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Checklist and distribution of ants (Hymenoptera: Formicidae) within an ecologically diverse southern African ecoregion: Eswatini

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Abstract

Documentation of species occurrences through compilation of checklists is an important component of biodiversity conservation and planning, which are limited in sub-Saharan Africa. As an ecologically diverse country, ant checklist compilation was carried out in Eswatini in order to determine ant diversity and distribution within the country's major ecological terrestrial biomes. Collections by various sources over the years have resulted in the determination of 148 species from 41 genera in 6 subfamilies, with Myrmicinae being the dominant one with 74 species. Within the terrestrial biomes, the savanna had 77% of the species recorded while grassland and forest biomes had 52.7% and 25% of the species, respectively. Three species, *Anoplolepis custodiens* (Smith, 1858), *Polyrhachis schistacea* (Gerstäcker, 1859) and *Pheidole megacephala* (Fabricius, 1793) were the most widely distributed in the country. There were also the first records of *Myrmicaria faurei* Arnold, 1947 and *Teratataner transvaalensis* Arnold, 1952 outside of their known ranges in Mpumalanga, South Africa, as well as *Camponotus liogaster* Santschi, 1932 outside of its known range in KwaZulu-Natal, South Africa. The forty-eight species identified only to genus level illustrates the taxonomic gap within entomology. This checklist confirms the importance of such documentation of species at both local and regional scale, contributing to knowledge on the region's biodiversity and its distribution.

Key words: Species records, ant diversity, monitoring, conservation planning, biomes

Introduction

Eswatini is a landlocked country with varied ecological landscapes and high biodiversity. Although the information base on Eswatini's biodiversity is incomplete, studies have shown that a great proportion of Southern Africa's plant and animal species occur here, as Eswatini has a diverse assemblage of ecosystems and habitats. For example, the grassland biome in eastern Eswatini is part of the Maputaland Centre of Plant Diversity, which is one of the world's "hotspots" of floral, as well as faunal species richness and endemism, while the savanna in western Eswatini is part of the Drakensberg Afromontane regional system, including the Barberton centre of endemism (NBSAP2 2016). While sub-Saharan Africa is depauperate when it comes to documentation of flora and fauna (Hita Garcia *et al*. 2009), a relatively extensive documentation of plants and larger animals has been carried out in Eswatini (Boycott 1992; Hyslop 1994; Monadjem 1997; Loffler & Loffler 2005). However, smaller organisms such as insects have not been documented as extensively by comparison and as such, no comprehensive checklist has been compiled for ants within the country. Ants are a significant component of biomass in terrestrial ecosystems but are notoriously known as pests (Bharti *et al.* 2016; Csősz *et al*. 2021). However, they are one of the most ecologically important groups, providing various ecosystem services and thus contribute to the integrity of ecosystems; services include biological control through predation and scavenging, nutrient recycling, soil turning and pollination, elevating them to be of ecological and conservation importance (Folgarait 1998; Andersen *et al*. 2004; Diamé *et al.* 2017; Mauda *et al.* 2017).

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With the compilation of checklists, there is proper species identification and this provides a foundation for literature and databases on biological diversity. Compilation of checklists provides a basis for research in various areas of biodiversity and biogeography (Hamer 1998; Sarnat *et al*. 2013) enabling monitoring of biodiversity for decision-making in conservation planning and management, particularly through identification of indicator taxa (McGeoch *et al.* 2011; Duelli & Obrist 2003). One essential component of checklists is the provision of information on species presence and distribution patterns. The aim of this paper was thus to provide such a list for Eswatini as well as distribution of ants within the country, particularly between the terrestrial biomes.

Material and Methods

A nationwide survey was carried out in December 2016–February 2017 and sampling methods used and design are outlined in Magagula (2022). Additionally, extra resources used in compilation of this checklist are from earlier surveys (Magagula & Nzima 2015; Magagula 2020) as well as literature records by various entomologists and enthusiasts as recorded in AntWeb. Records from AntWeb are based on various collections while survey materials from 2010 to 2017 were identified at AfriBugs by PGH and curated in the AfriBugs collection (AFRC, South Africa) (Table 1). An identical collection is also curated in the Eswatini National Museum of Natural History at the University of Eswatini. Specimen data for the material housed in the AFRC has been uploaded to AntWeb and can be retrieved using the unique specimen identifiers listed in Appendix 1, where unique specimen identifiers for all other records obtained via AntWeb are also provided. These identifiers will allow any updates to identifications of the specimens forming the foundation of the checklist, and the effects of any subsequent nomenclatural changes, to be tracked in order to keep the checklist current.

Ants were identified to genus using Bolton (1994) in 2013 or Fisher & Bolton (2016) in 2017 and then to species where possible using the most recent available keys to the genera (in some cases only to parts of genera) concerned (in some cases new keys have recently become available and were used to confirm or update identifications): for *Aenictus*, Gómez, (2022), *Agraulomyrmex*, Prins (1983); *Anoplolepis*, Prins (1982), *Bothroponera*, Joma & Mackay (2017), *Cardiocondyla*, Rigato (2002); *Cataulacus*, Bolton (1982), *Crematogaster*, Arnold (1920); *Hagensia*, Arnold (1951), *Hypoponera*, Bolton & Fisher (2011), *Lepisiota*, Arnold (1920); *Leptogenys*, Bolton (1975); *Meranoplus*, Bolton (1981a); *Messor*, Bolton (1982), *Microdaceton*, Bolton (1983), *Monomorium*, Bolton (1987); *Myrmicaria*, Santschi (1925), *Nesomyrmex*, Mbanyana & Robertson (2008), *Ocymyrmex*, Bolton & Marsh (1989), *Odontomachus*, Brown (1976), *Plectroctena*, Bolton & Brown (2002), *Polyrhachis*, Bolton (1973) and Rigato (2016), *Streblognathus*, Robertson (2002), *Strumigenys*, Bolton (2000), *Technomyrmex*, Bolton (2007), *Teratanер*, Bolton (1981b), *Tetramorium*, Bolton (1980), Hita Garcia *et al*. (2010) and *Tetraponera* (Ward 2022). For some genera, such as *Camponotus*, *Carebara*, *Dorylus*, *Eburopone*, *Euponera*, *Mesoponera*, *Pheidole*, *Plagiolepis*, *Solenopsis*, *Tapinolepis* and *Tapinoma*, where no keys were available for the Afrotropical fauna, as well as for species in other genera that could not be identified using the available keys, specimens were identified by comparison with reference material in the AFRC and images on AntWeb (www.antweb.org).

Where no formal name could be assigned, a morphospecies code matched to voucher material in the AFRC was assigned, where necessary creating new codes for those species not yet represented in the AFRC. These codes are globally unique and images of most are available on AntWeb to allow cross-referencing between studies. The code structure follows the pattern: *Genus* afrc-[ISO code of country where first recorded]+[species number], e.g. *Tapinoma* afrc-sz01 is the first *Tapinoma* species recorded from Eswatini in the AFRC. In genera where identification tools are lacking or are inadequate to allow effective identification, these codes may represent described and/or undescribed species, while in genera where formal identification is straightforward due to the availability of comprehensive keys, they generally represent undescribed species. These codes are also included in the checklist since, whether described or not, they represent significant components of the biodiversity of Eswatini that would otherwise be overlooked. In several cases entire genera would be omitted from the checklist were these codes to be excluded. Inclusion of the coded species is also particularly important in species-rich genera such as *Camponotus, Monomorium, Crematogaster* and *Pheidole* since a large number of species in the region have not been described (Fisher & Bolton 2016) and exclusion of these would provide substantially lower than the reality of species present. Due to numerous revisions and reclassifications within the Formicidae, species synonyms are not listed as these can be quite extensive and only current valid names are used (AntCat; AntWiki; Fisher & Bolton 2016).

