



# A checklist of Nigerian ants (Hymenoptera, Formicidae): a review, new records and exotic species

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## Abstract

### Background

Ants are one of the most ubiquitous, widespread and abundant groups of animals on Earth. They are eusocial and are well noted for their important ecosystem services such as nutrient recycling, seed dispersal, engaging in mutualistic associations with other organisms, as well as serving as predators and scavengers. Although Africa has been recognised as a global hotspot for ant diversity, African ant genera are not as well-known when compared with other regions. The last checklist of Nigerian ants was compiled and published in the 1970s. To contribute to new knowledge on West African ant genera and Nigeria in particular, we conducted a review of the ant species of Nigeria using 132 scientific publications mostly compiled in the database [www.antmaps.org](http://www.antmaps.org), along with a survey of ant species of Lagos and Oyo States in Nigeria which was conducted between 2018 and 2020. The study aimed to ascertain the diversity of Nigerian ant genera, as well

as to confirm the presence of previously recorded species and add new species to the current checklist of Nigerian ants, based on the 1970 survey.

## New information

As many as 106 species were recorded from the survey in the current study, of which 28 are new to Nigeria and additional 28 are identified to the morphospecies level. In total, 317 species from 10 subfamilies and 64 genera are now recorded from Nigeria, including 11 invasive ants, of which six are new to Nigeria. The following eleven species that were included in the 1970 checklist were excluded from the current list, mostly due to previous misidentifications: *Aenictus rotundatus* Mayr, 1901; *Anochetus jonesi* Arnold, 1926; *Camponotus barbarossa micipsa* Wheeler, 1992; *Camponotus foraminosus dorsalis* Santschi, 1926; *Camponotus rufoglaucus* (Jerdon, 1851); *Cardiocondyla zoserka* Bolton, 1982; *Messor barbarus* (Linnaeus, 1767); *Odontomachus haematodus* (Linnaeus, 1758); *Technomyrmex albipes* (Smith, 1861); *Tetramorium decem* Forel, 1913 and *Tetraponera penzigi* (Mayr, 1907).

## Keywords

Afrotropics, ant diversity, native and non-native ants, Lagos, West Africa

## Introduction

Ants (Hymenoptera, Formicidae) are very important in both natural and managed ecosystems because of their high diversity, abundance and interactions with fauna, flora and physical factors in their environment (Hölldobler and Wilson 1990, Subedi 2016). Their activities profoundly affect ecosystem dynamics through the modification, maintenance and creation of habitats for other organisms in the ecosystem (Jouquet et al. 2006, Frouz and Jílková 2008, Subedi 2016). Moreover, they have been used as bioindicators of land restoration success, land degradation and the conservation value of land parcels (King et al. 1998, Majer et al. 2007), specifically in relation to mine site restoration (Andersen 1997). They have evolved to become the most species rich and ecologically diverse social insects since their origin about 120 million years ago (Hölldobler and Wilson 1990, Grimaldi and Engel 2005). Despite records indicating an estimated 14,114 species, 346 genera and 16 subfamilies in the world (Bolton 2023), a very high number of species are yet to be discovered and officially described (Hölldobler and Wilson 1990, Ward 2000). Thus, the diversity of ant species, both identified and unidentified, could far exceed twenty-five thousand (Wilson 2003, Bolton 2007).

Due to their social structure, ability to form large colonies, high reproductive rates, as well as the ability of their reproductive castes to fly long distances, ants can rapidly establish and dominate in new environments (both natural and disturbed) (Vonshak and Gordon 2015). Globally, many species of ants have rapidly spread to many regions outside their

natural geographic distribution where they have established, spread and become invasive (Wetterer 2009a, Wetterer 2009b, Wetterer 2009c, Wetterer 2010a, Wetterer 2010b, Wetterer 2010c, Wetterer 2011a, Wetterer 2012a, Wetterer 2012b, Simberloff et al. 2013, Wauters et al. 2014, Wetterer 2019). These ants have become a global threat to biodiversity and general pests of agricultural and economic importance in all the regions where they have been introduced and become invasive (McGlynn 1999, Suarez et al. 2010, Pimentel 2011). Indeed, five ant species have made it on to the Global Invasive Species Database (GISD) of the 100 worst invasive species in the world: *Anoplolepis gracillipes* (Smith, 1857)- Yellow crazy ant (#6), *Linepithema humile* (Mayr, 1868)- Argentine ant (#48), *Pheidole megecephala* (Fabricius, 1793)- African big head ant (#68), *Solenopsis invicta* Buren, 1972- Red Imported Fire Ant (#86) and *Wasmannia auropunctata* (Roger, 1863)- Little fire ant (#100) (GISD 2023). Although research on invasive ants is abundant globally, there is a paucity of studies in the African context (Mothapo and Wossler 2017). Moreover, there is a dearth of information quantifying the presence and/or absence of invasive ant species on the continent. Recent work in Côte d'Ivoire traced invasive ants in urban settings and showed a record number of exotic and invasive species in urban, peri-urban and natural environments (Kouakou et al. 2018a, Kouakou et al. 2018b).

Africa, being mainly tropical, has been recognised as one of the hotspots for ant diversity (Ward 2000, Guénard et al. 2012). Within the tropical regions of Africa, especially West Africa, ant species richness appears to be comparatively lower than in other regions of similar latitude, but this may be due to lack of comprehensive sampling compared to other regions (Dunn et al. 2007, Guénard et al. 2012, Kouakou et al. 2018a, Kouakou et al. 2018b). Recent generic revisions seem to support the view that the Afrotropical fauna is widely underestimated (Gómez 2020). Since the year 2000, nine new genera have been described for the region and, in the 14 genera revised since 2000, the number of described species has increased from 92 to 214, a 133% increase (Gómez 2020).

Early ant-listing publications in Nigeria were published by Booker (1968), Eguagie (1971) and Adenuga (1975) as stated in Taylor (1977). In their studies of cocoa tree cultivars, Booker (1968) recorded 19 species and Eguagie (1971) recorded 27. The most comprehensive early ant collection in Nigeria was the one maintained in the Cocoa Research Institute of Nigeria (CRIN) Entomological Museum (158 species from 51 genera), mostly collected by Dr. Barry Bolton in 1969 (Taylor 1977). The first published comprehensive ant survey was carried out in 1976, where Dr. Brian Taylor collected ants from the Gambari Experimental Station of the Cocoa Research Institute of Nigeria in Ibadan and other cocoa growing areas of western Nigeria (Taylor 1976). The main purpose of this survey, which recorded 130 species, was to study the role of ants in the spread of black pod disease of cocoa (Taylor 1976, Taylor 1977, Taylor 1978, Taylor and Adedoyin 1978, Taylor 1979, Taylor 1980a, Taylor 1980b). Apart from the work done in the 1970s by Barry Bolton and Brian Taylor, no comprehensive published studies exist and there is a need for update of the checklists. Moreover, there have been no records of invasive ant species in Nigeria. Therefore, this study was carried out to ascertain the presence of invasive ants in Nigeria and to reassess the list of ant species in the current checklist.

## Materials and methods

### Sampling locations

The study locations are in Lagos and Oyo States, Nigeria. A large part of the sampling was conducted in Lagos State (Fig. 1 and Table 2), but an additional collection was made in the International Institute of Tropical Agriculture (IITA) Ibadan, Oyo State. The sampling locations in Lagos were: Lekki Conservation Center (LCC/NCF), Lekki Urban Forestry and Animal Shelter Initiatives (LUFASI), Omu Resort, Agbowa, Badagry, Ilogbo Eremi, Ilupeju in Mushin Local Government, Ketu in Kosofe Local Government, Ikotun in Alimosho Local Government, Victoria Garden City (VGC) and University of Lagos (UNILAG).

Table 1.

Current list of 14 tramp/exotic/species in Nigeria. Species with asterisk (\*) indicate a new addition.

