

## New Records of Ant (Hymenoptera: Formicidae) Species for Hidalgo, Mexico<sup>1</sup>

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Four species of ants (Hymenoptera: Formicidae) are reported as new state records for Hidalgo, Mexico, a state with 249 previous records of native species (Guenard et al. 2017, Myrmecol. News 24:83–89). Ant specimens were collected for 2 yr as part of an inventory of formicids associated with corn (*Zea mays* L), coffee (*Coffea arabica* L.), and orange (*Citrus sinensis* [L.] Osbeck) crops to analyze the structure of ant communities in northeastern Hidalgo near the municipality of Huejutla.

Each site was characterized by a number of plant species other than the principal crop. Cleared areas near Huejutla had adjacent patches of vegetation composed of medium subevergreen forest and high evergreen forest that included *Nectandra ambigens* (Blake) Allen (Lauraceae), *Aphananthe monoica* (Hemsl.) J.-L. Leroy (Cannabaceae), *Bursera simaruba* (L.) Sarg. (Burseraceae), *Cecropia obtusifolia* Bertol. (Urticaceae), *Brosimum alicastrum* Swartz (Moraceae), *Cedrela odorata* L. (Meliaceae), and *Chamaedorea tepejilote* Liebm. (Arecaceae). Corn fields also contained such plant species as *Bidens pilosa* L. (Asteraceae), *Ipomoea purpurea* L. (Convolvulaceae), *Heliconia schiedeana* L. (Heliconiaceae), *Commelina erecta* L. (Commelinaceae), *Croton draco* Schltdl. & Cham. (Euphorbiaceae), and *Guazuma ulmifolia* Lam (Malvaceae). *Commelina erecta* L. (Commelinaceae), *Christella ovata* var. *Lindheimeri* (C. Chr) A.R.Sm. (Thelypteridaceae), *C. tepejilote*, *Heliocarpus appendiculatus* Turcz (Malvaceae), *H. schiedeana*, and *Musa*

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*paradisiaca* L. (Musaceae) were the predominant weedy plant species in coffee production sites. Orange groves also contained *B. pilosa*, *Struthanthus quercicola* (Schltdl. & Cham.) Blume (Loranthaceae), and *Melia azedarach* L. (Meliaceae). Agroecologic management was implemented in all crops, with weeds being removed periodically.

At each site, three linear transects of 50 m each were established. For each transect, five sampling points were designated at a distance of 10 m apart. Pitfall traps baited with honey and tuna were placed at each point for 72 h. Collections by hand were also made at each point. Collected specimens were transported to the laboratory, sorted, and identified using Forel (1885, Bull. Soc. Vaud. Sci. Nat. 20:316–380), MacKay et al. (2004, J. Insect Sci. 4:1–7), Wild (2005, Zootaxa 834:1–25), and Ješovnik and Schultz (2017, ZooKeys 670:1–109). Representative specimens of each species are deposited in the ant collection at the Centro de Estudios en Zoología de la Universidad de Guadalajara.

These collections yielded four ant species that are new records for the state of Hidalgo. These were *Sericomyrmex amabilis* Wheeler (2 specimens collected in orange grove), *Camponotus formiciformis* Forel (10 specimens collected in coffee plantation and orange grove), *Neoponera apicalis* (Latreille) (5 specimens from coffee plantation), and *Mycocetopus smithii* (Forel) (2 specimens from coffee). More details on collection, taxonomic characters, and distribution of each of these species follow.

### ***Sericomyrmex amabilis* Wheeler**

**Locale:** MEXICO, Hidalgo (**New state record**), Huejutla, Axcaco at 13.96 km southwest of the municipal seat. 21°10'12.72"N, 98°36'55.79"W, elevation 645 m, 25.iii.2021. E. Martínez-Hernández. Two individuals of the worker caste were collected in an orange grove.

**Taxonomic characters:** This species is of medium size; mandible usually striate; frontal carina complete; frontal lobe triangular; eye almost flat, without white layer; posterior cephalic margin with abrupt to gradual emargination; mesosomal tubercles from low and obtuse to well developed; and first gastral tergite with lateral carinae strongly developed, dorsal carinae from weak to well developed.

**Geographic range:** Central America, Colombia, Ecuador, Venezuela, Costa Rica, and Mexico (Ješovnik and Schultz 2017). In Mexico, there are records of the species in the states of Veracruz, San Luis Potosí, and Mexico (Guenard et al. 2017). In Costa Rica, it is common in the lowland habitats up to approximately 800 m elevation in open or seasonally dry areas, but it is not seen at lower elevations in moist, closed-canopy forest habitats (AntWeb 2022, <https://www.antweb.org/description.do?genus=sericomymex&species=amabilis&rank=species>, last accessed 4 July 2022). We collected this ant at 645 m, below what was recorded in Costa Rica.

**Ecologic notes:** This ant cultivates symbiotic fungi as a food source (Ješovnik et al. 2017, Syst. Entomol. 42:523–542). Workers collect fragments of decomposing organic matter and plant material that are used as fertilizer to nourish the fungus they cultivate for food (Leal and Oliveira 2000, Insectes Soc. 47:376–382; de Fine Licht and Boomsma 2010, Ecol. Entomol. 35:259–269).

