

First survey of the ants (Hymenoptera, Formicidae) of Piauí: filling a major knowledge gap about ant diversity in Brazil

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Abstract. Piauí, a Brazilian Northeast state, has been considered one of the most important regions for the presence of new taxa in ants globally, especially considering the ecosystems' diversity formed by the transition of the three biomes in the state, the Cerrado, Caatinga and the Atlantic Forest. Despite the recent increase in studies of ant diversity in the Neotropical region, Piauí still represents a major knowledge gap regarding its ant fauna. Therefore, this study aimed to increase the knowledge about the ant fauna of the state by generating a list of species with data obtained from the literature, online repositories and collection expeditions to the Serra da Capivara and Serra das Confusões National Parks. A total of 152 species in 52 genera and nine subfamilies were registered from 24 localities in Piauí. Fifty-eight out of the 152 species recorded represent new records for the state, eight are new records for the Brazilian Northeast Region, and one consists of a new record for the country. Eleven species are here recognized as new for science. Considering the field expeditions carried out here, this work represents the first standardized study for the ant fauna of Piauí. The species list presented considerably exceeds the current number of species registered for the state so far. From the present 48 records, the number of species for Piauí raises to more than 150 with a tendency to increase with the accomplishment of future field endeavors and advances in the study of the local ants.

Key-Words. Cerrado; Caatinga; Atlantic Forest; Taxonomy; Conservation.

INTRODUCTION

Ants are eusocial insects grouped into a single family (Formicidae), which in turn is classified into 17 subfamilies and 334 genera (Bolton, 2019). Ants occur in great diversity and abundance in most ecosystems (Choe, 2012). In view of this, ants are extremely important ecologically and are key participants in many ecosystem processes (Lamanceau & Blouin, 2018). In addition, these insects are also good indicators of environmental conservation status, since they are very sensitive to environmental stress (Silvestre *et al.*, 2003; Ribas *et al.*, 2012).

In the Brazilian Northeast, anthropic action has led to a deterioration of natural areas and drastic changes in the relief and other characteristics of the soil surface. The state of Piauí, located in this region, has been suffering human disturbances since the 1960s, when tax incentives for agricultural projects were implemented (Lacombe, 1969; Aguiar & Monteiro, 2005). The key location of this state in a transition zone among three Brazilian biomes, the Cerrado, the Caatinga and the Atlantic

Forest, makes it a priority for the study of diversity. Despite recent advances, which translate into a 33% reduction in deforestation of the state's Cerrado areas, Piauí remains a leader in the deforestation of that biome (MMA, 2018). Also, since it is one of the last agricultural frontiers in the Cerrado, the southern region of the state is under intense threat (Machado *et al.*, 2004).

The ant fauna of Piauí has remained relatively unstudied compared to other Brazilian states (Camargo, 2011; Prado *et al.*, 2019). One of the few studies involving the state's ant fauna shows that deforestation and loss of diversity by monocultures are very high. In the same study, the anthropic impact on the balance of local ecosystems was highlighted, together with the need for accurate surveys of the local diversity in order to develop more efficient conservation policies, and to promote the documentation of species that are present there before they go locally extinct (Fontes & Almeida Filho, 2002).

Considering the growing need for inventories to fill knowledge gaps about the diversity of places that need to be given conservation prior-

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ity, regional species lists are an important tool (Castro *et al.*, 2018; Demétrio *et al.*, 2017; Vicente *et al.*, 2018). The primary data generated by the inventory of animal and plant species are very important in decision-making regarding environmental conservation management. Similarly, as predominant and diverse organisms in any terrestrial environment, sampling the local ant fauna is essential. This is especially true when we consider the poorly explored regions of the state of Piauí, which are, on average, suffering more from deforestation than their surrounding areas and therefore deserve special attention regarding conservation and investment in scientific research. In fact, Brazil probably has a widely underestimated number of species and Piauí is where new genera are most likely to be found (Guénard *et al.*, 2012). In this context, the objective of the present study is to increase the knowledge about the ant fauna of the state of Piauí by compiling records from literature, online repositories and field expeditions in two of the state's main National Parks.

MATERIAL AND METHODS

Species records were gathered from a comprehensive independent literature review and consultation of the online repository Antmaps.org. Each species listed here is validated by at least one published reference or data source and the validity of names has been verified in the Antcat.org platform (Bolton, 2019). To confirm the occurrences (Table 1) and to prepare the map (Fig. 1),

the geographical coordinates, when not available in the respective reference, were georeferenced based on the Google Earth platform.