Species	Purported (Putative) Native range	Status	References
<i>Cardiocondyla emeryi</i>	Sub-Saharan Africa	Native/Tramp	Seifert (2003), Wetterer (2012a)
<i>Monomorium floricola</i>	Tropical Asia	Exotic/Potential invasive	Abbott et al. (2006), Wetterer (2010a)
<i>Monomorium pharaonis</i>	Tropical Asia	Exotic/Potential invasive	Wetterer (2010c)
* <i>Nylanderia bourbonica</i>	Southern and South-East Asia	Exotic/Potential invasive	Williams and Lucky (2020)
<i>Paratrechina longicornis</i>	Indo-Pacific (South East Asia & Melanesia)	Exotic/Potential invasive	Wetterer (2008)
<i>Pheidole megacephala</i>	Sub-Saharan Africa	Native/Tramp	Wetterer (2012b)
* <i>Solenopsis globularia</i>	Neotropical & Nearctic	Exotic/Potential invasive	Wetterer (2019)
<i>Solenopsis geminata</i>	New World (South and Central America)	Exotic/Potential invasive	Wetterer (2011a)
<i>Tapinoma melanocephalum</i>	Indo-Pacific	Exotic/Potential invasive	Wetterer (2009a)
* <i>Tetramorium bicarinatum</i>	Indo-Pacific	Exotic/Potential invasive	Wetterer (2009c)
* <i>Tetramorium lanuginosum</i>	India, East Asia, Northern Australia and Western Oceania	Exotic/Potential invasive	Wetterer (2010b)
<i>Tetramorium simillimum</i>	Afrotropical region	Native/Tramp	Bolton (1980)

Species	Purported (Putative) Native range	Status	References
* <i>Trichomyrmex destructor</i>	North Africa, Middle East and South Asia	Exotic/Potential invasive	Wetterer (2009b)
* <i>Trichomyrmex mayri</i>	Indian Subcontinent	Exotic/Potential invasive	Bolton (1987), Borowiec and Salata (2019)

Table 2.

Description of collecting sites in Lagos State.

Locality code	Locality name	State	Habitat	Coordinates	Altitude (m)
1	Agbowa	Lagos	Agricultural Cassava farm, grassland	6.6608, 3.72519	10 m
2	Badagry	Lagos	Agricultural Cassava farm, grassland. Dominant Tree- <i>Cocos nucifera</i>	6.42682, 2.83925	10 m
3	Alimosho (Ikotun)	Lagos	Urban, Residential Area	6.57519, 3.27331	10 m
4	Faculty of Science, University of Lagos (UNILAG)	Lagos	Garden	6.51662, 3.39922	10 m
5	IITA Ibadan	Ibadan	Reserve/Urban	7.50121, 3.908	200 m
6	Ilogbo Eremi	Lagos	Agricultural Cassava farm, grassland.	6.50018, 2.97196	
7	Kosofe (Ketu)	Lagos	Urban, Residential Area	6.59126, 3.40238	10 m
8	LUFASI Nature park	Lagos	Reserve Area, Tropical grassland. Dominant Tree- Palm tree	6.46805, 3.65462	10 m
9	Mushin (Ilupeju)	Lagos	Urban, Residential Area	6.54909, 3.35996	10 m
10	NCF/LCC (Lekki Conservation Center)	Lagos	Reserve Area, Tropical grassland	6.43219, 3.53552	10 m
11	Omu Resort	Lagos	Reserve Area, Tropical grassland	6.49011, 3.75319	10 m
12	Victoria Garden City (VGC)	Lagos	Urban Residential Area	6.46048, 3.54931	10 m

## Ant sampling and identification

Ants sampling was done from 2018 to 2020, using three different sampling methods: pitfall traps, baiting (sardine, peanut butter and jam) and direct sampling (hand collection). Ants were collected from urban, agroecosystem (cassava plantation) and semi-natural areas (secondary forest). The samples were stored inside vials containing 75% alcohol. All collected ants were cleaned, sorted and identified initially to the genus level using a stereomicroscope and keys in Bolton (1994) and Fisher and Bolton (2016). Further identification to species level was conducted with keys available on Antwiki using the original scientific journals cited there. Identified material was compared with type images at Antweb ([www.antweb.org](http://www.antweb.org)) when available and distributions checked with Antmaps ([www.a](http://www.a)

[ntmaps.org](http://ntmaps.org)). Antmaps is the largest database of ant species, consisting of 1.72 million records extracted from over 8811 publications and 25 existing databases which are updated on a weekly basis (Guénard et al. 2017). Antweb is the main image database including photographs of type specimens for most of the described ant species, but also used to store records, natural and taxonomic history of every ant species. One hundred and thirty two scientific journals from these repositories were reviewed in order to establish the existing ant species in Nigeria. Voucher specimens are available in the Kiko Gómez Collection (KGAC) in Spain. All available information has been uploaded into the Antweb database for public access.

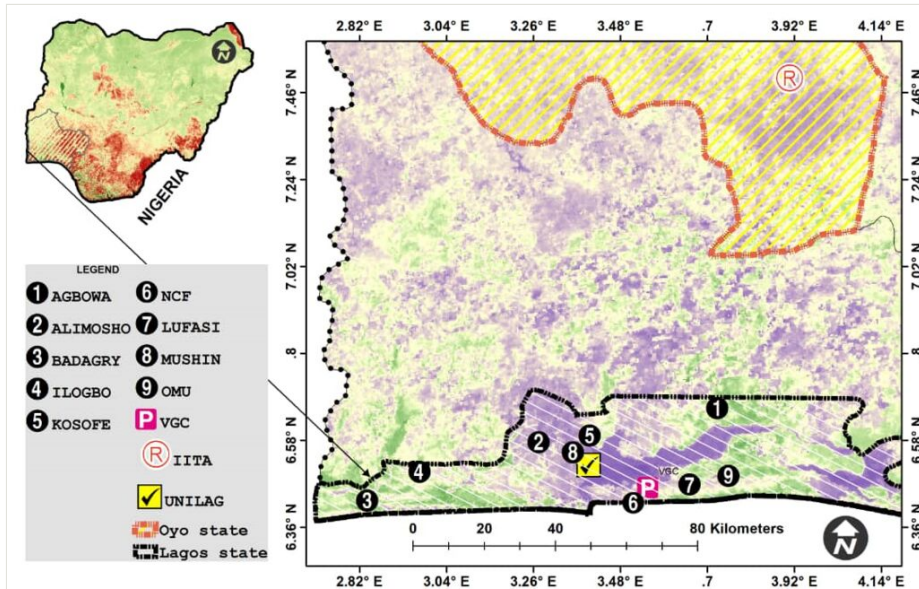


Figure 1. [doi](#)

Map of Lagos State and part of Oyo State in Nigeria showing the locations where ants were sampled for the current survey. Specific localities are indicated in Table 2.

We have identified four species to a subspecies status *Pheidole caffa senilifrons* Wheeler, 1922, *Lepisiota capensis laevis* (Santschi, 1913), *Crematogaster kneri pronotalis* Santschi, 1914 and *Pheidole excellens weissii* Santschi, 1910. We do not feel comfortable with the subgeneric names, but the current state of the taxonomy in these genera makes it impossible for us to judge the validity of these names. Identification has been done by comparing the material with available types in Antweb and, although adopting these names suggests that we agree with its validity as a good species, we prefer to wait until a thorough revision for the group is published. We recognise morphological differences between the types of the names we have adopted and the other subspecies, but they could be due to a number of reasons (regional or individual variation, for instance), so we refrain from modifying its status with the information we have gathered.

Below is the checklist of Nigerian ants. All the species collected in the present survey are denoted by asterisks, the ones with double asterisks (\*\*) being new records for Nigeria.

## A checklist of Nigerian ants

### Subfamily Amblyoponinae

#### *Xymmer muticus* (Santschi, 1914)

**Notes:** (Santschi 1914, Wheeler 1922, Lévieux 1972, Gotwald and Lévieux 1972, Brown 1960, Medler 1980, Yoshimura and Fisher 2012) .

### Subfamily Apomyrminae

#### *Apomyrma stygia* Brown et al., 1971

**Notes:** (Medler 1980)

### Subfamily Dolichoderinae

#### *Axinidris denticulata* (Wheeler, 1922)

**Notes:** (Taylor 1978)

#### *Axinidris kinoin* Shattuck, 1991

**Notes:** (Shattuck 1991, Shattuck 1994, Snelling 2007)

#### \* *Tapinoma carinotum* Weber, 1943

**Notes:** (Taylor et al. 2018)

New Records: 1

#### *Tapinoma lugubre* Santschi, 1917

**Notes:** (Braet and Taylor 2008)

#### *Tapinoma melanocephalum* (Fabricius, 1793)

**Notes:** (Taylor 1978, Medler 1980, Wetterer 2009b)

***Technomyrmex andrei* Emery, 1899**

Notes: (Medler 1980)

***Technomyrmex moerens* Santschi, 1913**

Notes: (Bolton 2007)

***Technomyrmex nigriventris* Forel, 1910**

Notes: (Bolton 2007)

***Technomyrmex parviflavus* Bolton, 2007**

Notes: (Bolton 2007)

***Technomyrmex semiruber* Emery, 1899**

Notes: (Braet and Taylor 2008)

**Subfamily Dorylinae*****Aenictus decolor* (Mayr, 1879)**

Notes: (Wheeler 1922, Baroni Urbani 1977a, Gotwald and Leroux 1980, Medler 1980)