Identifications in literature records and of specimens recorded on AntWeb were accepted and were not re-evaluated or independently verified. Collections where voucher specimens are located are: AfriBugs, Pretoria, South Africa (AFRC), Eswatini National Museum of Natural History at the University of Eswatini, Kwaluseni, Eswatini (ENMNH), Iziko South African Museum, Cape Town, South Africa (SAMC), Natural History Museum, London, United Kingdom (formerly British Museum of Natural History) (NHMUK), Philip S. Ward Collection at UC Davis, California, USA (PSWC), University of California at Davis, California, USA (UCDC).

Five species of indeterminate identification were excluded which had been recorded as *Hypoponera meridia*_cf, *Hypoponera spei*_cf from Forbes Reef (PSW); *Lepisiota* sp. 1, *Monomorium* sp. 1 and sp. 2 from Mlawula (CNM).

Results

Diversity

Based on the surveys and review, ant specimens were collected from various areas across the country, with more from protected areas (Fig. 1). The distribution map illustrates that a large proportion of the country still needs to be surveyed, particularly outside of protected areas. This was also confirmed by the species accumulation plots (Fig. 2) which indicated that the number of species observed is much lower than that estimated by bootstrap (176) and Chao 2 (221). The checklist consists of 148 species, represented by 6 subfamilies and 40 genera. Myrmicinae was the largest subfamily, with 16 genera and 74 species (Table 2). Of the 148 species, 98 were identified to species level and the rest (50) only to genus level but assigned AFRC morphospecies codes to distinguish them as unidentified species within the respective genera. Of these, Myrmicinae again had the highest number of unidentified species, with 18 of these being first records of the morphospecies in the country, particularly from the surveys.

With regard to ecological distribution across the terrestrial biomes, sites in the savanna had higher species diversity than grassland and forest biome sites, with sites in the savanna biome having 77% of the species collected compared to 52.7% of species in the grassland and 25% in forest biome sites (Fig.3). This, however, could be linked to the area covered by each biome as well as sampling effort (Table 3).

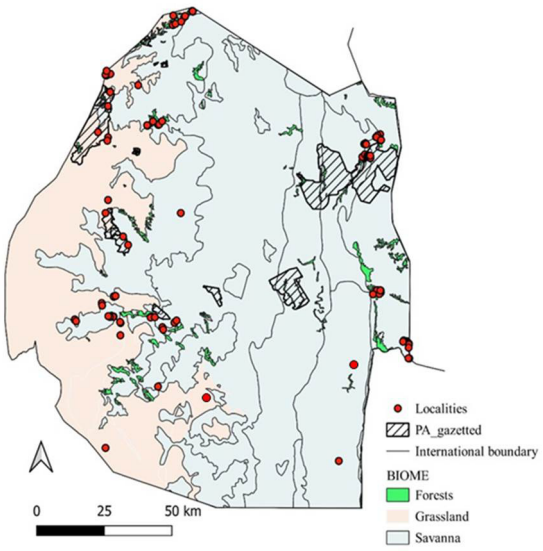

Figure 1. Distribution of locations from which specimens were collected within biomes.

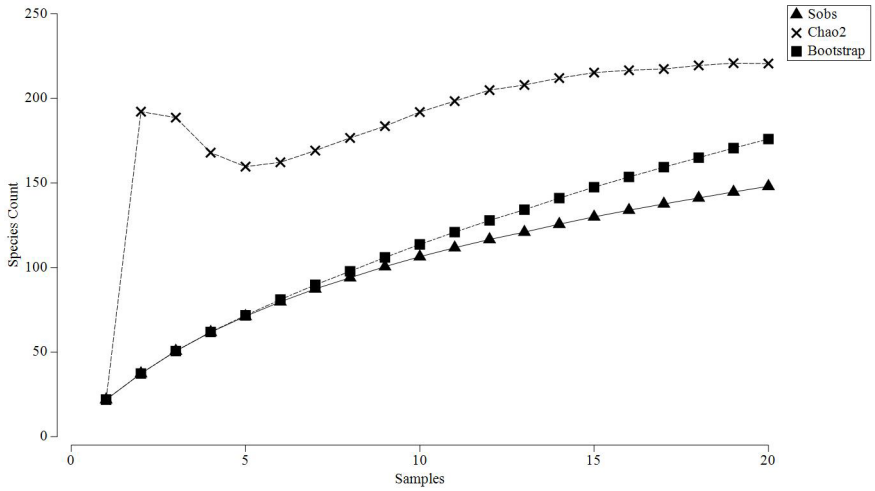

Figure 2. Species accumulation plot for species collected and estimated diversity indices.

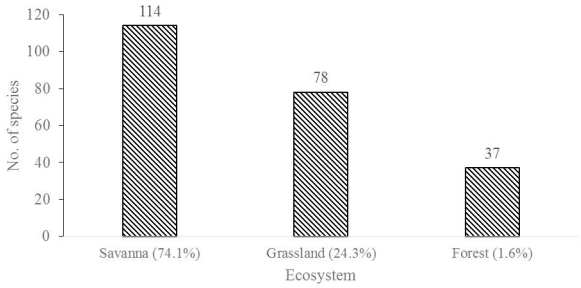

Figure 3. Species contribution across the terrestrial biomes.

Table 1. Subfamilies and species recorded from all terrestrial biomes, with presence (*) or absence (-) indicated for each biome.

Subfamily	Species	Author	Savanna	Grassland	Forest
Dolichoderinae	*Tapinoma* afrc-sz01		*	-	-
	Technomyrmex pallipes	(Smith, 1876)	*	*	-
	Technomyrmex voeltzkowi	(Forel, 1907)	*	-	-
Dorylinae	*Aenictus eugenii*	Emery, 1895	*	*	-
	Dorylus afrc-za03		*	*	-
	Dorylus helvolus pretoriae	Arnold, 1946	*	-	-
	Eburopone wroughtoni	(Forel, 1910)	*	-	-
Formicinae	*Agraulomyrmex* afrc-sz01		-	*	*
	Agraulomyrmex afrc-sz02		*	-	-
	Anoplolepis custodiens	(Smith, F., 1858)	*	*	*
	Camponotus aequitas	Santschi, 1920	*	-	-
	Camponotus afrc-sz01		*	-	*
	Camponotus afrc-sz02		-	*	-
	Camponotus afrc-sz03		-	*	-
	Camponotus afrc-za12		*	*	*
	Camponotus afrc-za28		-	*	-
	Camponotus afrc-za42		*	-	-
	Camponotus afrc-za53		*	-	-
	Camponotus auropubens jacob	Santschi, 1915	*	-	-

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Table 1. (Continued)