Table 1. Collecting locations and municipalities with ant records for the state of Piauí, Brazil, according to the specific reference list below.

| Locality | Coordinates | Source |
|-----------------------------------------|-----------------------------|---------------------------|
| Altos | 05° 02' 23" S 42° 27' 29" W | 14 |
| Bom Jesus | 09° 11' 29" S 44° 50' 33" W | 7 |
| Buriti dos Lopes | 03° 10' 30" S 41° 52' 01" W | 10 |
| Canto do Buriti | 08° 06' 36" S 42° 56' 40" W | 9; 17; 22 |
| Corrente | 10° 26' 30" S 45° 09' 52" W | 4; 9; 10; 17 |
| Corrente 2 | 10° 26' 00" S 45° 09' 00" W | 1 |
| Estação Ecológica Uruçuí-Uma, Bom Jesus | 08° 51' 50" S 45° 12' 00" W | 10 |
| Floriano | 06° 46' 01" S 43° 01' 21" W | 10; 17 |
| Floriano 2 | 06° 44' 37" S 43° 02' 49" W | 23 |
| Jacobina do Piauí | 08° 00' 00" S 41° 25' 00" W | 2 |
| Marvão | 05° 19' 59" S 41° 32' 60" W | 14 |
| Matias Olímpio | 03° 42' 58" S 42° 33' 18" W | 10 |
| Oeiras | 07° 01' 31" S 42° 07' 52" W | 4; 9; 22 |
| Oeiras 2 | 07° 00' 59" S 42° 07' 16" W | 3 |
| Parnaíba | 02° 54' 19" S 41° 46' 24" W | 14 |
| Piauí – uncertain locality | — | 5; 6; 8; 16; 21 |
| Rio Uruçuí Preto | 07° 19' 00" S 44° 37' 00" W | 3; 10; 13; 15; 17; 19; 20 |
| São Raimundo Nonato | 08° 38' 23" S 42° 46' 32" W | 23 |
| Serra da Capivara, Coronel José Dias | 08° 41' 42" S 42° 35' 10" W | 11 |
| Serra das Confusões, Caracol | 09° 13' 22" S 43° 29' 23" W | 12 |
| Sete Cidades | 04° 05' 59" S 41° 42' 50" W | 18 |
| Teresina | 05° 05' 31" S 42° 48' 13" W | 14 |
| Timon (Maranhão) | 05° 04' 59" S 42° 49' 00" W | 3 |
| Uruçuí | 07° 20' 35" S 44° 37' 00" W | 3 |