***Aenictus guineensis* Santschi, 1924**

Notes: (Medler 1980, Taylor 1980a, Taylor et al. 2018)

***Aenictus vagans* Santschi, 1924**

Notes: (Baroni Urbani 1977a)

***Dorylus affinis* Shuckard, 1840**

Notes: (Medler 1980, Ewuim 2007)

***Dorylus atratus* Shuckard, 1840**

Notes: (Emery 1895, Wheeler 1922, Medler 1980, Borowiec 2016)



**\*\* *Dorylus braunsi* Emery, 1895**

**Notes:** New record for Nigeria

New Records: 2, 9

***Dorylus depilis* Emery, 1895**

**Notes:** (Wheeler 1922, Medler 1980)

***Dorylus emeryi* Mayr, 1896**

**Notes:** (Medler 1980)

***Dorylus fimbriatus* (Shuckard, 1840)**

**Notes:** (Medler 1980, Taylor 1980a)

***Dorylus fulvus* (Westwood, 1839)**

**Notes:** (Medler 1980)

***Dorylus gribodoi* Emery, 1892**

**Notes:** (Wheeler 1922, Medler 1980, Schöning et al. 2008)

***Dorylus helvolus* (Linnaeus, 1764)**

**Notes:** (Wheeler 1922, Medler 1980, Taylor 1980a, Taylor et al. 2018)

***Dorylus kohli* Wasmann, 1904**

**Notes:** (Medler 1980, Taylor 1980a, Taylor et al. 2018)

***Dorylus nigricans* Wasmann, 1904**

**Notes:** (Emery 1910, Wheeler 1922, Taylor 1980a, Medler 1980, Nwosu and Lawal 2010, Ewuim et al. 2011)

***Dorylus nigricans* subsp. *burmeisteri* (Shuckard, 1840)**

**Notes:** (Santschi 1914, Wheeler 1922)

***Dorylus nigricans* subsp. *rubellus* (Savage, 1849)**

Notes: (Schöning and Moffett 2007)

***Dorylus rufescens* Santschi, 1915**

Notes: (Menozzi 1926)

***Dorylus savagei* Emery, 1895**

Notes: (Medler 1980)

***Dorylus savagei* subsp. *mucronatus* Emery, 1899**

Notes: (Emery 1899, Forel 1901, Emery 1910, Wheeler 1922, Borowiec 2016)

***Dorylus spininodis* Emery, 1901**

Notes: (Santschi 1914, Wheeler 1922, Medler 1980)

***Lioponera foreli* (Santschi, 1914)**

Notes: (Taylor 1976, Medler 1980)

***Parasyscia cribrinodis* Emery, 1899**

Notes: (Taylor 1976)

***Parasyscia sudanensis* (Weber, 1942)**

Notes: (Brown 1975)

***Simopone conradti* Emery, 1899**

Notes: (Bolton and Fisher 2012)

***Zasphinctus rufiventris* (Santschi, 1915)**

Notes: (Medler 1980)

## Subfamily Formicinae

### ***Camponotus aberrans* Mayr, 1895**

Notes: (Taylor 1978)

### **\* *Camponotus acvapimensis* Mayr, 1862**

Notes: (Forel 1910, Forel 1913, Wheeler 1922, Menozzi 1926, Brown 1956, Taylor 1978, Taylor and Adedoyin 1978, Medler 1980, Ewuim 2007, Ewuim et al. 2011)

New Records: 1, 2, 3, 5, 7, 8, 10

### ***Camponotus barbarossa* Emery, 1920**

Notes: (Taylor 1978)

### ***Camponotus bayeri* Forel, 1913**

Notes: (Weber 1964)

### ***Camponotus bituberculatus* André, 1889**

Notes: (Santschi 1915)

### ***Camponotus brutus* Forel, 1886**

Notes: (Taylor 1978, Medler 1980)

### ***Camponotus chrysurus* Gerstäcker, 1871**

Notes: (Medler 1980)

### ***Camponotus compressiscapus* André, 1889**

Notes: (Santschi 1915)

### ***Camponotus congolensis* Emery, 1899**

Notes: (Bernard 1953)

### **\* *Camponotus flavomarginatus* Mayr, 1862**

Notes: (Taylor 1978, Medler 1980)

New Records: 4, 5, 10

***Camponotus foraminosus* Forel, 1879**

**Notes:** (Santschi 1915, Wheeler 1922, Medler 1980)

***Camponotus foraminosus* subsp. *deductus* Santschi, 1915**

**Notes:** (Santschi 1915 as s. str.; Bolton 1975b, Taylor 1978, Taylor and Adedoyin 1978, Medler 1980 as ssp. *dorsalis*)

**\* *Camponotus haereticus* Santschi, 1914**

**Notes:** (Santschi 1914, Santschi 1915, Wheeler 1922)

New Records: 1, 6, 8, 10

**\* *Camponotus maculatus* (Fabricius, 1782)**

**Notes:** (Santschi 1914, Santschi 1915, Wheeler 1922, Prins 1963, Bolton 1969, Taylor 1978, Medler 1980, Ewuim 2007, Ewuim et al. 2011)

New Records: 2, 3, 5, 6, 8, 9, 10, 11

***Camponotus perrisii* Forel, 1886**

**Notes:** (Medler 1980, Ewuim 2007)

***Camponotus perrisii* subsp. *nigeriensis* Santschi, 1914**

**Notes:** (Santschi 1914, Wheeler 1922)

**\*\* *Camponotus schoutedeni* Forel, 1911**

**Notes:** New record for Nigeria

New Records: 1, 2, 10

**\* *Camponotus sericeus* (Fabricius, 1798)**

**Notes:** (Wheeler 1922, Prins 1963, Prins 1964, Medler 1980)

New Records: 6, 10

***Camponotus solon* Forel, 1886**

Notes: (Medler 1980)

***Camponotus solon* subsp. *chiton* Emery, 1925**

Notes: (Wheeler 1922)

***Camponotus vestitus* (Smith, 1858)**

Notes: (Medler 1980)

***Camponotus vestitus* subsp. *comptus* Santschi, 1926**

Notes: (Santschi 1937a)

**\* *Camponotus vividus* (Smith, 1858)**

Notes: (Wheeler 1922, Taylor 1978, Taylor and Adedoyin 1978, Medler 1980)

New Records: 4, 5, 6, 8, 10

***Camponotus vividus* subsp. *meinerti* Forel, 1886**

Notes: (Santschi 1914)

***Cataglyphis bicolor* (Fabricius, 1793)**

Notes: (Medler 1980)

***Cataglyphis bicolor* subsp. *seticornis* (Emery, 1906)**

Notes: (Medler 1980)

**\*\* *Lepisiota ambigua* (Santschi, 1935)**

Notes: New record for Nigeria

New Records: 6

***Lepisiota cacozele* (Stitz, 1916)**

Notes: (Santschi 1914, Wheeler 1922)

**\* *Lepisiota canescens* (Emery, 1897)**

Notes: (Santschi 1914, Wheeler 1922)

New Records: 1, 2, 4, 5, 6, 8, 10

***Lepisiota capensis* (Mayr, 1862)**

Notes: (Taylor 1978, Taylor and Adedoyin 1978, Medler 1980)

***Lepisiota capensis* subsp. *guineensis* (Mayr, 1902)**

Notes: (Taylor et al. 2018)

**\*\* *Lepisiota capensis* subsp. *laevis* (Santschi, 1913)**

Notes: New record for Nigeria:

New Records: 1, 2, 6, 8, 9, 10, 11

***Lepisiota incisa* (Forel, 1913)**

Notes: (Medler 1980)

***Lepisiota monardi* (Santschi, 1930)**

Notes: (Taylor et al. 2016)

***Lepisiota spinosior* (Santschi, 1930)**

Notes: (Taylor 1978, Medler 1980)

***Lepisiota validiuscula* (Emery, 1897)**

Notes: (Taylor et al. 2018)

***Nylanderia boltoni* LaPolla et al., 2011**

Notes: (LaPolla et al. 2011)

**\*\* *Nylanderia bourbonica* (Forel, 1886)**

Notes: New record for Nigeria.

New Records: 2, 4, 8, 9, 11

***Nylanderia lepida* (Santschi, 1915)**

Notes: (LaPolla et al. 2011)

***Nylanderia scintilla* LaPolla et al., 2011**

Notes: (LaPolla et al. 2011)

**\*\* *Nylanderia umbella* LaPolla et al., 2011**

Notes: New record for Nigeria.