Subfamily	Species	Author	Savanna	Grassland	Forest
Formicinae	*Camponotus brevisetosus*	Forel, 1910	-	*	-
	Camponotus buttikeri	Arnold, 1958	-	*	-
	Camponotus cosmicus	(Smith, 1858)	*	*	*
	Camponotus cubangensis dofleini	Forel, 1911	*	-	-
	Camponotus empedocles	Emery, 1920	*	-	-
	Camponotus etiolipes	Bolton, 1995	*	-	*
	Camponotus eugeniae	Forel, 1879	*	-	*
	Camponotus grandidieri eumendax	Özdikmen, 2010	*	*	*
	Camponotus liogaster	Santschi, 1932	-	-	*
	Camponotus mayri	Forel, 1879	*	*	-
	Camponotus niveosetosus	Mayr, 1862	-	*	-
	Camponotus petersii	Emery, 1895	*	*	-
	Camponotus robecchii rhodesianus	Forel, 1913	*	-	-
	Camponotus tauricollis	Forel, 1894	*	*	*
	Camponotus valdeziae	Forel, 1879	*	-	*
	Camponotus vestitus pectitus	Santschi, 1930	*	*	-
	Camponotus vestitus strophiatus	Santschi, 1926	*	*	*
	Lepisiota afrc-za22		-	*	-
	Lepisiota arnoldi	(Forel, 1913)	-	-	*
	Lepisiota crinita	(Mayr, 1895)	*	*	-
	Lepisiota egregia	(Forel, 1913)	*	*	*
	Lepisiota longinoda	(Arnold, 1920)	-	*	-
	Lepisiota spinosior	(Forel, 1913)	*	-	-
	Nylanderia boltoni	LaPolla & Fisher, 2011	-	*	-
	Nylanderia natalensis	(Forel, 1915)	*	*	-
	Plagiolepis afrc-sz01	Westwood, 1839	*	-	-
	Plagiolepis afrc-za06	Westwood, 1839	*	*	-
	Plagiolepis afrc-za09	Westwood, 1839	*	-	-
	Plagiolepis afrc-za13	Westwood, 1839	*	-	-
	Polyrhachis gagates	Smith, 1858	*	*	-
	Polyrhachis schistacea	(Gerstäcker, 1859)	*	*	*
	Polyrhachis spinicola	Forel, 1894	*	-	-
	Tapinolepis afrc-sz01		*	*	-
Myrmicinae	*Cardiocondyla emeryi*	Forel, 1881	*	*	-
	Cardiocondyla shuckardi	Forel, 1891	*	-	-
	Carebara afrc-za13		-	-	*
	Cataulacus intrudens	(Smith, 1876)	*	*	*
	Cataulacus traegaordhi	Santschi, 1914	*	*	-
	Crematogaster afrc-sz01		*	*	-
	Crematogaster afrc-tz03		*	*	*
	Crematogaster afrc-za01		*	-	-
	Crematogaster afrc-za04		*	-	-
	Crematogaster afrc-za05		*	*	*
	Crematogaster amita	Forel, 1913	*	-	-
	Crematogaster liengmei	Forel, 1894	-	*	-
	Crematogaster rectinota	Forel, 1913	*	*	-
	Meranoplus afrc-sz01		*	-	-
	Messor capensis	(Mayr, 1862)	*	-	-
	Microdaceton exornatum	Santschi, 1913	-	*	*
	Monomorium afrc-sz01		*	-	-
	Monomorium afrc-sz02		-	*	-
	Monomorium afrc-sz03		*	-	-
	Monomorium afrc-sz04		*	-	-
	Monomorium afrc-sz05		*	-	-

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Table 1. (Continued)

Subfamily	Species	Author	Savanna	Grassland	Forest
Myrmicinae	*Monomorium* afrc-sz06		*	-	-
	Monomorium afrc-za04		*	-	-
	Monomorium albopilosum	Emery, 1895	*	-	*
	Monomorium delagoense	Forel, 1894	*	-	-
	Monomorium junodi	Forel, 1910	*	-	-
	Monomorium mictilis	Forel, 1910	*	-	-
	Monomorium osiridis	Santschi, 1915	*	-	-
	Monomorium shilohense	Forel, 1913	*	-	-
	Monomorium vaguum	Santschi, 1930	*	-	-
	Myrmicaria faurei	Arnold, 1947	-	*	-
	Myrmicaria fusca nigerrima	Arnold, 1916	*	*	-
	Myrmicaria natalensis	(Smith, 1858)	*	*	*
	Nesomyrmex angulatus	(Mayr, 1862)	*	-	-
	Nesomyrmex stramineus	(Arnold, 1948)	-	*	-
	Ocymyrmex fortior	Santschi, 1911	*	-	-
	Pheidole afrc-sz01		*	-	-
	Pheidole afrc-sz02		*	*	-
	Pheidole afrc-sz03		*	-	-
	Pheidole afrc-sz04		*	-	-
	Pheidole afrc-sz05		-	*	-
	Pheidole afrc-sz06		*	-	-
	Pheidole afrc-sz07		*	-	-
	Pheidole afrc-tz16		*	*	*
	Pheidole afrc-za04		*	*	*
	Pheidole afrc-za08		-	-	*
	Pheidole afrc-za15		*	*	-
	Pheidole afrc-za27		-	*	-
	Pheidole afrc-za35		*	-	-
	Pheidole megacephala	(Fabricius, 1793)	*	*	*
	Solenopsis punctaticeps caffra	Forel, 1894	*	*	-
	Strumigenys afrc-sz01		*	-	-
	Terataner transvaalensis	Arnold, 1952	*	-	-
	Tetramorium afrc-sz01		-	-	*
	Tetramorium afrc-sz02		-	*	-
	Tetramorium afrc-sz03		-	*	-
	Tetramorium akermani	Arnold, 1926	*	*	-
	Tetramorium chloe	(Santschi, 1920)	*	-	-
	Tetramorium decem	Forel, 1913	*	-	-
	Tetramorium delagoense	Forel, 1894	*	-	-
	Tetramorium eminii	(Forel, 1894)	-	*	-
	Tetramorium grassii	Emery, 1895	*	*	-
	Tetramorium guineense	(Bernard, 1953)	-	-	*
	Tetramorium notiale	Bolton, 1980	*	-	-
	Tetramorium plumosum	Bolton, 1980	*	-	-
	Tetramorium sepultum	Bolton, 1980	-	*	-
	Tetramorium sericeiventre	Emery, 1877	*	*	*
	Tetramorium setigerum	Mayr, 1901	*	*	-
	Tetramorium setuliferum	Emery, 1895	*	*	*
	Tetramorium simillimum	(Smith, 1851)	*	-	*
	Tetramorium tenebrosum	Arnold, 1926	*	*	*
	Tetramorium transversinode	(Mayr, 1901)	-	*	-
	Tetramorium ultor	Forel, 1913	-	*	-
	Tetramorium weitzeckeri	Emery, 1895	*	*	*

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Table 1. (Continued)

Subfamily	Species	Author	Savanna	Grassland	Forest
Ponerinae	*Anochetus bequaerti*	Forel, 1913	*	-	*
	Bothroponera berthoudi	(Forel, 1901)	*	*	-
	Bothroponera cariosa	Emery, 1895	*	*	*
	Bothroponera ilgii	(Forel, 1910)	*	-	-
	Bothroponera kruegeri	(Forel, 1910)	*	-	-
	Euponera brunoi	(Forel, 1913)	*	*	-
	Hagensia afrc-sz01		-	*	-
	Hagensia havilandi havilandi	(Forel, 1901)	*	-	-
	Hagensia havilandi marleyi	Arnold, 1926	*	-	-
	Hagensia peringueyi	Emery, 1899	-	*	-
	Hypoponera dulcis	(Forel, 1907)	*	*	-
	Leptogenys afrc-sz01		*	-	-
	Leptogenys intermedia	Emery, 1902	*	*	-
	Leptogenys leiothorax	Prins, 1965	-	*	*
	Leptogenys schwabi	Forel, 1913	*	-	-
	Mesoponera caffraria	(Smith, 1858)	*	*	-
	Odontomachus troglodytes	Santschi, 1914	*	*	-
	Ophthalmopone berthoudi	Forel, 1890			
	Plectroctena mandibularis	Smith, 1858	*	*	*
	Streblognathus peetersi	Robertson, 2002	-	*	-
Pseudomyrmecinae	*Tetraponera emeryi*	(Forel, 1911)	-	*	-
	Tetraponera natalensis	(Smith, 1858)	*	*	-

Table 2. Genus and species diversity of Eswatini ants.

SubFamily	Genera	% of total	Species	% of Total
Myrmicinae	16	39.0	74	50.0
Formicinae	8	19.5	45	30.4
Ponerinae	11	26.8	20	13.5
Dorylinae	3	7.3	4	2.7
Dolichoderinae	2	4.9	3	2.0
Pseudomyrmecinae	1	2.4	2	1.4

Table 3. Comparison of Eswatini surface area and species collected between biomes.