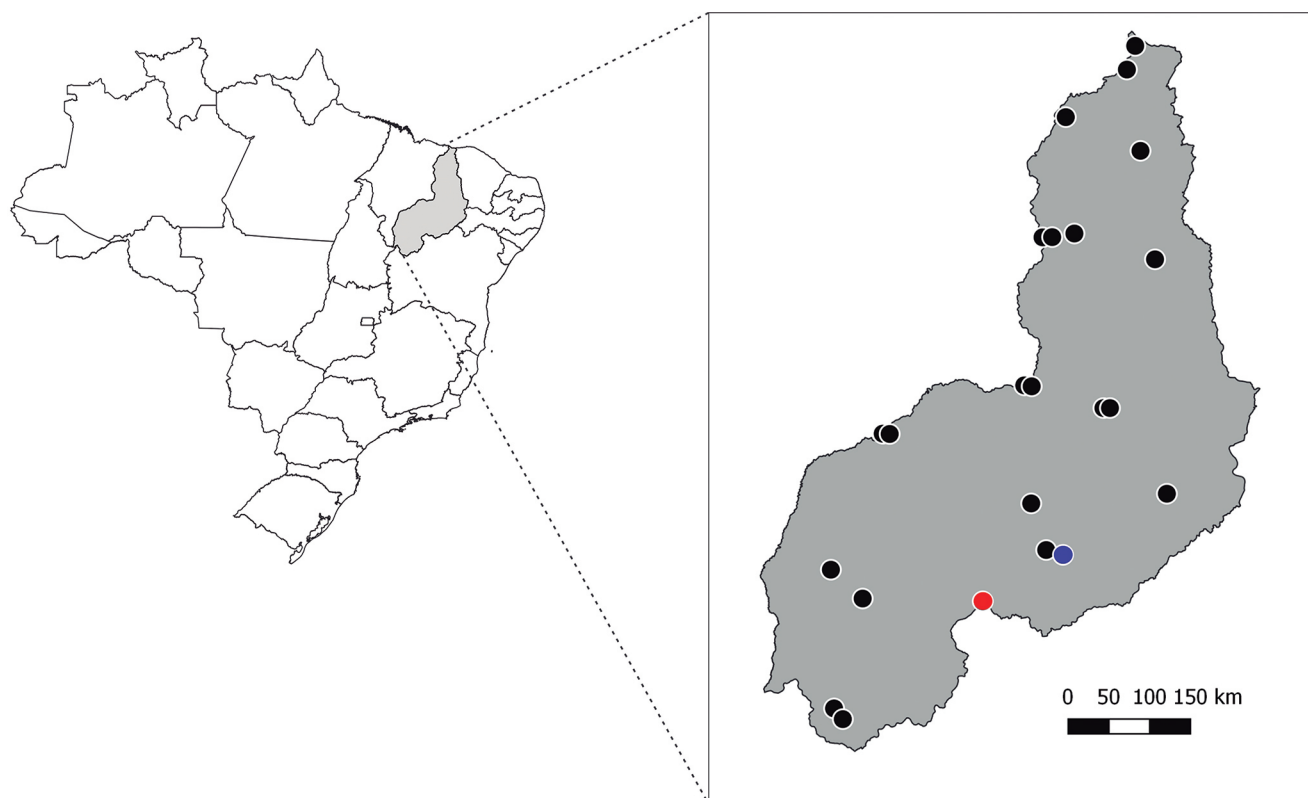


Figure 1. Areas with ant records in the state of Piauí, Brazil, based on literature review (black circles) and collecting expeditions of the present study to the Serra das Confusões (red circle) and Serra da Capivara (blue circle) National Parks.

In addition to the bibliographic survey, two collecting expeditions were made to the Serra da Capivara and Serra das Confusões National Parks. In both parks, ants were collected with three distinct techniques: manual capture, pitfall traps in the soil and vegetation, and Winkler leaf-litter extractors.

Parque Nacional da Serra das Confusões is centered between the coordinates 09°13'22"S and 43°29'23"W and has an average elevation of approximately 700 m. It is located in a transitional area between Caatinga and Cerrado with a predominance of arboreal and shrubby vegetation cover with the presence of semi-deciduous forests in some areas, within the geographic domain of the Atlantic Forest (Gonçalves, 2003).

Serra da Capivara National Park, on the other hand, is centered between the coordinates 08°41'42"S and 42°35'10"W and has an average elevation of approximately 500 m. It has a relief with plateaus and valleys with differences of up to 250 meters. In the high plateau areas, the phytophysiology of dense arboreal Caatinga predominates, while in the valleys where humidity is highest, the phytophysiology is arboreal Caatinga, with open understory (Barros, *et al.*, 2012).

The specimens were processed at the Laboratory of Ant Systematics and Biology of the Federal University of Paraná, Curitiba, Brazil. Identification to genus was accomplished with the help of the Guide for Ant Genera of Brazil (Baccaro *et al.*, 2015) and for species we used the bibliographies recommended for each genus in this same Guide (Albuquerque & Brandão, 2004; Cuzzo, 2000; Gonçalves, 1961; Jesovnik & Schultz, 2017; Kempf, 1951, 1973; Kugler, 1994; LaPolla & Fisher, 2005; Longino, 2003; Ortiz-Sepulveda *et al.*, 2019; Schmidt & Shattuck, 2014; Watkins, 1976). Vouchers were deposited in the Padre Jesus Santiago Moure Entomological Collection of the Universidade Federal do Paraná (DZUP), Curitiba, Brazil.

RESULTS AND DISCUSSION

A total of 152 ant species/morphospecies were recorded in the state of Piauí in 52 genera and nine subfamilies distributed in 24 locations (Table 1). A total of 96 species were namely identified (63%) and 56 remained as morphospecies due to the lack of taxonomic resolution for their genera. The most diverse subfamilies were Myrmicinae, with 94 species, and Formicinae, with 21 species, represented by 25 and five genera, respectively. Among the genera, *Pheidole* had the highest number of species, 25, followed by *Solenopsis*, with 16 species, and *Camponotus* with 13 species. Considering the ant genera listed, 31 represent new records for the state. Regarding the species, 58 are new records, all of which are collected in Parque Nacional da Serra da Capivara and Parque Nacional da Serra das Confusões. Eight species represent new records for the Northeast Region of the country: *Camponotus mus* Roger, 1863, *Hylomyrma blandiens* Kempf, 1961, *Pheidole cardinalis* Wilson, 2003, *Pheidole fracticeps* Wilson, 2003, *Pheidole geraesensis* Santschi,

1929, *Pheidole microps* Wilson, 2003, *Pheidole nubila* Emery, 1906, and *Strumigenys hindenburgi* Forel, 1915. Additionally, there is a new record for Brazil, represented by the species *Pheidole microps* Wilson, 2003.