New Records: 1, 2, 8, 9, 10, 11, 12

**\* *Oecophylla longinoda* (Latreille, 1802)**

Notes: (Wheeler 1922, Menozzi 1926, Taylor 1978, Taylor and Adedoyin 1978, Medler 1980, Ewuim 2007, Badejo et al. 2011, Ewuim et al. 2011, Wetterer 2017a, Wetterer 2017b)

New Records: 1, 2, 4, 5, 8, 11

***Oecophylla longinoda* subsp. *fusca* Emery, 1899**

Notes: (Wheeler 1922, Menozzi 1926, Cole and Jones 1948)

***Paraparatrechina albipes* (Emery, 1899)**

Notes: (LaPolla et al. 2010)

***Paraparatrechina gnoma* LaPolla & Cheng, 2010**

Notes: (LaPolla et al. 2010)

***Paraparatrechina subtilis* (Santschi, 1920)**

Notes: (Braet and Taylor 2008)

**\* *Paratrechina longicornis* (Latreille, 1802)**

Notes: (Santschi 1914, Wheeler 1922, Medler 1980, Wetterer 2008)

New Records: 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

***Plagiolepis alluaudi* Emery, 1894**

Notes: (Wetterer 2013b)

***Plagiolepis brunni* Mayr, 1895**

Notes: (Taylor 1978, Medler 1980)

***Polyrhachis concava* André, 1889**

Notes: (Taylor 1978)

***Polyrhachis decemdentata* André, 1889**

Notes: (Bolton 1973b, Taylor 1978, Medler 1980)

***Polyrhachis fissa* Mayr, 1902**

Notes: (Medler 1980)

***Polyrhachis laboriosa* Smith, 1858**

Notes: (Santschi 1914, Wheeler 1922, Bolton 1973b, Taylor 1978, Medler 1980)

**\* *Polyrhachis militaris* (Fabricius, 1782)**

Notes: (Forel 1901, Wheeler 1922, Bernard 1953, Bolton 1973b, Taylor 1978, Medler 1980, Rigato 2016)

New Records: 8

***Polyrhachis monista* Santschi, 1910**

Notes: (Santschi 1914, Bolton 1973b, Taylor 1978, Medler 1980)

***Polyrhachis otleti* Forel, 1916**

Notes: (Bolton 1973b, Taylor 1978, Medler 1980)

***Polyrhachis phidias* Forel, 1910**

Notes: (Taylor 1978)



***Polyrhachis rufipalpis* Santschi, 1910**

Notes: (Taylor 1978)

***Polyrhachis schistacea* (Gerstäcker, 1859)**

Notes: (Bolton 1973b, Medler 1980)

***Polyrhachis viscosa* Smith, 1858**

Notes: (Bolton 1973b, Medler 1980)

***Polyrhachis weissii* Santschi, 1910**

Notes: (Taylor 1978)

**\*\* *Tapinolepis pernix* (Viehmeyer, 1923)**

Notes: New record for Nigeria

New Records: 2

**Subfamily Leptanillinae*****Leptanilla africana* Baroni Urbani, 1977**

Notes: (Zolessi and Abenante 1973, Baroni Urbani 1977b, Boudinot 2015)

**Subfamily Myrmicinae****\* *Atopomyrmex cryptocerooides* Emery, 1892**

Notes: (Santschi 1914, Wheeler 1922)

New Records: 5, 6

***Atopomyrmex mocquerysi* André, 1889**

Notes: (Taylor 1980a, Medler 1980, Bolton 1981a)

***Baracidris meketra* Bolton, 1981**

Notes: (Bolton 1981a, Fernández 2003)

***Bondroitia lujae* (Forel, 1909)**

Notes: (Taylor 1980a)

***Calyptomyrmex barak* Bolton, 1981**

Notes: (Bolton 1981b)

***Calyptomyrmex nummuliticus* Santschi, 1914**

Notes: (Bolton 1981b)

**\* *Cardiocondyla emeryi* Forel, 1881**

Notes: (Taylor 1979, Medler 1980, Bolton 1982, Kugler 1984, Seifert 2003, Wetterer 2012a, Mohammadi et al. 2012)

New Records: 1, 2, 3, 4, 8, 10

***Cardiocondyla neferka* Bolton, 1982**

Notes: (Seifert 2003)

**\*\* *Cardiocondyla sekhemka* Bolton, 1982**

Notes: New record for Nigeria

New Records: 2

**\* *Cardiocondyla shuckardi* Forel, 1891**

Notes: (Bolton 1982)

New Records: 1, 2, 6, 8, 10, 11

**\*\* *Cardiocondyla weserka* Bolton, 1982**

Notes: New record for Nigeria

New Records: 2

**\* *Cardiocondyla yoruba* Rigato, 2002**

Notes: (Seifert 2003)

New Records: 1, 2, 3, 6, 7, 9, 12

***Cardiocondyla zoserka* Bolton, 1982**

Notes: (Bolton 1982, Heinze 2019)

***Carebara distincta* (Bolton & Belshaw, 1993)**

Notes: (Bolton and Belshaw 1993)

***Carebara silvestrii* (Santschi, 1914)**

Notes: (Medler 1980, Taylor 1980a)

***Carebara termitolestes* (Wheeler, 1918)**

Notes: (Bolton 1969, Taylor 1980a)

***Cataulacus bequaerti* Forel, 1913**

Notes: (Bolton 1974a)

***Cataulacus boltoni* Snelling, 1979**

Notes: (Snelling 1979, Bolton 1982)

***Cataulacus brevisetosus* Forel, 1901**

Notes: (Bolton 1974a, Taylor 1979, Medler 1980)

***Cataulacus difficilis* Santschi, 1916**

Notes: (Taylor 1979)

***Cataulacus egenus* Santschi, 1911**

Notes: (Bolton 1974a, Taylor 1979, Medler 1980, Bolton 1982)

**\* *Cataulacus guineensis* Smith, 1853**

Notes: Santschi 1914, Wheeler 1922, Bolton 1974a, Taylor and Adedoyin 1978, Taylor 1979, Medler 1980, Bolton 1982)

New Records: 10

***Cataulacus huberi* André, 1890**

Notes: (Bolton 1974a, Medler 1980, Bolton 1982)

**\* *Cataulacus lujae* Forel, 1911**

Notes: (Bolton 1982)

New Records: 1

***Cataulacus mocquerysi* André, 1889**

Notes: (Bolton 1974a, Taylor 1979, Medler 1980, Bolton 1982)

***Cataulacus moloch* Bolton, 1982**

Notes: (Bolton 1982)

***Cataulacus pullus* Santschi, 1910**

Notes: (Bernard 1953)

***Cataulacus pygmaeus* André, 1890**

Notes: (Taylor 1979, Medler 1980)

***Cataulacus taylori* Bolton, 1982**

Notes: (Bolton 1982)

***Cataulacus traegaordhi* Santschi, 1914**

Notes: (Bolton 1982)

***Cataulacus vorticus* Bolton, 1974**

Notes: (Bolton 1974a, Taylor 1979, Medler 1980, Bolton 1982)

**\* *Cataulacus weissii* Santschi, 1913**

Notes: (Taylor 1979)

New Records: 1

***Crematogaster africana* Mayr, 1895**

**Notes:** (Forel 1910, Wheeler 1922, Soulié and Dicko 1965, Adenuga 1975, Taylor and Adedoyin 1978, Taylor 1979, Medler 1980, Nwosu and Lawal 2010)