Percentage (%)	Grassland	Forest	Savanna
Surface area	24.3	1.6	74.1
Species collected	53.1	25.5	77.2

Checklist

Subfamily: Dolichoderinae

Tapinoma Foerster, 1850

Tapinoma afrc-sz01
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Technomyrmex Mayr, 1872

Technomyrmex pallipes (Smith, 1876)
Collector: CNM, PSW
Distribution: Big Bend (21.v.-2.vi.2010), Forbes Reef (18.ii.1999), Malkerns (12-25.v.2010)

Technomyrmex voeltzkowi (Forel, 1907)
Collectors: CNM
Distribution: Shewula (27-31.xii.2016)

Subfamily: Dorylinae

Aenictus Schuckard, 1840

Aenictus eugenii Emery, 1895
Collectors: CNM, PSW
Distribution: Big Bend (11-25.iii.2010), Ekuvinjelweni (21-25.i.2017), Malkerns (17-30.iii.2010), Mlilwane (17.ii.1999), Sigcineni (4-8.i.2017)

Dorylus Fabricius, 1793

Dorylus afrc-za03
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Dorylus helvolus
pretoriae (Arnold, 1946)
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Malkerns (14-26.iv.2010)

Eburopone Borowiec, 2016

Eburopone wroughtoni (Forel, 1910)
Collector: CNM
Distribution: Malkerns (2-16.ii.2010), Velezizweni (9-13.i.2017)

Subfamily: Formicinae

Agraulomyrmex Prins, 1983

Agraulomyrmex afrc-sz01
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Jilobi (18-22.xii.2016)

Agraulomyrmex afrc-sz02
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Anoplolepis Santschi, 1914

Anoplolepis custodiens (Smith, 1858)
Collectors: CNM, PSW
Distribution: Big Bend (8-14.iv.2010), Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Forbes Reef

(19.ii.1999), Jilobi (18-22.xii.2016), Malkerns (2-16.ii.2010), Mambane (13-17.xii.2016), Mlawula (14-16.i.2017), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Camponotus Mayr, 1861

Camponotus aequitas Santschi, 1920
Collector: CNM
Distribution: Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Camponotus afrc-sz01
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Shewula (27-31.xii.2016)

Camponotus afrc-sz02
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017)

Camponotus afrc-sz03
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Camponotus afrc-za12
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Emvembili (26-30.i.2017), Malkerns (17.ii-2.iii.2010), Mlawula (6.xi.2014), Shewula (27-31.xii.2016)

Camponotus afrc-za28
Collector: CNM
Distribution: Bulembu (26-30.i.2017),

Camponotus afrc-za42
Collector: CNM
Distribution: Big Bend (11-25.iii.2010), Malkerns (3-16.ii.2010)

Camponotus afrc-za53
Collector: CNM
Distribution: Big Bend (11-25.iii.2010), Malkerns (3-16.iii.2010)

Camponotus auropubens
jacob Santschi, 1915
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Camponotus brevisetosus Forel, 1910
Collectors: PSW, PGH
Distribution: Malolotja (18-20.ii.1999; 7-9.i.2015)

Camponotus buttikeri Arnold, 1958
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Camponotus cosmicus (Smith, 1858)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-

17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Camponotus cubangensis Forel, 1901
dofleini Forel, 1911
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Camponotus empedocles Emery, 1920
Collectors: CNM, JAW
Distribution: Mambane (13-17.xii.2016), Unknown (13.xii.1920, 1.xi.1920)

Camponotus etiolipes Bolton, 1995
Distribution: Jilobi (18-22.xii.2016), Shewula (27-31.xii.2016)

Camponotus eugeniae Forel, 1879
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (14-16.i.2017)

Camponotus grandidieri Forel, 1886
eumendax Özdikmen, 2010
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Sigcineni (4-8.i.2017)

Camponotus liogaster Santschi, 1932
Collector: CNM
Distribution: Jilobi (18-22.xii.2016)

Camponotus mayri Forel, 1879
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Ekuvinjelweni (21-25.i.2017)

Camponotus niveosetosus Mayr, 1862
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Camponotus petersii Emery, 1895
Collector: CNM
Distribution: Big Bend (11-25.iii.2010), Bulembu (31.i.-4.ii.2017), Malkerns (2-16.iii.2010), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Camponotus robecchii Emery, 1892
rhodesianus Forel, 1913
Collector: JHG
Distribution: Manzini (23.i.1957)

Camponotus tauricollis Forel, 1894
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Camponotus valdeziae Forel, 1879
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016)

Camponotus vestitus (Smith, 1858)
pectitus Santschi, 1930
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Camponotus vestitus (Smith, 1858)
strophiatus Santschi, 1926
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Lepisiota Santschi, 1926

Lepisiota afrc-za22
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Lepisiota arnoldi (Forel, 1913)
Collector: CNM
Distribution: Jilobi (18-22.xii.2016)

Lepisiota crinita (Mayr, 1895)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Malkerns (12-25.v.2010)

Lepisiota egregia (Forel, 1913)
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Lepisiota longinoda (Arnold, 1920)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Lepisiota spinosior (Forel, 1913)
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Nylanderia Emery, 1906

Nylanderia boltoni LaPolla & Fisher, 2011
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Nylanderia natalensis (Forel, 1915)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Malkerns (17-30.iii.2010), Velezizweni (9-13.i.2017)

Plagiolepis Mayr, 1861

Plagiolepis afrc-sz01
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Plagiolepis afrc-za06
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Plagiolepis afrc-za09
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Plagiolepis afrc-za13
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Polyrhachis Smith, 1857

Polyrhachis gagates Smith, 1858
Collectors: CNM, VBW
Distribution: Ekuvinjelweni (21-25.i.2017), Mambane (13-17.xii.2016), Mbabane (6.iv.1978), Mlawula (8-10.x.2016)

Polyrhachis schistacea (Gerstäcker, 1859)
Collector: CNM, JEC, VBW
Distribution: Big Bend (11-25.ii.2010), Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Malkerns (17.ii-2.iii.2010), Malolotja (16-20.xii.2017), Mambane (13-17.xii.2016), Mbabane (6.iv.1968), Mhlosheni (25.v.1980), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Polyrhachis spinicola Forel, 1894
Collector: PSW
Distribution: Mlilwane (17.ii.1999)

Tapinolepis Emery, 1925

Tapinolepis afrc-sz01
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Mambane (13-17.xii.2016)

Subfamily: Myrmicinae

Cardiocondyla Emery, 1869

Cardiocondyla emeryi Forel, 1881
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Cardiocondyla shuckardi
Collector: CNM
Distribution: Big Bend (3-17.vi.2010)

Carebara Westwood, 1840

Carebara afrc-za13
Collector: CNM
Distribution: Jilobi (18-22.xii.2016)

Cataulacus Smith, 1853

Cataulacus intrudens (Smith, 1876)
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Shewula (27-31.xii.16), Velezizweni (9-13.i.2017)

Cataulacus traegaordhi Santschi, 1914
Collectors: CNM, PSW
Distribution: Malkerns (31.iii.-13.iv.2010), Malolotja (20.ii.1999)

Crematogaster Lund, 1831

Crematogaster afrc-sz01
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Mlawula (8-10.x.2016

Crematogaster afrc-tz03
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Velezizweni (9-13.i.2017)

Crematogaster afrc-za01
Collector: CNM
Distribution: Malkerns (2-16.ii.2010)

Crematogaster afrc-za04
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Mambane (13-17.xii.2016)

Crematogaster afrc-za05
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Crematogaster amita Forel, 1913
Collector: CNM
Distribution: Mambane (13-17.xii.2016), Mlawula (8-10.x.2016)

Crematogaster liengmei Forel, 1894
Collector: PSW
Distribution: Forbes Reef (19.ii.1999)

Crematogaster rectinota Forel, 1913
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Meranoplus Smith, 1853

Meranoplus afrc-sz01
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Messor Forel, 1890

Messor capensis (Mayr, 1862)
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Microdaceton Santschi, 1913