The diversity pattern found among the recorded taxa was somewhat expected as the two subfamilies and the most diverse genera in this paper are extremely rich and widely distributed in the Neotropical region (Ward *et al.*, 2015). Myrmicinae can be considered the most successful group among all subfamilies of Formicidae, comprising almost 50% of the diversity of Formicidae (Ward *et al.*, 2015; Bolton, 2019). Their dominance can be explained by the broad feeding and reproductive strategies (Agosti *et al.*, 2000; Hamidi *et al.*, 2017). Thus, the results obtained for this subfamily are within the expectations of the literature, since approximately 62% of the species registered in the state of Piauí belong to this group.

From the eight new ant species firstly recorded for the Northeast Region of Brazil, seven belong to megadiverse genera, including *Pheidole*, *Camponotus*, and *Strumigenys*. This highlights the importance of specific-level identification for an ant inventories, since these new records are both an artifact of the lack of expertise to identify these genera and the lack of data collection in Piauí state. In fact, different ant collections in Brazil probably hold unidentified specimens of *Pheidole*, *Camponotus* and similar genera that could be new records in species lists and surveys.

Two exotic species, *Monomorium pharaonis* (Linnaeus, 1758) and *Paratrechina longicornis* (Latreille, 1802), were recorded. These species had already been recorded for neighboring states (AntMaps, 2019; Prado *et al.*, 2019). *Monomorium pharaonis* is considered a species of medical importance in many parts of the world, including Brazil, specifically in hospitals, where it is a potential carrier of pathogens (Wetterer, 2010). *Paratrechina longicornis* is considered an urban and agricultural pest in most of the tropics and subtropics of the world for infesting buildings and facilitating the multiplication of populations of Hemiptera that feed on plant phloem (Wetterer, 2008).

We recognize at least 11 new ant species (Table 2), of which one belongs to the genus *Mycetophylax*, one to *Mycocepurus* and nine to *Pheidole*. This demonstrates the great potential of this region to reveal taxonomic novelties, as predicted by Guénard *et al.* (2012), even though these authors referred to potential new genera.

Regarding the relative contribution of each data source (literature and expeditions) to compose the final list of species in Piauí, literature contributed 25% of the registered species (38 species), while the collecting expeditions were responsible for 75% of the species (114 species), 71 collected in Serra da Capivara and 101 in Serra das Confusões. It is noteworthy that all 58 new species records for the state come from these collecting expeditions. From the species collected specifically in the expeditions, 79 were sampled with pitfall traps in the soil, 21 were manually collected, and 27 were exclusively found in leaf-litter samples submitted to the Winkler extractor. This highlights the importance of collecting expeditions

Table 2. Ant species recorded for the state of Piauí, Brazil. Numbers in the second column refer to the sources from which the occurrence information was obtained for each species, presented in the specific reference list below and in Table 1. Genera and species indicated with an asterisk (*) represent new records for the state of Piauí, two asterisks (**) represent new records for the Northeast Region of Brazil and three asterisks (***) represent new records for Brazil. Species indicated with a dagger (†) were recorded exclusively within the domain of the Atlantic Forest in the state, while all the other species were present only in savanna environments (Caatinga and/or Cerrado).