***Crematogaster africana* subsp. *alligatrix* Forel, 1911**

**Notes:** (Forel 1913, Wheeler 1922, Soulié and Dicko 1965)

***Crematogaster batesi* Forel, 1911**

**Notes:** (Wheeler 1922, Soulié and Dicko 1965)

***Crematogaster bequaerti* Forel, 1913**

**Notes:** (Taylor and Adedoyin 1978, Taylor 1979, Medler 1980)

***Crematogaster brunneipennis* André, 1890**

**Notes:** (Santschi 1933, Taylor et al. 2018)

***Crematogaster brunneipennis* subsp. *yorubosa* Santschi, 1933**

**Notes:** (Santschi 1933)

***Crematogaster buchneri* Forel, 1894**

**Notes:** (Menozzi 1926, Taylor 1979, Medler 1980)

***Crematogaster buchneri* subsp. *graeteri* Forel, 1916**

**Notes:** (Forel 1913)

***Crematogaster castanea* Smith, 1858**

**Notes:** (Medler 1980)

***Crematogaster clariventris* Mayr, 1895**

**Notes:** (Forel 1913, Wheeler 1922, Soulié and Dicko 1965, Taylor and Adedoyin 1978, Taylor 1979, Medler 1980)

**\* *Crematogaster depressa* Latreille, 1802**

**Notes:** (Santschi 1914, Wheeler 1922, Soulié and Dicko 1965, Taylor 1979, Medler 1980)

New Records: 4, 10, 11

***Crematogaster excisa* Mayr, 1895**

**Notes:** (Taylor et al. 2018)

***Crematogaster gabonensis* Emery, 1899**

**Notes:** (Taylor and Adedoyin 1978, Taylor 1979, Medler 1980, Andersen 1997)

**\* *Crematogaster gambiensis* André, 1889**

**Notes:** (Taylor 1979, Medler 1980)

New Records: 4, 5, 12

***Crematogaster gerstaeckeri* Dalla Torre, 1892**

**Notes:** (Taylor 1979, Medler 1980)

***Crematogaster kneri* Mayr, 1862**

**Notes:** (Taylor 1979, Medler 1980)

**\* *Crematogaster kneri* subsp. *pronotalis* Santschi, 1914**

**Notes:** Santschi 1914, Wheeler 1922, Soulié and Dicko 1965)

New Records: 1, 2

***Crematogaster kohli* subsp. *winkleri* Forel, 1909**

**Notes:** (Forel 1913, Wheeler 1922, Soulié and Dicko 1965)

**\*\* *Crematogaster lamottei* Bernard, 1953**

**Notes:** New record for Nigeria

New Records: 5

***Crematogaster laurenti* Forel, 1909**

Notes: (Wheeler 1922, Soulié and Dicko 1965)

***Crematogaster luctans* Forel, 1907**

Notes: (Adenuga 1975)

***Crematogaster nigeriensis* Santschi, 1914**

Notes: (Santschi 1914, Wheeler 1922, Soulié and Dicko 1965, Medler 1980, Taylor et al. 2018)

***Crematogaster solenopsides* subsp. *costeboriensis* Santschi, 1919**

Notes: (Taylor et al. 2018)

***Crematogaster stadelmanni* subsp. *dolichocephala* Santschi, 1911**

Notes: (Santschi 1914, Wheeler 1922, Soulié and Dicko 1965)

***Crematogaster stigmata* Santschi, 1914**

Notes: (Santschi 1914, Wheeler 1922, Soulié and Dicko 1965)

**\* *Crematogaster striatula* Emery, 1892**

Notes: (Adenuga 1975, Taylor 1979, Medler 1980)

New Records: 8

***Crematogaster wellmani* Forel, 1909**

Notes: (Forel 1910, Wheeler 1922, Soulié and Dicko 1965, Adenuga 1975, Taylor 1979, Medler 1980)

***Crematogaster zavattarii* Menozzi, 1926**

Notes: (Menozzi 1926, Taylor et al. 2018)

***Dicroaspis cryptocera* Emery, 1908**

Notes: (Taylor 1979, Medler 1980)

***Melissotarsus beccarii* Emery, 1877**

Notes: (Medler 1980)

***Meranoplus inermis* Emery, 1895**

Notes: (Bolton 1981b)

***Meranoplus nanus* André, 1892**

Notes: (Taylor 1979, Medler 1980)

***Messor galla* (Mayr, 1904)**

Notes: (Medler 1980, Bolton 1982)

***Messor regalis* (Emery, 1892)**

Notes: (Emery 1892, Santschi 1914, Wheeler 1922, Bolton 1982, Medler 1980)

**\*\* *Monomorium* sp1**

Notes: New Species - to be described in another journal

New Records: 7, 8, 11

**\*\* *Monomorium afrum* André, 1884**

Notes: New record for Nigeria

New Records: 1, 2, 6

**\* *Monomorium bicolor* Emery, 1877**

Notes: (Taylor 1980a, Medler 1980, Bolton 1987)

New Records: 1, 2, 3, 4, 6, 7, 8, 9, 10, 12

***Monomorium egens* Forel, 1910**

Notes: (Bolton 1987)



**\* *Monomorium exiguum* Forel, 1894**

Notes: (Bolton 1987, Sharaf et al. 2018)

New Records: 1, 2, 5, 8, 9, 10

**\* *Monomorium floricola* (Jerdon, 1851)**

Notes: (Santschi 1914, Wheeler 1922, Medler 1980, Taylor 1980a, Bolton 1987, Wetterer 2010a)

New Records: 2, 4, 8, 10, 11

***Monomorium invidium* Bolton, 1987**

Notes: (Bolton 1987)

**\* *Monomorium pharaonis* (Linnaeus, 1758)**

Notes: (Medler 1980, Bolton 1987)

New Records: 5, 10

**\* *Monomorium rosae* Santschi, 1920**

Notes: (Bolton 1987)

New Records: 1, 2, 10

**\*\* *Monomorium vonatu* Santschi, 1930**

Notes: New record for Nigeria

New Records: 2

***Monomorium vaguum* Bolton, 1987**

Notes: (Bolton 1987)

***Myrmicaria fumata* Santschi, 1916**

Notes: (Santschi 1933)

***Myrmicaria natalensis* subsp. *eumenoides* (Gerstäcker, 1859)**

Notes: (Medler 1980)

***Myrmecaria striata* Stitz, 1911**

Notes: (Taylor and Adedoyin 1978, Taylor 1980a, Medler 1980, Ewuim 2007)

**\* *Nesomyrmex angulatus* (Mayr, 1862)**

Notes: (Bolton 1982, Hita Garcia et al. 2017)

New Records: 1

***Pheidole aurivillii* subsp. *kasaiensis* Forel, 1911**

Notes: (Forel 1913, Wheeler 1922)

**\*\* *Pheidole bequaerti* Forel, 1913**

Notes: New record for Nigeria

New Records: 2, 6, 9, 10

***Pheidole caffra* Emery, 1895**

Notes: (Medler 1980)

**\*\* *Pheidole caffra* subsp. *senilifrons* Wheeler, 1922**

Notes: New record for Nigeria

New Records: 3, 5, 8, 11, 12

***Pheidole crassinoda* Emery, 1895**

Notes: (Medler 1980, Taylor 1980a, Ewuim et al. 2011)

**\* *Pheidole excellens* subsp. *weissi* Santschi, 1910**

Notes: (Santschi 1914, Wheeler 1922)

New Records: 1, 2, 3, 4, 5, 6, 9

***Pheidole liengmei* Forel, 1894**

Notes: (Medler 1980)

**\* *Pheidole megacephala* (Fabricius, 1793)**

**Notes:** (Adenuga 1975, Taylor and Adedoyin 1978, Medler 1980, Taylor 1980a, Wetterer 2012c)

New Records: 2, 3, 5, 7, 8, 9, 10, 11, 12

***Pheidole megacephala* subsp. *costauriensis* (Fabricius, 1793)**

**Notes:** (Santschi 1914, Wheeler 1922, Braet and Taylor 2008)

***Pheidole megacephala* subsp. *impressifrons* Wasmann, 1905**

**Notes:** (Forel 1913, Wheeler 1922, Prins 1963, Prins 1964)

***Pheidole megacephala* subsp. *melancholica* Santschi, 1912**

**Notes:** (Bernard 1953)

***Pheidole minima* Mayr, 1901**

**Notes:** (Taylor and Adedoyin 1978, Taylor 1980a)

***Pheidole minima* subsp. *catella* Santschi, 1914**

**Notes:** (Santschi 1914, Wheeler 1922)

***Pheidole nigeriensis* Santschi, 1914**

**Notes:** (Santschi 1914, Wheeler 1922)

***Pheidole semidea* Fischer et al., 2012**

**Notes:** (Fischer et al. 2012)

**\* *Pheidole speculifera* Emery, 1877**

**Notes:** (Medler 1980, Taylor 1980a)

New Records: 1, 5

***Pristomyrmex orbiceps* (Santschi, 1914)**

**Notes:** (Bolton 1981a, Wang 2003)

***Solenopsis geminata* (Fabricius, 1804)**

Notes: (Bolton 1973a, Medler 1980, Taylor 1980a, Wetterer 2011a)

**\*\* *Solenopsis globularia* (Smith, 1858)**

Notes: New record for Nigeria

New Records: 3, 7, 8, 9, 10, 11

***Solenopsis orbuloides* André, 1890**

Notes: (Santschi 1914, Wheeler 1922)

***Strumigenys cacaoensis* Bolton, 1971**

Notes: (Taylor 1979, Medler 1980, Bolton 1983, Bolton 2000)

**\*\* *Strumigenys exunca* (Bolton, 2000)**

Notes: New record for Nigeria

New Records: 2

***Strumigenys hastyla* Bolton, 1983**

Notes: (Bolton 1983)

***Strumigenys laticeps* (Brown, 1962)**

Notes: (Brown 1962, Bolton 1972, Medler 1980, Bolton 1983, Bolton 2000)