Microdaceton exornatum Santschi, 1913
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Shewula (27-31.xii.2016)

Monomorium Mayr, 1855

Monomorium afrc-sz01
Collector: CNM
Distribution: Velezizweni (9-13.i.2017)

Monomorium afrc-sz02
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Monomorium afrc-sz03
Collector: CNM
Distribution: Velezizweni (9-13.i.2017)

Monomorium afrc-sz04
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Monomorium afrc-sz05
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Monomorium afrc-sz06
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Monomorium afrc-za04
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Monomorium albopilosum Emery, 1895
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Monomorium delagoense Forel, 1894
Collectors: CNM, JHG
Distribution: Mambane (13-17.xii.2016), Manzini (23.i.1957), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Monomorium junodi Forel, 1910
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Monomorium mictilis Forel, 1910
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Monomorium osiridis Santschi, 1915
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Monomorium shilohense Forel, 1913
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Monomorium vaguum Santschi, 1930
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Myrmicaria Saunders, 1842

Myrmicaria faurei Arnold, 1947
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Myrmicaria fusca Stitz, 1911
nigerrima Arnold, 1916
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Myrmicaria natalensis (Smith, 1858)
Collector: CNM
Distribution: Big Bend (8-14.iv.2010), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Malkerns (2-16.ii.2010), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Nesomyrmex Wheeler, 1910

Nesomyrmex angulatus (Mayr, 1862)
Collector: CNM
Distribution: Mlawula (22.1.2015)

Nesomyrmex stramineus (Arnold, 1948)
Collector: PSW
Distribution: Malolotja (18.ii.1999)

Ocymyrmex Emery, 1886

Ocymyrmex fortior Santschi, 1911
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Pheidole Westwood, 1839

Pheidole afrc-sz01
Collector: CNM
Distribution: Malkerns (2-16.ii.2010)

Pheidole afrc-sz02
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Ekuvinjelweni (21-25.i.2017), Malkerns (17.ii-2.iii.2010), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Pheidole afrc-sz03
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Mlawula (6.xi.2014)

Pheidole afrc-sz04
Collector: CNM
Distribution: Big Bend (11-25.iii.2010), Mlawula (8-10.x.2016)

Pheidole afrc-sz05
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Pheidole afrc-sz06
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Pheidole afrc-sz07
Collector: CNM
Distribution: Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Pheidole afrc-tz16
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Shewula (27-31.xii.2016)

Pheidole afrc-za04
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Sigcineni (4-8.i.2017), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Pheidole afrc-za08
Collector: CNM
Distribution: Jilobi (18-22.xii.2016)

Pheidole afrc-za15
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Sigcineni (4-8.i.2017)

Pheidole afrc-za27
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Pheidole afrc-za35
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Pheidole megacephala (Fabricius, 1793)
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016), Malkerns (3-16.iii.2010), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Solenopsis Westwood, 1840

Solenopsis punctaticeps Mayr, 1865
caffra Forel, 1894
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Strumigenys Smith, 1860

Strumigenys afrc-sz01
Collector: CNM
Distribution: Velezizweni (9-13.i.2017)

Teratаner Emery, 1912

Teratаner transvaalensis Arnold, 1952
Collector: CNM
Distribution: Mambane (13-17.xii.2016)

Tetramorium Mayr, 1855

Tetramorium afrc-sz01
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Tetramorium afrc-sz02
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Tetramorium afrc-sz03
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017)

Tetramorium akermani Arnold, 1926
Collectors: CNM, PSW
Distribution: Forbes Reef (19.ii.1999), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Tetramorium chloe (Santschi, 1920)
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Tetramorium decem Forel, 1913
Collector: CNM
Distribution: Shewula (27-31.xii.2016)

Tetramorium delagoense Forel, 1894
Collector: CNM
Distribution: Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Tetramorium eminii (Forel, 1894)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Tetramorium grassii Emery, 1895
Collector: CNM
Distribution: Velezizweni (9-13.i.2017)

Tetramorium guineense (Bernard, 1953)
Collector: CNM
Distribution: Jilobi (18-22.xii.2016)

Tetramorium notiale Bolton, 1980
Collector: CNM
Distribution: Big Bend (3-17.vi.2010), Malkerns (17.ii-2.iii.2010)

Tetramorium plumosum Bolton, 1980
Collector: RG
Distribution: King's forest (12.vii.1962)

Tetramorium sepultum Bolton, 1980
Collector: RG
Distribution: Mbabane (2.ii.1962)

Tetramorium sericeiventre Emery, 1877
Collector: CNM
Distribution: Big Bend (11-25.ii.2010), Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Tetramorium setigerum Mayr, 1901
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017), Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Tetramorium setuliferum Emery, 1895
Collectors: CNM, PSW
Distribution: Ekuvinjelweni (21-25.i.2017), Forbes Reef (19.ii.1999), Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (14-16.i.2017), Mndvungulu (14-18.i.2017), Sigcineni (4-8.i.2017)

Tetramorium simillimum (Smith, 1851)
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Tetramorium tenebrosum Arnold, 1926
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Shewula (27-31.xii.2016), Velezizweni (9-13.i.2017)

Tetramorium transversinode (Mayr, 1901)
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017)

Tetramorium ultor Forel, 1913
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017)

Tetramorium weitzeckeri Emery, 1895
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Malkerns (3-16.iii.2010), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017)

Subfamily: Ponerinae

Anochetus Mayr, 1861

Anochetus bequaerti Forel, 1913
Collector: CNM
Distribution: Jilobi (18-22.xii.2016), Mambane (13-17.xii.2016)

Bothroponera Mayr, 1862

Bothroponera berthoudi (Forel, 1901)
Collector: CNM, JHG
Bulembu (31.i.-4.ii.2017), Nsoko (23.i.1957)

Bothroponera cariosa Emery, 1895
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Jilobi (18-22.xii.2016), Shewula (27-31.xii.2016)

Bothroponera ilgii (Forel, 1910)
Collector: CNM
Distribution: Mambane (13-17.xii.2016), Sigcineni (4-8.i.2017), Shewula (27-31.xii.2016)

Bothroponera kruegeri (Forel, 1910)
Collector: CNM
Distribution: Sigcineni (4-8.i.2017)

Euponera Forel, 1891

Euponera brunoi (Forel, 1913)
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Sigcineni (4-8.i.2017)

Hagensia Forel, 1901

Hagensia afrc-sz01
Collector: CNM
Distribution: Emvembili (26-30.i.2017)

Hagensia havilandi (Forel, 1901)
havilandi (Forel, 1901)
Collectors: RFL
Distribution: Hlathikulu (1.i.1939)

Hagensia havilandi (Forel, 1901)
marleyi Arnold, 1926
Collectors: CNM, PGH
Distribution: Malolotja (7.i.2015), Sigcineni (4-8.i.2017)

Hagensia peringueyi Emery, 1899
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017)

Hypoponera Santschi, 1938

Hypoponera dulcis (Forel, 1907)
Collector: CNM
Distribution: Ekuvinjelweni (21-25.i.2017), Sigcineni (4-8.i.2017)

Leptogenys Roger, 1861

Leptogenys afrc-sz01
Collector: CNM
Distribution: Velezizweni (9-13.i.2017)

Leptogenys intermedia Emery, 1902
Collectors: CNM, PSW
Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017), Malkerns (2-16.ii.2010), Malolotja (20.ii.1999), Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Velezizweni (9-13.i.2017)

Leptogenys leiothorax Prins, 1965
Collector: CNM
Distribution: Emvembili (26-30.i.2017), Jilobi (18-22.xii.2016)

Leptogynys schwabi Forel, 1913
Collector: CNM
Distribution: Big Bend (26.ii-10.iii.2010), Malkerns (2-16.ii.2010)

Mesoponera Emery, 1900

Mesoponera caffraria (Smith, 1858)
Collector: CNM
Distribution: Bulembu (31.i.-4.ii.2017), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Odontomachus Latreille 1804