| Taxon | Source | Sampling methods for sources 11 and 12 | Taxon | Source | Sampling methods for sources 11 and 12 |
|---------------------------------------------------------|-------------------|----------------------------------------|-----------------------------------------------------------|--------------------|----------------------------------------|
| Amblyoponinae | | | Camponotus Mayr, 1861 | | |
| Prionopelta Mayr, 1866* | | | <i>Camponotus arboreus</i> (Smith, 1858)* | 11; 12 | Hand collection |
| <i>Prionopelta punctulata</i> Mayr, 1866* | 11; 12 | Epigeic pitfall traps | <i>Camponotus blandus</i> (Smith, 1858)* | 11; 12 | |
| Dolichoderinae | | | <i>Camponotus cingulatus</i> Mayr, 1862* | 11 | Epigeic pitfall traps |
| Azteca Forel, 1878 | | | <i>Camponotus crassus</i> Mayr, 1862* | 11; 12 | Epigeic pitfall traps |
| <i>Azteca</i> sp. 1 | 12 | Hand collection | <i>Camponotus melanoticus</i> Emery, 1894* | 11; 12 | Epigeic pitfall traps |
| <i>Azteca</i> sp. 2 | 11 | Hand collection | <i>Camponotus mus</i> Roger, 1863** | 12 | Epigeic pitfall traps |
| Dorymyrmex Mayr, 1866 | | | <i>Camponotus renggeri</i> Emery, 1894 | 19; 22 | |
| <i>Dorymyrmex goeldii</i> Forel, 1904 | 9 | | <i>Camponotus substitutus</i> Forel, 1899* | 11; 12 | Hand collection |
| <i>Dorymyrmex</i> sp. 1 aff. <i>pyramicus</i> | 11; 12 | Epigeic pitfall traps | <i>Camponotus vittatus</i> Forel, 1904* | 11; 12 | Epigeic pitfall traps |
| <i>Dorymyrmex</i> sp. 2 | 11; 12 | Epigeic pitfall traps | <i>Camponotus</i> sp. 1 | 11; 12 | Epigeic pitfall traps |
| <i>Dorymyrmex</i> sp. 3 | 12 | Epigeic pitfall traps | <i>Camponotus</i> sp. 2 | 11; 12 | Epigeic pitfall traps |
| <i>Dorymyrmex</i> sp. 4 | 11 | Epigeic pitfall traps | <i>Camponotus</i> sp. 3 | 11 | Epigeic pitfall traps |
| Forelius Emery, 1888 | | | <i>Camponotus</i> sp. 4 | 12 | Hand collection |
| <i>Forelius brasiliensis</i> (Forel, 1908)* | 11; 12 | Epigeic pitfall traps | Nylanderia Emery, 1906* | | |
| <i>Forelius pusillus</i> Santschi, 1922 | 8 | | <i>Nylanderia</i> sp. 1 [†] | 12 | Winkler extractor |
| <i>Forelius</i> sp. 1 | 11; 12 | Epigeic pitfall traps | Paratrechina Motschoulsky, 1863* | | |
| Gracilidris Wild & Cuzzo, 2006 | | | <i>Paratrechina longicornis</i> (Latreille, 1802)* | 12 | Hand collection |
| <i>Gracilidris pombero</i> Wild & Cuzzo, 2006 | 18 | | Heteroponerinae | | |
| Linepithema Mayr, 1866* | | | Acanthoponera Mayr, 1862* | | |
| <i>Linepithema neotropicum</i> Wild, 2007* | 12 | Epigeic pitfall traps | <i>Acanthoponera mucronata</i> (Roger, 1860)* | 11 | Epigeic pitfall traps |
| Tapinoma Foerster, 1850* | | | Myrmicinae | | |
| <i>Tapinoma melanocephalum</i> (Fabricius, 1793)* | 12 | Hand collection | Acromyrmex Mayr, 1865 | | |
| <i>Tapinoma</i> sp. 1 | 12 | Epigeic pitfall traps | <i>Acromyrmex landolti</i> (Forel, 1885) | 14; 16 | |
| Dorylinae | | | <i>Acromyrmex rugosus</i> (Smith, 1858) | 11; 12; 14; 16 | Epigeic pitfall traps |