***Strumigenys ludovici* Forel, 1904**

Notes: (Taylor 1979, Bolton 1983, Bolton 2000)

***Strumigenys lujae* Forel, 1902**

Notes: (Medler 1980, Bolton 1983)

***Strumigenys malaplax* (Bolton, 1983)**

Notes: (Bolton 1983)

***Strumigenys maynei* Forel, 1916**

Notes: (Taylor 1979, Medler 1980, Bolton 1983)

***Strumigenys ninda* (Bolton, 1983)**

Notes: (Bolton 1983, Bolton 2000)

***Strumigenys pallestes* Bolton, 1971**

Notes: (Taylor 1979, Medler 1980, Bolton 1983)

**\* *Strumigenys petiolata* Bernard, 1953**

Notes: (Bolton 1983, Bolton 2000)

New Records: 2, 8

***Strumigenys rogeri* Emery, 1890**

Notes: (Taylor 1979, Bolton 1983, Wetterer 2012b)

**\* *Strumigenys rufobrunea* Santschi, 1914**

Notes: (Santschi 1914, Wheeler 1922, Brown 1954, Taylor 1979, Medler 1980, Bolton 1983)

New Records: 1

***Strumigenys scotti* Forel, 1912**

Notes: (Taylor 1979, Medler 1980)

***Strumigenys simoni* Emery, 1895**

Notes: (Santschi 1914, Wheeler 1922, Brown 1952, Bolton 1983, Bolton 2000)

***Strumigenys vazerka* Bolton, 1983**

Notes: (Bolton 1983)

***Syllophopsis cryptobia* Santschi, 1921**

Notes: (Bolton 1987, Sharaf and Aldawood 2013)

***Terataner elegans* Bernard, 1953**

Notes: (Bolton 1981a)

***Terataner luteus* (Emery, 1899)**

Notes: (Medler 1980)

***Terataner piceus* Menozzi, 1942**

Notes: (Bolton 1981a)

**\* *Tetramorium aculeatum* (Mayr, 1866)**

Notes: (Wheeler 1922, Menozzi 1926, Taylor and Adedoyin 1978, Taylor 1979, Bolton 1980, Medler 1980)

New Records: 5

***Tetramorium africanum* (Mayr, 1866)**

Notes: (Bolton 1980)

**\* *Tetramorium angulinode* Santschi, 1910**

Notes: (Bolton 1980)

New Records: 1, 2, 6, 8

***Tetramorium asetyum* Bolton, 1980**

Notes: (Bolton 1980)

**\* *Tetramorium ataxium* Bolton, 1980**

Notes: (Bolton 1980)

New Records: 8

***Tetramorium bellicosum* Bolton, 1980**

Notes: (Bolton 1980)

**\*\* *Tetramorium bicarinatum* (Nylander, 1846)**

**Notes:** New record for Nigeria

New Records: 3

***Tetramorium boltoni* Hita Garcia et al., 2010**

**Notes:** (Hita Garcia et al. 2010, Hita Garcia and Fisher 2014a)

***Tetramorium brevispinosum* (Stitz, 1910)**

**Notes:** (Bolton 1976)

***Tetramorium caldarium* (Roger, 1857)**

**Notes:** (Bolton 1980, Wetterer and Hita Garcia 2015)

**\* *Tetramorium calinum* Bolton, 1980**

**Notes:** (Bolton 1980)

New Records: 1

**\*\* *Tetramorium cristatum* Stitz, 1910**

**Notes:** New record for Nigeria

New Records: 1

***Tetramorium critchleyi* (Bolton, 1976)**

**Notes:** (Bolton 1976, Bolton 1986)

***Tetramorium delagoense* Forel, 1894**

**Notes:** (Bolton 1980)

***Tetramorium dumezi* Menozzi, 1942**

**Notes:** (Bolton 1980)

***Tetramorium dysderke* Bolton, 1980**

**Notes:** (Bolton 1980)

**\*\* *Tetramorium edouardi* Forel, 1894**

Notes: New record for Nigeria

New Records: 1, 6

**\* *Tetramorium eminii* (Forel, 1894)**

Notes: (Bolton 1976)

New Records: 2

**\*\* *Tetramorium ericae* Arnold, 1917**

Notes: New record for Nigeria

New Records: 2

***Tetramorium flavithorax* (Santschi, 1914)**

Notes: (Bolton 1980, Hita Garcia et al. 2010)

**\*\* *Tetramorium furtivum* (Arnold, 1956)**

Notes: New record for Nigeria

New Records: 8, 10

***Tetramorium granulatum* Arnold, 1956**

Notes: (Bolton 1980, Taylor et al. 2018)

***Tetramorium guineense* (Bernard, 1953)**

Notes: (Bolton 1980, Hita Garcia et al. 2010, Hita Garcia and Fisher 2014a)

***Tetramorium intonsum* Bolton, 1980**

Notes: (Bolton 1980)

***Tetramorium jugatum* Bolton, 1980**

Notes: (Bolton 1980)



***Tetramorium khyarum* Bolton, 1980**

Notes: (Bolton 1980, Sharaf and Al-Zailaie 2006)

**\*\* *Tetramorium lanuginosum* Mayr, 1870**

Notes: New record for Nigeria

New Records: 2, 7

**\* *Tetramorium legone* Bolton, 1980**

Notes: (Bolton 1980)

New Records: 1

***Tetramorium longicorne* Forel, 1907**

Notes: (Bolton 1980)

***Tetramorium lucayanum* Wheeler, 1905**

Notes: (Santschi 1914, Wheeler 1922, Brown 1964, Taylor 1980a, Bolton 1980, Wetterer 2011b)

***Tetramorium minimum* (Bolton, 1976)**

Notes: (Bolton 1976)

***Tetramorium opacum* (Forel, 1909)**

Notes: (Medler 1980)

**\* *Tetramorium quadridentatum* Stitz, 1910**

Notes: (Bolton 1980)

New Records: 10

***Tetramorium raptor* Hita Garcia & Fisher, 2014**

Notes: (Medler 1980, Taylor 1980a, Hita Garcia and Fisher 2014b; as *decem*)

***Tetramorium rubrum* Hita Garcia et al., 2010**

**Notes:** (Hita Garcia et al. 2010)

**\* *Tetramorium sericeiventre* Emery, 1877**

**Notes:** (Santschi 1914, Wheeler 1922, Bolton 1980, Medler 1980, Taylor 1980a)

New Records: 1, 2, 3, 6, 7, 8, 10

**\* *Tetramorium simillimum* (Smith, 1851)**

**Notes:** (Santschi 1914, Wheeler 1922, Bolton 1980)

New Records: 1, 2, 3, 6, 7, 8, 10, 11

**\* *Tetramorium uelense* Santschi, 1923**

**Notes:** (Longhurst et al. 1979, Hita Garcia and Fisher 2014b)

New Records: 1

***Tetramorium wadje* Bolton, 1980**

**Notes:** (Bolton 1980)

**\*\* *Tetramorium xuthum* Bolton, 1980**

**Notes:** New record for Nigeria

New Records: 6

**\* *Tetramorium zapyrum* Bolton, 1980**

**Notes:** (Bolton 1980)

New Records: 1, 6, 8

***Trichomyrmex abyssinicus* (Forel, 1894)**

**Notes:** (Bolton 1987, Radchenko 1997, Rigato 2002, Sharaf et al. 2016)

**\*\* *Trichomyrmex destructor* (Jerdon, 1851)**

**Notes:** New record for Nigeria

New Records: 2, 9, 11

**\*\* *Trichomyrmex mayri* (Forel, 1902)**

Notes: New record for Nigeria

New Records: 8

**Subfamily Ponerinae**

***Anochetus africanus* (Mayr, 1865)**

Notes: (Taylor 1976, Medler 1980)

***Anochetus bequaerti* Forel, 1913**

Notes: (Taylor 1976, Medler 1980)

***Anochetus fuliginosus* Arnold, 1948**

Notes: (Brown 1978)

***Anochetus katonae* Forel, 1907**

Notes: (Santschi 1914, Wheeler 1922, Medler 1980)

***Anochetus pellucidus* Emery, 1902**

Notes: (Taylor 1976, Brown 1978, Medler 1980)

***Anochetus punctaticeps* Mayr, 1901**

Notes: (Taylor 1976, Medler 1980)

***Anochetus siphneus* Brown, 1978**

Notes: (Brown 1978)

***Anochetus talpa* Forel, 1901**

Notes: (Santschi 1914, Wheeler 1922, Medler 1980)