Odontomachus troglodytes Santschi, 1914
Collector: CNM
Distribution: Big Bend (26.ii-10.iii.2010), Ekuvinjelweni (21-25.i.2017), Emvembili (26-30.i.2017), Mambane (13-17.xii.2016), Mlawula (8-10.x.2016), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017)

Ophthalmopone Forel, 1890

Ophthalmopone berthoudi Forel, 1890
Collector: CNM
Distribution: Big Bend (11-25.iii.2010),

Plectroctena Smith, 1858

Plectroctena mandibularis Smith, 1858
Collector: CNM

Distribution: Bulembu (31.i.-4.ii.2017), Emvembili (26-30.i.2017), Ekuvinjelweni (21-25.i.2017), Jilobi (18-22.xii.2016), Malkerns (2-16.ii.2010), Mambane (13-17.xii.2016), Mndvungulu (14-18.i.2017), Shewula (27-31.xii.2016), Sigcineni (4-8.i.2017), Velezizweni (9-13.i.2017)

Streblognathus Mayr, 1862

Streblognathus peetersi Robertson, 2002
Collectors: CNM, JAW
Distribution: Bulembu (31.i.-4.ii.2017), Pigg's Peak (18.vi.1987)

Subfamily: Pseudomyrmecinae

Tetraponera Smith, 1852

Tetraponera emeryi (Forel, 1911)
Collector: PSW
Distribution: Malolotja (18-20.ii.1999), Forbes Reef (18.ii.1999)

Tetraponera natalensis (Smith, 1858)
Collectors: CNM, PSW
Distribution: Emvembili (26-30.i.2017), Mlilwane (17.ii.1999), Shewula (27-31.xii.2016)

Discussion

The 148 species in 41 genera recorded and published in this checklist is comparable to records in similar biomes in South Africa; Parr *et al.* 2004 reported 160 species in 37 genera in three savannah habitat types, while Munyai & Foord 2015 recorded 130 species in 38 genera in a variety of habitats including forest, thicket, sedgeland/herbland and savannah. (Parr *et al.* 2004; Munyai & Foord 2015). Species with wide-spread distribution across all regions in the country were *Anoplolepis custodiens*, *Polyrhachis schistacea* and *Pheidole megacephala* (Table 1). All three are also widespread in the continent, with *Pheidole megacephala* now considered an invasive species worldwide (Wetterer 2012, 2015). The savanna biome covers a greater extent of the country and this also reflected in this biome having the highest species diversity recorded so far. However, this does not necessarily translate to a true reflection of species completeness since not all regions were sampled equally nor cover an equal land area. Compared to proportional land area covered by each of these biomes, the forest and grassland biomes make a significant contribution to local ant species diversity, particularly when considering species with restricted distributions. Despite the proportional differences in size, each of the biomes had species collected exclusively from them, e.g. *Streblognathus petersii*, *Hagensia peringueyi*, *Hagensia* afrc_sz01, *Myrmicaria faurei* were collected only from the grassland habitats, *Monomorium albipilosum*, *Strumigenys* afrc_sz01, *Tetramorium eminii*, *Monomorium junodi* and *Ocymyrmex fortior* were collected only from savanna habitats and *Tetramorium guineense*, *Camponotus liogaster* and *Lepisiota arnoldi* only from forests.

While single site occurrence for sixty-six species (44.6%) may be attributed to their habitat requirements such as specificity to vegetation types (Schoeman & Foord 2012) or limited mobility compared to flying insects, they also highlight the need for an extensive survey as indicated by the distribution map of areas surveyed (Fig. 1). This emphasises the ecological importance of all the biomes as habitat for these organisms. Unfortunately, all the biomes, particularly the grassland and forest, have been greatly reduced due to various anthropogenic impacts such as agricultural expansion and only 4% of the country is under formal conservation areas, of which 2% grassland, 2% forest and 5% savanna are within these (NBSAP2, 2016). Utilisation of biodiversity data from surveys and checklists provides evidence for informed decision-making, facilitating the selection of priority conservation areas as well as future research (Schoeman & Foord 2012; McGeoch *et al.* 2013, Jaitrong *et al.* 2016; Onagbola & Scheffrahn 2019), as is planned in the local context.

The new ant species records from the surveys carried out (Magagula 2020; Magagula 2022) highlight the taxonomic challenge for this group as well as insects as a whole, where a large number of species remain undescribed (Fisher & Bolton 2016; McGeoch *et al.* 2011; Schoeman & Foord 2012). By determining the distribution of the ants in

the country, this checklist also provided new information on the range of some species, e.g. *Teratataner transvaalensis*, which was previously known only from a single locality in Mpumalanga province of South Africa, was collected locally in the south-eastern part of Eswatini. Additionally, *Myrmicaria faurei*, previously known only from a few sites in Mpumalanga, South Africa, was collected in the north-west of the country and *Camponotus liogaster*, previously known only from a few sites in the Hlabisa District in KwaZulu-Natal, South Africa, was also recorded for the first time in Eswatini. This emphasises the importance of continued recording and surveys to increase knowledge on southern Africa's biodiversity and its actual distribution, particularly in protected areas. In a time of rapid biodiversity loss due to human activity and demands, it is imperative that this biodiversity be recorded (Sánchez-Bayo & Wyckhuys 2019, van Klink *et al.* 2020). This ultimately provides information on areas for future research and monitoring, which are essential for management and conservation planning.

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Appendix 1. Supplementary data for voucher material and specimen depositories.

Species	Author	Collector	Determined by	Institution	Unique specimen identifier(s)	Data source
DOLICHODERINAE						
Tapinoma afrc-sz01		CNM	PGH	AFRC*	CASENT0889654, CASENT0889655	AntWeb
Technomyrmex pallipes	(Smith, 1876)	CNM PSW	PGH PSW	AFRC* PSWC	CASENT0889706, CASENT0249799	AntWeb
Technomyrmex voeltzkowi	(Forel, 1907)	CNM	PGH	AFRC*	CASENT0889656, CASENT0889658	AntWeb
DORYLINAE						
Aenictus eugenii	Emery, 1895	CNM	PGH	AFRC*	CASENT0889648, CASENT0889649,	AntWeb
		PSW	PSW	UCDC	CASENT0889722, CASENT0889723, CASENT0106069	
Dorylus afrc-za03		CNM	PGH	AFRC*	CASENT0889558–CASENT0889561 CASENT0889718	AntWeb
Dorylus helvolus pretoriae	Arnold, 1946	CNM	PGH	AFRC*	CASENT0889714, CASENT0889715	AntWeb
Eburopone wroughtoni	(Forel, 1910)	CNM	PGH	AFRC*	CASENT0889562, CASENT0889563, CASENT0889717	AntWeb
FORMICINAE						
Agraulomyrmex afrc-sz01		CNM	PGH	AFRC*	CASENT0889740, CASENT0889741	AntWeb
Agraulomyrmex afrc-sz02		CNM	PGH	AFRC*	CASENT0889742	AntWeb
Anoplolepis custodiens	(Smith, 1858)	CNM	PGH	AFRC*	CASENT0889541, CASENT0889542,	AntWeb
		PSW	HGR	UCDC SAMC	CASENT0889803–CASENT0889808, CASENT0106259, SAM-HYM-C016536	
Camponotus aequitas	Santschi, 1920	CNM	PGH	AFRC*	CASENT0889784, CASENT0889785	AntWeb
Camponotus afrc-sz01		CNM	PGH	AFRC*	CASENT0889748	AntWeb
Camponotus afrc-sz02		CNM	PGH	AFRC*	CASENT0889747, CASENT0889749	AntWeb
Camponotus afrc-sz03		CNM	PGH	AFRC*	CASENT0889750	AntWeb
Camponotus afrc-za12		CNM	PGH	AFRC*	CASENT0821197–CASENT0821201, CASENT0889710, CASENT0889711	AntWeb
Camponotus afrc-za28		CNM	PGH	AFRC	CASENT0821194	AntWeb
Camponotus afrc-za42		CNM	PGH	AFRC*	CASENT0889704	AntWeb
Camponotus afrc-za53		CNM	PGH	AFRC*	CASENT0889712	AntWeb
Camponotus auropubens jacob	Santschi, 1915	CNM	PGH	AFRC*	CASENT0889783	AntWeb
Camponotus brevisetosus	Forel, 1910	PGH PSW	PGH PSW	AFRC PSWC SAMC	CASENT0814725–CASENT0814738, CASENT0280304, CASENT0280305, SAM-HYM-C017551	AntWeb
Camponotus buttikeri	Arnold, 1958	CNM	PGH	AFRC*	CASENT0889753, CASENT0889754	AntWeb
Camponotus cosmicus	(Smith, 1858)	CNM	PGH	AFRC*	CASENT0889773–CASENT0889778	AntWeb
Camponotus cubangensis dofleini	Forel, 1911	CNM	PGH	AFRC*	CASENT0889751	AntWeb
Camponotus empedocles	Emery, 1920	B	GA	SAMC	SAM-HYM-C001955, SAM-HYM-C013231	AntWeb