| Acanthostichus Mayr, 1887* | | | Apterostigma Mayr, 1865* | | |
| <i>Acanthostichus</i> sp. 1 aff. <i>brevicornis</i> | 11 | Epigeic pitfall traps | <i>Apterostigma</i> gr. <i>pilosum</i> sp. 1 [†] | 12 | |
| Eciton Latreille, 1804* | | | Atta Fabricius, 1804 | | |
| <i>Eciton dulcium</i> Forel, 1912* | 11 | Epigeic pitfall traps | <i>Atta laevigata</i> (Smith, 1858) | 16 | |
| Labidus Jurine, 1807* | | | <i>Atta opaciceps</i> Borgmeier, 1939 | 16 | |
| <i>Labidus coecus</i> (Latreille, 1802)* | 12 | Epigeic pitfall traps | <i>Atta sexdens</i> (Linnaeus, 1758) | 11; 16 | Epigeic pitfall traps |
| Neivamyrmex Borgmeier, 1940 | | | Blepharidatta Wheeler, 1915 | | |
| <i>Neivamyrmex diana</i> (Forel, 1912)* | 11 | Epigeic pitfall traps | <i>Blepharidatta conops</i> Kempf, 1967 | 11; 12; 7 | Epigeic pitfall traps |
| <i>Neivamyrmex minensis</i> (Borgmeier, 1928)* | 12 | Epigeic pitfall traps | Carebara Westwood, 1840* | | |
| <i>Neivamyrmex pertii</i> (Shuckard, 1840) | 5; 16 | | <i>Carebara lignata</i> sp. 1 [†] | 12 | Winkler extractor |
| Ectatomminae | | | <i>Carebara brevopilosa</i> Fernández, 2004* | 11 | Epigeic pitfall traps |
| Ectatomma Smith, 1858 | | | Cephalotes Latreille, 1802 | | |
| <i>Ectatomma muticum</i> Mayr, 1870 | 6; 11; 12; 19; 22 | Epigeic pitfall traps | <i>Cephalotes atratus</i> (Linnaeus, 1758) | 10 | |
| Gnamptogenys Roger, 1863* | | | <i>Cephalotes betoi</i> De Andrade, 1999 | 10; 19; 11, 12; 22 | Hand collection |
| <i>Gnamptogenys striatula</i> Mayr, 1884* | 11; 12 | Epigeic pitfall traps | <i>Cephalotes clypeatus</i> (Fabricius, 1804) | 10; 12; 19; 22 | Hand collection |
| <i>Gnamptogenys sulcata</i> (Smith, 1858)* [†] | 12 | Hand collection | <i>Cephalotes cordatus</i> (Smith, 1853) | 10 | |
| Formicinae | | | <i>Cephalotes fiebrigi</i> (Forel, 1906) | 10 | |
| Acropyga Roger, 1862* | | | <i>Cephalotes minutus</i> (Fabricius, 1804) | 10; 19; 22 | |
| <i>Acropyga goeldii</i> Forel, 1893* [†] | 12 | Winkler extractor | <i>Cephalotes pavonii</i> (Latreille, 1809)* | 11; 12 | Epigeic pitfall traps |
| Brachymyrmex Mayr, 1868* | | | <i>Cephalotes persimilis</i> De Andrade, 1999 | 10; 12; 19; 22 | Hand collection |
| <i>Brachymyrmex coactus</i> Mayr, 1887* [†] | 12 | Winkler extractor | <i>Cephalotes pinelii</i> (Guérin-Méneville, 1844) | 10 | |
| <i>Brachymyrmex patagonicus</i> Mayr, 1868* | 11; 12 | Epigeic pitfall traps | <i>Cephalotes pusillus</i> (Klug, 1824) | 10; 11; 12; 19; 22 | Epigeic pitfall traps |
| <i>Brachymyrmex pictus</i> Mayr, 1887* [†] | 12 | Winkler extractor | Crematogaster Lund, 1831* | | |
| <i>Brachymyrmex</i> sp. 1 aff. <i>fiebrigi</i> | 12 | Epigeic pitfall traps | <i>Crematogaster crinosa</i> Mayr, 1862* | 11; 12 | Hand collection |
| <i>Brachymyrmex</i> sp. 2 | 11 | Epigeic pitfall traps | <i>Crematogaster pygmaea</i> Forel, 1904* | 11; 12 | Epigeic pitfall traps |

