
<td>Mycocepurus smithii</td>
<td>Guadalupe/Nuevo León</td>
<td>Tropical gallery forest of Platanus and Juglans</td>
</tr>
</tbody>
</table>

TABLE 1. ATTINE ANTS COLLECTED IN NORTHEASTERN MEXICO, THEIR LOCALITIES AND GENERAL HABITATS.
near the Santa Catarina river. There, several small plots (<1 ha) were grown to cover crops (Fabaceae), providing full shade. *Mycterosiris hartmanni* workers were foraging under the cover crop, at the northern edge of one plot, at noon. The Tamaulipas location is disturbed tropical gallery forest with the trees *T. mucronatum, Ficus* sp., and *Inga vera* Wild., about 20 km north of Gómez Farias. *Mycterosiris hartmanni* is an infrequently collected species (Mackay 1998; Longino 2009). In Mexico, this ant is known from the humid, medium-height tropical forest at Gómez Farias, Tamaulipas (Jusino-Atresino & Phillips 1992). The type locality is warm-temperate (Austin, Texas) (Wheeler 1907). Longino (2009) lists *M. hartmanni* from south Texas (Laguna Atascosa Wildlife Refuge) in coastal, low shrubby vegetation. *Mycterosiris hartmannii* has not been reported living in the ephemeral habitat of annual agricultural crops.

*Mycocepurus smithii* Forel. NUEVO LEÓN: Municipio of Guadalupe, La Pastora State Park. 10.VII.2006 and 28.XII.2006. N 25°39’53”, W 100°15’15”, 500 masl. This 200-ha park in the deciduous and subdeciduous tropical forests, oak-pine forest, and secondary vegetation in urban areas (Vázquez-Bolaños 2007). The report herein is the northernmost for the species; it is in the Neartic ecozone at almost the same latitude of Brownsville, Texas, and in the Rio Grande Basin as well. This locality is apparently the most xeric (annual average precipitation 551 mm) and temperate (SAGARPA 2002) known for *Mycocepurus* in most of its range. Ants of the genera *Mycterosiris* and *Mycocepurus* are small, cryptic, and infrequently collected (Mackay 1998).

*Sericomymex aztecs* Forel (*†*). SAN LUIS POTOSÍ: Municipio of Aquismón. 10.IV.2008. N 21°48’09”, W 99°10’49”, 200 m masl. Rio Santa María, Tamul. Undercover of tropical gallery forest including trees of *B. simaruba* and *F. cotinifolia*. Municipio de Ciudad Valles, N 21°56’11”, W 98°53’23”, 100 masl. Near gardens of hotel at Tanín. This is a mesic microhabitat in secondary low and medium-height tropical forest with *B. simaruba* and *F. cotinifolia*. The northernmost species of *Sericomymex* is *S. aztecs* from Mexico. Longino (2008) collected *S. aztecs* in Chiapas, near the Guatemala border. The Tanín, Ciudad Valles location reported herein, about 40 km from the state of Tamaulipas, is probably the northernmost record for the genus. Both Wheeler (1925) and Longino (2008) consider that Mesoamerican (or most) species of *Sericomymex* are similar, and probably describe intra-specific variation.

*Trachymyrmex smithi* Buren. COAHUILA: Municipio and city of Saltillo. 19.VII.2005. N 25°21’36”, W 100°58’42”, 1680 masl. Lomas de Lourdes, Sierra de Zapalínamé. Workers foraging after summer rains on reddish-soil hills, above SE Saltillo. The habitat is temperate, an ecotone of xerophilous brush and forest with oaks (*Quercus laeta* Liebm. and the endemic *Q. saltillensis* Trel.), madrone (*Arbutus xalapensis* Kunth), and pistache (*Pistacia mexicana* H.B.K.). The type locality for *T. smithi* is La Rosa, General Cepeda, Coahuila, about 50 km W, in rocky Chihuahuan desert habitats (Buren 1944). Mackay & Mackay (2002) list it from Chihuahua state, Mexico. From the records, this species appears to occur in high, temperate deserts where summer temperatures are usually below 33°C.

in sandy soil; nest aggregations (6 nests/10 m$^2$). Known from matorral at Vallecillo, Nuevo León (40 km S of Laredo, Texas) (Buren 1944). This is possibly the most common *Trachymyrmex* species in the lower, hotter arid areas of NE Mexico.

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