***Asphinctopone silvestrii* Santschi, 1914**

**Notes:** (Santschi 1914, Wheeler 1922, Weber 1949, Lévieux 1972, Medler 1980, Bolton and Fisher 2008b)

***Bothroponera ryderae* Joma & Mackay, 2017**

**Notes:** (Joma and MacKay 2017)

**\* *Bothroponera silvestrii* (Santschi, 1914)**

**Notes:** (Taylor 1976, Joma and MacKay 2017)

New Records: 8

***Bothroponera soror* (Emery, 1899)**

**Notes:** (Medler 1980)

**\* *Brachyponera sennaarensis* (Mayr, 1862)**

**Notes:** (Santschi 1914, Wheeler 1922, Prins 1963, Prins 1964, Taylor 1976, Medler 1980, Rafinejad et al. 2009, Wetterer 2013a)

New Records: 2, 3, 5, 7, 8, 10

***Centromyrmex sellaris* Mayr, 1896**

**Notes:** (Taylor 1976, Bolton and Fisher 2008a)

***Euponera brunoi* (Forel, 1913)**

**Notes:** (Santschi 1914, Wheeler 1922, Brown 1963, Taylor 1976, Medler 1980)

***Euponera sjostedti* (Mayr, 1896)**

**Notes:** (Taylor 1976, Medler 1980)

***Hypoponera angustata* (Santschi, 1914)**

**Notes:** (Bolton and Fisher 2011)

***Hypoponera camerunensis* (Santschi, 1914)**

**Notes:** (Taylor 1976, Medler 1980)

***Hypoponera coeca* (Santschi, 1914)**

Notes: (Bolton and Fisher 2011)

***Hypoponera dulcis* (Forel, 1907)**

Notes: (Bolton and Fisher 2011)

***Hypoponera inaudax* (Santschi, 1919)**

Notes: (Bolton and Fisher 2011)

***Hypoponera lea* (Santschi, 1937)**

Notes: (Taylor 1976)

***Hypoponera lepida* Bolton & Fisher, 2011**

Notes: (Bolton and Fisher 2011)

***Hypoponera punctatissima* (Roger, 1859)**

Notes: (Santschi 1914, Wheeler 1922, Bernard 1953, Taylor 1976, Medler 1980, Delabie and Blard 2002, Nwosu and Lawal 2010, Bolton and Fisher 2011)

**\*\* *Leptogenys conradti* Forel, 1913**

Notes: New record for Nigeria

New Records: 6

***Leptogenys elegans* Bolton, 1975**

Notes: (Bolton 1975b, Taylor 1976, Medler 1980)

***Leptogenys khaura* Bolton, 1975**

Notes: (Bolton 1975b, Medler 1980)

**\*\* *Leptogenys longiceps* Santschi, 1914**

Notes: New record for Nigeria

New Records: 1, 2

***Leptogenys stygia* Bolton, 1975**

Notes: (Bolton 1975b, Taylor 1976, Medler 1980)

***Loboponera politula* Bolton & Brown, 2002**

Notes: (Bolton and Brown Jr 2002)

***Loboponera vigilans* Bolton & Brown, 2002**

Notes: (Bolton and Brown Jr 2002)

***Megaponera analis* (Latreille, 1802)**

Notes: (Wheeler 1922, Prins 1963, Prins 1964, Medler 1980, Ewuim 2007)

***Mesoponera ambigua* (André, 1890)**

Notes: (Taylor 1976, Medler 1980)

**\* *Mesoponera cafferaria* (Smith, 1858)**

Notes: (Taylor 1976, Medler 1980)

New Records: 1, 5, 10

**\* *Odontomachus troglodytes* Santschi, 1914**

Notes: (Santschi 1914, Wheeler 1922, Prins 1963, Prins 1964, Taylor 1976, Taylor and Adedoyin 1978; as *O. haematodus*, Medler 1980, Ewuim et al. 2011)

New Records: 1, 2, 4, 5, 8, 9, 10, 11, 12

**\* *Paltothyreus tarsatus* (Fabricius, 1798)**

Notes: (Taylor 1976, Medler 1980, Ewuim et al. 2011)

New Records: 1, 2, 5, 6, 8, 10, 11

***Parvaponera darwinii* subsp. *africana* (Forel, 1909)**

Notes: (Santschi 1914, Wheeler 1922, Santschi 1935)

***Platythyrea conradti* Emery, 1899**

Notes: (Taylor 1976, Medler 1980)

***Platythyrea frontalis* Emery, 1899**

Notes: (Medler 1980)

***Platythyrea lamellosa* (Roger, 1860)**

Notes: (Medler 1980)

***Platythyrea modesta* Emery, 1899**

Notes: (Taylor 1976)

***Plectroctena cristata* Emery, 1899**

Notes: (Medler 1980)

***Plectroctena macgeei* Bolton, 1974**

Notes: (Bolton 1974b, Taylor 1976, Medler 1980, Bolton and Brown Jr 2002)

***Plectroctena minor* Emery, 1892**

Notes: (Bolton 1974b, Taylor 1976, Medler 1980)

***Psalidomyrmex foveolatus* André, 1890**

Notes: (Bolton 1975a, Taylor 1976, Medler 1980, Bolton and Brown Jr 2002, Taylor et al. 2018)

**Subfamily Proceratiinae*****Discothyrea oculata* Emery, 1901**

Notes: (Hita-Garcia et al. 2019)

**Subfamily Pseudomyrmecinae*****Tetraponera aethiops* Smith, 1877**

Notes: (Forel 1913, Wheeler 1922, Medler 1980)

***Tetraponera anthracina* (Santschi, 1910)**

**Notes:** (Santschi 1937b, Taylor 1976, Taylor and Adedoyin 1978, Medler 1980)

***Tetraponera latifrons* (Emery, 1912)**

**Notes:** (Medler 1980)

**\* *Tetraponera mocquerysi* (André, 1890)**

**Notes:** (Santschi 1914, Wheeler 1922, Baroni Urbani 1977a)

New Records: 1

***Tetraponera ophthalmica* (Emery, 1912)**

**Notes:** (Taylor 1976)

**Analysis**

A total of 106 native and exotic ants were recorded in this study, out of these, 28 species are new records for Nigeria and 28 are unidentified to species level. Ten exotic and potentially invasive species were also recorded. Four exotic species were listed in previous publications and were also encountered in this study: *Paratrechina longicornis*, *Monomorium floricola*, *Monomorium pharaonis* and *Tapinoma melanocephalum*; six species were added from the present study: *Nylanderia bourbonica*, *Solenopsis globularia*, *Tetramorium bicarinatum*, *Tetramorium lanuginosum*, *Trichomyrmex destructor* and *Trichomyrmex mayri*. *Solenopsis geminata* was also listed in the previous study, but was not found in the present study. This brings the update of exotic species to 11 (Table 1). Three tramp species: *Cardiocondyla emeryi*, *Pheidole megacephala* and *Tetramorium simillimum*, that are native to Nigeria are also recorded (Table 1). The 132 reviewed journals yielded 288 species/subspecies and, in addition to ants found in this study (28), an updated record of Nigeria ants is now 316, all from 10 subfamilies and 64 genera.

**Updated list of Nigerian ants**

An additional 28 collected morphospecies were not included in the Nigerian checklist because a proper identification could not be achieved due to the current challenges in the taxonomy of these genera or because they were represented only by sexual forms and only generic identification could be assessed. These morphospecies belong to: *Cardiocondyla* (1), *Carebara* (4), *Cataulacus* (3), *Crematogaster* (6), *Dorylus* (4), *Lepisiota* (1), *Myrmecaria* (1), *Pheidole* (2), *Plagiolepis* (1), *Tapinoma* (2), *Solenopsis* (1), *Strumigenys* (1) and *Tetramorium* (1).



A different case is the species listed as *Monomorium* sp1, as its status as a species is unknown to science, but it is not described in this article.

## Species deleted from the list

*Aenictus rotundatus* Mayr, 1901: *Aenictus* has been recently revised by one of the authors (Gómez 2022) and the distribution of this species seems to be restricted to eastern and southern Africa. Its sibling species *Aenictus guineensis* is distributed throughout western Africa, from Senegal to Nigeria (samples from Ibadan and Mokwa examined). Therefore, Nigerian records of *A. rotundatus* are here transferred to *Aenictus guineensis*.

*Anochetus jonesi* Arnold, 1926: described from South Africa. Its listing came from Taylor (1979) and was, therefore, added to the 1980 catalogue (Medler 1980). Taylor (1979) did not list this species from Nigeria in his web publication - The Ants of Africa - it is thus removed from the Nigerian list.

*Camponotus barbarossa micipsa* Wheeler, 1922 was cited in Taylor (1978), but the identification changed to *Camponotus barbarossa* Emery, 1920 by Taylor in his site, Ants of Africa (Taylor 2021).