| Taxon | Source | Sampling methods for sources 11 and 12 | Taxon | Source | Sampling methods for sources 11 and 12 |
|-------------------------------------------------------|----------------|------------------------------------------|------------------------------------------------------|-------------------|------------------------------------------|
| <i>Crematogaster</i> sp. 1 aff. <i>obscurata</i> | 12 | Epigeic pitfall traps | <i>Rogeria curvipubens</i> Emery, 1894*† | 12 | Winkler extractor |
| Cyphomyrmex Mayr, 1862 | | | <i>Rogeria foreli</i> Emery, 1894*† | 12 | Winkler extractor |
| <i>Cyphomyrmex rimosus</i> (Spinola, 1851)* | 11; 12 | Epigeic pitfall traps | <i>Rogeria lirata</i> Kugler, 1994* | 11; 12 | Epigeic pitfall traps |
| <i>Cyphomyrmex transversus</i> Emery, 1894 | 11; 12; 19; 22 | Epigeic pitfall traps, Winkler extractor | Sericomyrmex Mayr, 1865 | | |
| <i>Cyphomyrmex</i> sp. 1† | 12 | Winkler extractor | <i>Sericomyrmex mayri</i> Forel, 1912† | 3; 12; 15 | Winkler extractor |
| Hylomyrma Forel, 1912* | | | <i>Sericomyrmex scrobifer</i> Forel, 1911 | 3; 15 | |
| <i>Hylomyrma blandiens</i> Kempf, 1961** | 11 | Epigeic pitfall traps | Solenopsis Westwood, 1840 | | |
| Kalathomyrmex Klingenberg & Brandão, 2009 | | | <i>Solenopsis geminata</i> (Fabricius, 1804) | 19; 22; 23 | |
| <i>Kalathomyrmex emeryi</i> (Forel, 1907) | 12; 17; 19; 22 | Hand collection | <i>Solenopsis saevissima</i> (Smith, 1855) | 19; 22 | |
| Monomorium Mayr, 1855* | | | <i>Solenopsis tridens</i> Forel, 1911* | 11; 12 | Epigeic pitfall traps |
| <i>Monomorium pharaonis</i> (Linnaeus, 1758)* | 12 | Hand collection | <i>Solenopsis</i> sp. 1 | 11; 12 | Epigeic pitfall traps |
| Mycetarotes Emery, 1913* | | | <i>Solenopsis</i> sp. 2 | 11; 12 | Epigeic pitfall traps |
| <i>Mycetarotes parallelus</i> (Emery, 1906)*† | 12 | Hand collection | <i>Solenopsis</i> sp. 3 | 11; 12 | Epigeic pitfall traps |
| Mycetomoellerius Solomon et al., 2019* | | | <i>Solenopsis</i> sp. 4 | 11; 12 | Epigeic pitfall traps |
| <i>Mycetomoellerius</i> sp. 1† | 12 | Hand collection | <i>Solenopsis</i> sp. 5 | 11 | Epigeic pitfall traps |
| Mycetophylax Emery, 1913* | | | <i>Solenopsis</i> sp. 6 | 11 | Epigeic pitfall traps |
| <i>Mycetophylax</i> sp. n. | 12 | Epigeic pitfall traps, Winkler extractor | <i>Solenopsis</i> sp. 7† | 12 | Winkler extractor |
| Mycocepurus Forel, 1893* | | | <i>Solenopsis</i> sp. 8† | 12 | Winkler extractor |
| <i>Mycocepurus</i> sp. n.† | 12 | Hand collection | <i>Solenopsis</i> sp. 9 | 11; 12 | Hand collection |
| Myrmicocrypta Smith, 1860* | | | <i>Solenopsis</i> sp. 10† | 12 | Winkler extractor |
| <i>Myrmicocrypta</i> sp. 1 | 11 | Epigeic pitfall traps | <i>Solenopsis</i> sp. 11 | 11 | Epigeic pitfall traps |
| Oxyepoecus Santschi, 1926 | | | <i>Solenopsis</i> sp. 12 | 11 | Epigeic pitfall traps |
| <i>Oxyepoecus kempfi</i> Albuquerque & Brandão, 2004 | 1; 22 | | <i>Solenopsis</i> sp. 13 | 11 | Epigeic pitfall traps |
| <i>Oxyepoecus</i> sp. 1 aff. <i>vezenyii</i> | 11; 12 | Epigeic pitfall traps | Strumigenys Smith, 1860 | | |
| Paratrachymyrmex Solomon et al., 2019* | | | <i>Strumigenys crassicornis</i> Mayr, 1887*† | 12 | Winkler extractor |
| <i>Paratrachymyrmex bugnioni</i> (Forel, 1912)*† | 12 | Winkler extractor | <i>Strumigenys eggersi</i> Emery, 1890*† | 12 | Winkler extractor |
| Pheidole Westwood, 1839* | | | <i>Strumigenys elongata</i> Roger, 1863 | 4; 12 | Winkler extractor |
| <i>Pheidole cardinalis</i> Wilson, 2003**† | 12 | Winkler extractor | <i>Strumigenys hindenburgi</i> Forel, 1915**† | 12 | Winkler extractor |
| <i>Pheidole exigua</i> Mayr, 1884* | 11; 12 | Epigeic pitfall traps | <i>Strumigenys infidelis</i> Santschi, 1919 | 4 | |
| <i>Pheidole fimbriata</i> Roger, 1863*† | 12 | Hand collection | <i>Strumigenys lilloana</i> (Brown, 1950) | 3; 4; 19; 22 | |
| <i>Pheidole fracticeps</i> Wilson, 2003** | 11; 12 | Epigeic pitfall traps | <i>Strumigenys louisianae</i> Roger, 1863 | 2; 6 | |
| <i>Pheidole geraesensis</i> Santschi, 1929** | 11; 12 | Epigeic pitfall traps | <i>Strumigenys</i> sp. 1 aff. <i>elongata</i> | 12 | Winkler extractor |