***Camponotus formiciformis* Forel**

**Locale:** MEXICO, Hidalgo (**New state record**) Huejutla, Ahuehuetitla at 14.61 km southwest of the municipal seat. 21°3'55.08"N, 98°32'1.319"W, elevation 509 m, 14.x.2020. E. Martínez-Hernández. Four specimens of the worker caste were collected in the orange groves.

MEXICO, Hidalgo (**New state record**), Huejutla, Ixcatlán, 13.79 km from the municipal seat. 21°4'46.564"N, 98°32'9.247"W, elevation 701 m, 08.xi.2020. E. Martínez-Hernández. Six individuals of the worker caste were collected in the coffee plantation.

**Taxonomic characters:** These ants have propodeum without spines or tubercles and flat or almost flat dorsal and lateral faces and are joined at an approximately right angle; dorsal aspect of propodeum subrectangular; pubescence in the first gastral tergite diluted, appressed to suberectum, without obscuring the integument; uniform orange color; shiny integument; abundant, long and flexible erect setae (Longino 2002, <https://ants.biology.utah.edu/genera/camponotus/species/pittieri/formiciformis.html>, last accessed 5 July 2022).

**Geographic range:** Mexico, Guatemala, Honduras, and Costa Rica (Longino 2002). For Mexico, there are records in the states of Veracruz and Guerrero (Guenard et al. 2017).

**Ecological notes:** There is no information on their eating habits. It is a relatively uncommon species occurring in lowland moist forest habitats (Longino 2002).

***Neoponera apicalis* (Latreille)**

**Locale:** MEXICO, Hidalgo (**New state record**), Huejutla, Ixcatlán at 13.79 km southwest of the municipal seat. 21°4'46.564"N, 98°32'9.247"W, elev. 701 m, 08.xi.2020. E. Martínez-Hernández. Five individuals of the worker caste were collected in coffee plantation.

**Taxonomic characters:** Workers of this species are large (total length 9-12 mm) with elongated jaws with more than 10 teeth. The anterior border of the clypeus is broadly convex, and the medial area of the clypeus usually has several fine longitudinal striae. The eyes are large, located approximately in the middle of the head. The malar carina is well developed and sharp. It usually has several fine longitudinal striae. The mesosoma is elongated and strongly depressed at the metanotal suture. The region between the propodeal faces is broadly rounded, and the propodeal spiracle is slit-shaped. The petiole is wide from a sidelong view, with convex and rounded anterior and posterior faces and bright yellow antennal tips (Longino 2008, <https://ants.biology.utah.edu/genera/Pachycondyla/species/apicalis/apicalis.html>, last accessed 7 July 2022; MacKay and MacKay 2010, The systematics and biology of the New World ants of the genus *Pachycondyla* (Hymenoptera: Formicidae) Edwin Mellen Press, Lewiston, NY).

**Geographic range:** It is distributed from northern Mexico to southern Brazil and Bolivia (MacKay and MacKay 2010). In Mexico, there are records for the states of Tamaulipas, San Luis Potosí, Veracruz, Puebla, Oaxaca, Tabasco, Chiapas, Campeche, Quintana Roo, and Yucatán (Guenard et al. 2017).

**Ecologic notes:** Foragers are solitary hunters on the ground, where they capture live prey and feed on dead insects. They are never arboreal (Longino 2008). This species is common in primary and secondary moist tropical forests and in mid-elevation rainforests (150–1500 m) with a mean elevation of 642 m (Wild 2005; MacKay and MacKay 2010). This species has been documented from coffee plantations and spiny second-growth forests (Wild 2005).

### ***Mycocepurus smithii* (Forel)**

**Locale:** MEXICO, Hidalgo (**New state record**), Huejutla, Ixcatlán at 13.79 km southwest of the municipal seat. 21°4'46.564"N, 98°32'9.247"W, elevation 701 m, 22.ii.2021. E. Martínez-Hernández. Two individuals of the worker caste were collected in the coffee plantation.

**Taxonomic characters:** This is one of two species in which workers lack well-developed promesonotal spines in the center of the crown. There is usually a very low, sharp ridge in this region. In most cases, it can be separated from the other species that lacks these spines, such as *M. obsoletus*, by reviewing the biogeographic distribution.

**Geographic range:** It is distributed in Mexico, Honduras, Costa Rica, Panama, Colombia, Cuba, Puerto Rico, Peru, Trinidad, Guianas, Bolivia, Brazil, and Argentina (Mackay et al. 2004). In Mexico, it is distributed in the states of Nuevo León, Tamaulipas, San Luis Potosí, Veracruz, Puebla, Nayarit, Jalisco, Tabasco, Chiapas, and Quintana Roo (Guenard et al. 2017).

**Ecologic notes:** The workers carry dry leaves and caterpillar frass to the nest (Kempf 1963), where they grow fungi as a food source. This species can be found in open disturbed areas, tropical burned forest, tropical semideciduous forest, tropical moist forest, and moist ravines (MacKay et al. 2004).

Discovery of these four ant species as new state records for Hidalgo, Mexico, underscores the relative lack of data on ant diversity relative to habitats, including agronomic crops, in this region. Additional survey and exploration activities should be conducted to elucidate the role of these habitats as reservoirs of myrmecofauna and the effect of their ecologic conditions on the abundance and diversity of ants.