*Camponotus foraminosus dorsalis* Santschi, 1926: subspecies described from Tanzania, was listed by Taylor (1978) and Taylor and Adedoyin (1978) and then added to the 1980 catalogue. Taylor (1978) gave no particular reasons to identify the Nigerian material within this subspecies. It has not been listed anywhere apart from the original description by Santschi (1926). As a rule of thumb, East African and West African ant faunas tend to be distinct. It is, therefore, better to follow the cautious approach of naming the Nigerian material as *C. foraminosus* sensu lato until a thorough revision involving all subspecies suggests otherwise.

*Camponotus rufoglaucus* Jerdon, 1851: listed in a catalogue (Medler 1980), but this reference could not be traced to any previous record. It is an Asian species with five subspecies listed from the Afrotropical Region. All the records for the species and subspecies are from eastern and southern Africa. It was, therefore, not included in the list of Nigerian species.

*Cardiocondyla zoserka* Bolton, 1982: The current status of this species remains unclear, since Heinze (2019) discovered that the type material from Nigeria are males and not queens as previously thought and maybe belong to a previously-described species. We have opted for listing this species until its taxonomical status is cleared.

*Messor barbarus* Linnaeus, 1767: listed in Medler (1980), it is a European species and the record could not be traced to any previous source. Most definitely a misidentification of *Messor galla* which is quite similar and widespread in the Afrotropical Region north of the Equator, as well as Kenya and Tanzania.

*Odontomachus haematodus* Linnaeus, 1758: South American species listed by Santschi (1914) from Ibadan, Lagos and Olokomeji and subsequently recorded by other authors

(Wheeler 1922, Prins 1963, Prins 1964). It is clearly a misidentification of the common *Odontomachus troglodytes* and the record has been transferred to this species.

*Technomyrmex albipes* Smith, 1861: tramp species distributed worldwide. Its presence in Nigeria was first recorded by Taylor (1978) and it was added to the Medler (1980) catalogue. Taylor in his website 'The Ants of Africa' did not record this species from Nigeria and the only other specimen under this name collected in Ghana was re-identified as *T. andrei* "which seems to be quite common in Nigeria and possibly Ghana" (Taylor 2021). So, the identification was transferred to *T. andrei*.

*Tetramorium decem* Forel, 1913: listed in Medler (1980) and by Taylor (1980a). The group was subsequently revised by Hita Garcia and Fisher (2014b), stating this species as eastern and southern African. Taylor in his website "The Ants of Africa" acknowledges this distribution and transferred his samples from Nigeria to *T. raptor*, so this study follows the same pattern.

*Tetraponera penzigi* Mayr, 1907: listed in Medler (1980) with no other reference. It seems to have an eastern and southern African distribution and [antmaps.org](http://antmaps.org) lists it as "dubious", based on personal communication by Dr. Phil Ward. So, this is not included until new data are available.

## Notes to the list additions

*Camponotus schoutedeni*: widely distributed species, has been reported from South Africa to Côte d'Ivoire.

*Cardiocondyla sekhemka*: this is the second record of this species worldwide. Until this present study, this species was known only from its type locality in Tumu, Ghana (Bolton 1982). Four workers and one queen were collected in pitfall traps at Badagry.

*Cardiocondyla weserka*: known from Cameroon, was represented in a collection from Badagry by one queen that was assigned to this species, based on the morphology of its worker caste. The queen caste is currently undescribed.

*Cardiocondyla yoruba*: endemic species described in Rigato (2002), based on specimens from Ibadan. It was found at seven different sites, showing that it could be more common than estimated in the original description.

*Crematogaster lamottei*: species listed from Guinea (type loc.) and Central African Republic by Bernard (1953). This species belongs to the *kneri* species group, formerly subgenus *Sphaerocrema*. Morphometric analysis by one of the authors (KG) reveals that it is almost identical to the much more common and widespread *C. striatula*, also found in the samples collected in this study. The main differences between these species are the longer propodeal spines in *C. lamottei*, all the other characteristics being widely variable and overlapping. The real status of this species should be determined in a generic revision.

*Dorylus braunsi*: the identity of *Dorylus* species is unreliable due to lack of a revision of the genus to date. So, identity of *D. braunsi* is based on comparison with types from [antweb.org](http://antweb.org) and should, therefore, be taken with caution (Fisher 2023).

*Lepisiota ambigua*: known from Democratic Republic of Congo, but it seems to be distributed throughout West Africa as it was collected in two countries by two of the authors, Kiko Gómez in Senegal and Natasha Mothapo in University of Ghana and also at Kwame Nkrumah Memorial Park in Ghana (unpublished).

*Leptogenys conradti* and *Leptogenys longiceps*: both species have West African distribution and their presence is confirmed here.

*Monomorium afrum*: widely distributed species throughout tropical Africa, from Senegal to Côte d'Ivoire. Collection in this study is the first record for Nigeria.

*Monomorium vonatu*: known from Burkina Faso, Ghana and Senegal, the records in this study extend its distribution to Central Africa.

*Monomorium* sp1: This is a new species being described in another publication (KG, in preparation). Its distribution ranges from Senegal to Nigeria.

*Nylanderia bourbonica*: Asian introduced species known in Africa only from unpublished records in Tanzania.

*Nylanderia umbella*: known from a few locations (Cameroon, Gabon and Uganda), our records extending its range to the northwest: Senegal (KG leg.) and Nigeria.

*Pheidole bequaerti*: new species to Nigeria; previously recorded from Benin, Senegal and DRC.

*Pheidole caffra senilifrons*: known from Central Africa (DRC, Congo, Gabon, Cameroon, Benin and Togo), new to Nigeria.

*Solenopsis globularia*: known from Côte d'Ivoire and Senegal; it is an invasive ant species spreading throughout West Africa. It seems to be well established in Lagos State and is likely spreading to other areas of the country.

*Strumigenys exunca*: first Nigerian record for this West African species, previously recorded from Cameroon, Ghana and Côte d'Ivoire.

*Tapinolepis pernix*: known from Sudan (type loc.), Benin and Senegal. This genus also needs a revision. The species was assigned to this species by comparing it with the photographs from [antweb.org](http://antweb.org) (Fisher 2023).

*Tetramorium bicarinatum*: exotic species with worldwide distribution. It has been collected from Guinea and Ghana in West Africa and the DRC in Central Africa.

*Tetramorium cristatum*, *Tetramorium edouardi*, *Tetramorium furtivum*: West African and Congo Basin species, recorded in Nigeria for the first time.

*Tetramorium ericae*: the identification of this species must be taken with caution. Its measurements fit the description and it is virtually identical to the type images in Antweb, but its distribution seems to be restricted to southern and eastern Africa (Fisher 2023).

*Tetramorium lanuginosum*: exotic species known in the Afrotropical Region only from Ghana and Sierra Leone and labelled as “dubious” in the Antmaps site (Guénard et al. 2017).

*Tetramorium xuthum*: first world record apart from the type series from Ghana.

*Trichomyrmex destructor*: first record of this invasive species in Nigeria. It has been recorded extensively in West and Central Africa.

*Trichomyrmex mayri*: first record for Nigeria. Its presence had earlier been recorded in Sahelian Mali, Niger, Senegal and Sudan.

## Discussion

The study aimed to ascertain the prevalence of alien/exotic/potential invasive ant species in Nigeria and to reassess the checklist of species first compiled in the 1970s. A total of 28 new ant species were added in the updated checklist and the number of exotic species recorded has increased to 11. Further, eleven species were excluded from the current checklist largely due to prior misidentifications. These additions and removals resulted in a total of three hundred and sixteen (316) ant species in the checklist of ants of Nigeria. Increased sampling and identification efforts are yielding better knowledge of ant fauna composition in the region. This important finding, particularly in relation to the exotic species showed that there has been an increase in the number of invasive species which may have significant negative impacts on the native ant fauna. The invasive ant fauna should be monitored in future studies and its real distribution and impact should be assessed.

In recent years, research has indicated the growing number of invasive species hotspots and the association of urbanisation with these hot spots. Most invasive ant species occur in urbanised environments, which may facilitate the spread of propagules of invasive species into natural environments (Van Ham et al. 2013). Without the ecological studies to ascertain the impact of the presence of these invasive species on native ant fauna, a final assessment of the species presence in the country cannot be made. Future work should focus on the ecological interactions amongst these species as basic studies are missing in the region and on a large part of the African continent.

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## Author contributions

BOJ conducted the research as part of her PhD study and wrote the manuscript, KG identified the ants and contributed to writing the manuscript; PNM and EEP conceptualised and designed the study and contributed to the editing of the manuscript; KAK and WAM contributed to the sampling, research management and editing of the manuscript.

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