| <i>Pheidole microps</i> Wilson, 2003***† | 12 | Epigeic pitfall traps | <i>Strumigenys</i> sp. 2 aff. <i>louisianae</i> | 12 | Winkler extractor |
| <i>Pheidole nubila</i> Emery, 1906** | 11; 12 | Epigeic pitfall traps | Wasmannia Forel 1893* | | |
| <i>Pheidole obscurithorax</i> Naves, 1985* | 11; 12 | Epigeic pitfall traps | <i>Wasmannia auropunctata</i> (Roger, 1863) | 12 | Epigeic pitfall traps, Winkler extractor |
| <i>Pheidole radoszkowskii</i> Mayr, 1884* | 12 | Epigeic pitfall traps | Ponerinae | | |
| <i>Pheidole subarmata</i> Mayr, 1884*† | 12 | Winkler extractor | Anochetus Mayr, 1861* | | |
| <i>Pheidole synarmata</i> Wilson 2003* | 12 | Epigeic pitfall traps | <i>Anochetus neglectus</i> Emery, 1894*† | 12 | |
| <i>Pheidole valens</i> Wilson, 2003* | 11 | Epigeic pitfall traps | Centromyrmex Mayr, 1866 | | |
| <i>Pheidole</i> cf. <i>caribbaea</i> | 11 | Epigeic pitfall traps | <i>Centromyrmex brachycola</i> (Roger, 1861) | 19; 22 | |
| <i>Pheidole</i> cf. <i>vallifica</i> | 11 | Epigeic pitfall traps | Dinoponera Roger, 1861 | | |
| <i>Pheidole</i> gr. <i>aberrans</i> sp. n. | 12 | Epigeic pitfall traps | <i>Dinoponera quadriceps</i> Kempf, 1971 | 6; 11; 12; 19; 22 | Epigeic pitfall traps |
| <i>Pheidole</i> gr. <i>diligens</i> sp. n. | 11; 12 | Epigeic pitfall traps | Hypoponera Santschi, 1938* | | |
| <i>Pheidole</i> sp. 1 aff. <i>rufipilis</i> † | 12 | Epigeic pitfall traps | <i>Hypoponera</i> sp. 1† | 12 | Winkler extractor |
| <i>Pheidole</i> sp. 2 aff. <i>radoszkowskii</i> | 11; 12 | Epigeic pitfall traps | <i>Hypoponera</i> sp. 2† | 12 | Winkler extractor |
| <i>Pheidole</i> sp. n. 1 (aff. <i>diligens</i>) | 11; 12 | Epigeic pitfall traps | Neoponera Emery, 1901 | | |
| <i>Pheidole</i> sp. n. 2 (aff. <i>puttemansi</i>) | 11; 12 | Epigeic pitfall traps | <i>Neoponera bactronica</i> (Fernandes et al., 2014) | 13 | |
| <i>Pheidole</i> sp. n. 3 (aff. <i>triconstricta</i>) | 11 | Epigeic pitfall traps | <i>Neoponera commutata</i> (Roger, 1860) | 6; 21 | |
| <i>Pheidole</i> sp. n. 4 | 11 | Epigeic pitfall traps | Odontomachus Latreille, 1804* | | |
| <i>Pheidole</i> sp. n. 5 | 11; 12 | Epigeic pitfall traps | <i>Odontomachus bauri</i> Emery, 1892* | 11; 12 | Epigeic pitfall traps |
| <i>Pheidole</i> sp. n. 6 | 11 | Epigeic pitfall traps | Pseudoponera Emery, 1900* | | |
| <i>Pheidole</i> sp. n. 7 | 12 | Epigeic pitfall traps | <i>Pseudoponera gilberti</i> (Kempf, 1960)*† | 12 | Winkler extractor |
| Procryptocerus Emery, 1887 | | | Pseudomyrmecinae | | |
| <i>Procryptocerus hylaesus</i> Kempf, 1951 | 3; 20 | | Pseudomyrmex Lund, 1831* | | |
| <i>Procryptocerus victoris</i> Kempf, 1960 | 3 | | <i>Pseudomyrmex</i> gr. <i>pallidus</i> sp. 1 | 11 | Hand collection |
| Rogeria Emery, 1894* | | | <i>Pseudomyrmex tenuis</i> (Fabricius, 1804)*† | 12 | Hand collection |
| | | | <i>Pseudomyrmex termitarius</i> (Smith, 1855)* | 11 | Epigeic pitfall traps |

to increase our knowledge of the ant fauna in subsampled areas of the Neotropics, especially when involving multiple collecting techniques.

Regarding the representativity of ants in the different biomes of Piauí, it is not possible to characterize species typical of Cerrado or Caatinga, since these species can be found in both ecosystems and have been classified as "savanna specialists" (Leal *et al.*, 2017; Vasconcelos *et al.*, 2017). As for the Atlantic Forest ants, they are represented in our dataset by the specimens obtained from leaf-litter samples exclusive of our collection efforts in Parque Nacional da Serra das Confusões (Table 2).

The list of species presented here considerably increases the number of species previously recorded in the state. From 48 records (AntMaps, 2019), the number of ant species for Piauí went to 152. Nevertheless, these numbers are constantly changing as taxonomic works are published frequently and this process leads to the documentation of new species (Ward, 2007), as well as the establishment of local research groups and field trips. Thus, the list of species presented here is likely to grow with future collecting and advances in ant studies.

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