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Appendix 1. (Continued)

Species	Author	Collector	Determined by	Institution	Unique specimen identifier(s)	Data source
Camponotus etiolipes	Bolton, 1995	CNM	PGH	AFRC*	CASENT0889755	AntWeb
Camponotus eugeniae	Forel, 1879	CNM	PGH	AFRC*	CASENT0889745, CASENT0889746	AntWeb
Camponotus grandidieri eumendax	Özdikmen, 2010	CNM	PGH	AFRC*	CASENT0889767, CASENT0889768	AntWeb
Camponotus liogaster	Santschi, 1932	CNM	PGH	AFRC*	CASENT0889770	AntWeb
Camponotus mayri	Forel, 1879	CNM	PGH	AFRC*	CASENT0889752, CASENT0889787	AntWeb
Camponotus niveosetosus	Mayr, 1862	CNM	PGH	AFRC*	CASENT0889769	AntWeb
Camponotus petersii	Emery, 1895	CNM	PGH	AFRC*	CASENT0889779–CASENT0889782, CASENT0889786	AntWeb
Camponotus robecchii rhodesianus	Forel, 1913	JHG	AJP	SAMC	SAM-HYM-C002192	AntWeb
Camponotus tauricollis	Forel, 1894	CNM	PGH	AFRC*	CASENT0889771, CASENT0889772	AntWeb
Camponotus valdeziae	Forel, 1879	CNM	PGH	AFRC*	CASENT0889743, CASENT0889744	AntWeb
Camponotus vestitus pectitus	Santschi, 1930	CNM	PGH	AFRC*	CASENT0889757–CASENT0889760	AntWeb
Camponotus vestitus strophiatus	Santschi, 1926	CNM	PGH	AFRC*	CASENT0889761–CASENT0889766	AntWeb
Lepisiota afrc-za22		CNM	PGH	AFRC*	CASENT0889567	AntWeb
Lepisiota arnoldi	(Forel, 1913)	CNM	PGH	AFRC*	CASENT0889572	AntWeb
Lepisiota crinita	(Mayr, 1895)	CNM	PGH	AFRC*	CASENT0889570, CASENT0889571, CASENT0889720	AntWeb
Lepisiota egregia	(Forel, 1913)	CNM	PGH	AFRC*	CASENT0889573	AntWeb
Lepisiota longinoda	(Arnold, 1920)	CNM	PGH	AFRC*	CASENT0889569	AntWeb
Lepisiota spinosior	(Forel, 1913)	CNM	PGH	AFRC*	CASENT0889568	AntWeb
Nylanderia boltoni	LaPolla & Fisher, 2011	CNM	PGH	AFRC*	CASENT0889607	AntWeb
Nylanderia natalensis	(Forel, 1915)	CNM	PGH	AFRC*	CASENT0889608, CASENT0889609, CASENT0889705	AntWeb
Plagiolepis afrc-sz01		CNM	PGH	AFRC*	CASENT0889645	AntWeb
Plagiolepis afrc-za06		CNM	PGH	AFRC*	CASENT0889642–CASENT0889644	AntWeb
Plagiolepis afrc-za09		CNM	PGH	AFRC*	CASENT0889646	AntWeb
Plagiolepis afrc-za13		CNM	PGH	AFRC*	CASENT0889577	AntWeb
Polyrhachis gagates	Smith, 1858	CNM, VBW	PGH NMN	AFRC* SAMC	CASENT0814418 SAM-HYM-C018273	AntWeb
Polyrhachis schistacea	(Gerstäcker, 1859)	CNM	PGH	AFRC*	CASENT0815041, CASENT0889789,	AntWeb
		JEC, VBW	NMN	SAMC	CASENT0889792–CASENT0889794, SAM-HYM-C007061, SAM-HYM-C012022	
Polyrhachis spinicola	Forel, 1894	PSW	PSW	PSWC	CASENT0281456	AntWeb
Tapinolepis afrc-sz01		CNM	PGH	AFRC*	CASENT0889655, CASENT0889657	AntWeb
MYRMICINAE						
Cardiocondyla emeryi	Forel, 1881	CNM	PGH	AFRC*	CASENT0889543	AntWeb
Cardiocondyla shuckardi	Forel, 1891	CNM	PGH	AFRC	CASENT0889721	AntWeb
Carebara afrc-za13		CNM	PGH	AFRC*	CASENT0889544	AntWeb
Cataulacus intrudens	(Smith, 1876)	CNM	PGH	AFRC*	CASENT0889545	AntWeb
Cataulacus traegaordhi	Santschi, 1914	CNM	PGH	AFRC*	CASENT0889716,	AntWeb
		PSW	PSW	PSWC	CASENT0922508	

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Appendix 1. (Continued)

Species	Author	Collector	Determined by	Institution	Unique specimen identifier(s)	Data source
Crematogaster afrc-sz01		CNM	PGH	AFRC*	CASENT0889557	AntWeb
Crematogaster afrc-tz03		CNM	PGH	AFRC*	CASENT0889556	AntWeb
Crematogaster afrc-za01		CNM	PGH	AFRC*	CASENT0889795, CASENT0889796	AntWeb
Crematogaster afrc-za04		CNM	PGH	AFRC*	CASENT0889552, CASENT0889553	AntWeb
Crematogaster afrc-za05		CNM	PGH	AFRC*	CASENT0889554, CASENT0889555	AntWeb
Crematogaster amita	Forel, 1913	CNM	PGH	AFRC*	CASENT0889547	AntWeb
Crematogaster liengmei	Forel, 1894	PSW	BBB	PSWC	CASENT0922641	AntWeb
Crematogaster rectinota	Forel, 1913	CNM	PGH	AFRC*	CASENT0889548–CASENT0889551	AntWeb
Meranoplus afrc-sz01		CNM	NR	ENMNH	CASENT0889956	AntWeb
Messor capensis	(Mayr, 1862)	CNM	PGH	AFRC*	CASENT0889647	AntWeb
Microdaceton exornatum	Santschi, 1913	CNM	PGH	AFRC*	CASENT0889584, CASENT0889585	AntWeb
Monomorium afrc-sz01		CNM	PGH	AFRC*	CASENT0889584	AntWeb
Monomorium afrc-sz02		CNM	PGH	AFRC*	CASENT0889599	AntWeb
Monomorium afrc-sz03		CNM	PGH	AFRC*	CASENT0889600	AntWeb
Monomorium afrc-sz04		CNM	PGH	AFRC*	CASENT0889591	AntWeb
Monomorium afrc-sz05		CNM	PGH	AFRC*	CASENT0889593	AntWeb
Monomorium afrc-sz06		CNM	PGH	AFRC*	CASENT0889601	AntWeb
Monomorium afrc-za04		CNM	PGH	AFRC*	CASENT0889597	AntWeb
Monomorium albopilosum	Emery, 1895	CNM	PGH	AFRC*	CASENT0889586, CASENT0889587	AntWeb
Monomorium delagoense	Forel, 1894	CNM JHG	PGH AJP	AFRC* SAMC	CASENT0889590 SAM-HYM-C003173	AntWeb
Monomorium junodi	Forel, 1910	CNM	PGH	AFRC*	CASENT0889588	AntWeb
Monomorium mictilis	Forel, 1910	CNM	PGH	AFRC*	CASENT0889594	AntWeb
Monomorium osiridis	Santschi, 1915	CNM	PGH	AFRC*	CASENT0889592	AntWeb
Monomorium shilohense	Forel, 1913	CNM	PGH	AFRC*	CASENT0889595	AntWeb
Monomorium vaguum	Santschi, 1930	CNM	PGH	AFRC*	CASENT0889596	AntWeb
Myrmicaria faurei	Arnold, 1947	CNM	PGH	AFRC*	CASENT0889605	AntWeb
Myrmicaria fusca nigerrima	Arnold, 1916	CNM	PGH	AFRC*	CASENT0889606	AntWeb
Myrmicaria natalensis	(Smith, 1858)	CNM	PGH	AFRC*	CASENT0889602–CASENT0889604, CASENT0889788, CASENT0889802	AntWeb
Nesomyrmex angulatus	(Mayr, 1862)	CNM	NR	ENMNH	CASENT0889957	AntWeb
Nesomyrmex stramineus	(Arnold, 1948)	PSW NMN	PSW	PSWC SAMC	CASENT0922011 SAM-HYM-C016531	AntWeb
Ocymyrmex fortior	Santschi, 1911	CNM	PGH	AFRC*	CASENT0889610, CASENT0889611, CASENT0889701	AntWeb
Pheidole afrc-sz01		CNM	PGH	AFRC*	CASENT0889729, CASENT0889733–CASENT0889735	AntWeb
Pheidole afrc-sz02		CNM	PGH	AFRC*	CASENT0889638, CASENT0889639, CASENT0889730, CASENT0889790	AntWeb
Pheidole afrc-sz03		CNM	PGH	AFRC*	CASENT0889731	AntWeb
Pheidole afrc-sz04		CNM	PGH	AFRC*	CASENT0889732	AntWeb
Pheidole afrc-sz05		CNM	PGH	AFRC*	CASENT0889632, CASENT0889633	AntWeb
Pheidole afrc-sz06		CNM	PGH	AFRC*	CASENT0889636, CASENT0889636	AntWeb

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Appendix 1. (Continued)

Species	Author	Collector	Determined by	Institution	Unique specimen identifier(s)	Data source
Pheidole afrc-sz07		CNM	PGH	AFRC*	CASENT0889640, CASENT0889641	AntWeb
Pheidole afrc-tz16		CNM	PGH	AFRC*	CASENT0889619, CASENT0889623	AntWeb
Pheidole afrc-za04		CNM	PGH	AFRC*	CASENT0889620, CASENT0889621	AntWeb
Pheidole afrc-za08		CNM	PGH	AFRC*	CASENT0889631	AntWeb
Pheidole afrc-za15		CNM	PGH	AFRC*	CASENT0889614–CASENT0889618	AntWeb
Pheidole afrc-za27		CNM	PGH	AFRC*	CASENT0889635	AntWeb
Pheidole afrc-za35		CNM	PGH	AFRC*	CASENT0889622	AntWeb
Pheidole megacephala	(Fabricius, 1793)	CNM	PGH	AFRC*	CASENT0889624–CASENT0889630, CASENT0889723, CASENT0889725–CASENT0889728	AntWeb
Solenopsis punctaticeps caffra	Forel, 1894	CNM	PGH	AFRC*	CASENT0889739	AntWeb
Strumigenys afrc-sz01		CNM	PGH	AFRC*	CASENT0889654	AntWeb
Terataner transvaalensis	Arnold, 1952	CNM	PGH	AFRC*	CASENT0889540, CASENT0889659	AntWeb
Tetramorium afrc-sz01		CNM	PGH	AFRC*	CASENT0889667	AntWeb
Tetramorium afrc-sz02		CNM	PGH	AFRC*	CASENT0889669	AntWeb
Tetramorium afrc-sz03		CNM	PGH	AFRC*	CASENT0889672, CASENT0889673	AntWeb
Tetramorium akermani	Arnold, 1926	CNM PSW	PGH NMN	AFRC* SAMC	CASENT0889670, CASENT0889671, SAM-HYM-C016537	AntWeb
Tetramorium chloe	(Santschi, 1920)	CNM	PGH	AFRC*	CASENT0889668	AntWeb
Tetramorium decem	Forel, 1913	CNM	PGH	AFRC*	CASENT0889665	AntWeb
Tetramorium delagoense	Forel, 1894	CNM	PGH	AFRC*	CASENT0889662	AntWeb
Tetramorium eminii	(Forel, 1894)	CNM	PGH	AFRC*	CASENT0889684	AntWeb
Tetramorium grassii	Emery, 1895	CNM	PGH	AFRC*	CASENT0889686, CASENT0889687	AntWeb
Tetramorium guineense	(Bernard, 1953)	CNM	PGH	AFRC*	CASENT0889663	AntWeb
Tetramorium notiale	Bolton, 1980	CNM	PGH	AFRC*	CASENT0889702	AntWeb
Tetramorium plumosum	Bolton, 1980	RLG	BB	NHMUK	CASENT0901186	AntWeb
Tetramorium sepultum	Bolton, 1980	RLG	BB	NHMUK	CASENT0901160	AntWeb
Tetramorium sericeiventre	Emery, 1877	CNM	PGH	AFRC*	CASENT0889688, CASENT0889797–CASENT0889800	AntWeb
Tetramorium setigerum	Mayr, 1901	CNM	PGH	AFRC*	CASENT0889679–CASENT0889683	AntWeb
Tetramorium setuliferum	Emery, 1895	CNM PSW	PGH HGR	AFRC* SAMC	CASENT0889674–CASENT0889676, SAM-HYM-C016538	AntWeb
Tetramorium simillimum	(Smith, 1851)	CNM	PGH	AFRC*	CASENT0889660, CASENT0889661	AntWeb
Tetramorium tenebrosum	Arnold, 1926	CNM	PGH	AFRC*	CASENT0889685	AntWeb
Tetramorium transversinode	(Mayr, 1901)	CNM	PGH	AFRC*	CASENT0889664	AntWeb
Tetramorium ultor	Forel, 1913	CNM	PGH	AFRC*	CASENT0889666	AntWeb
Tetramorium weitzeckeri	Emery	CNM	PGH	AFRC*	CASENT0889677, CASENT0889678, CASENT0889703, CASENT0889707	AntWeb

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Appendix 1. (Continued)

Species	Author	Collector	Determined by	Institution	Unique specimen identifier(s)	Data source
PONERINAE						
Anochetus bequaerti	Forel, 1913	CNM	PGH	AFRC*	CASENT0889582	AntWeb
Bothroponera berthoudi	(Forel, 1901)	CNM	PGH	AFRC*	CASENT0889651,	AntWeb
		JHG	HGR	SAMC	SAM-HYM-C007378	
Bothroponera cariosa	Emery, 1895	CNM	PGH	AFRC*	CASENT0889652	AntWeb
Bothroponera ilgii	Forel, 1910	CNM	PGH	AFRC*	CASENT0889650	AntWeb
Bothroponera kruegeri	(Forel, 1910)	CNM	PGH	AFRC*	CASENT0889653	AntWeb
Euponera brunoi	(Forel, 1913)	CNM	PGH	AFRC*	CASENT0889564–CASENT0889566	AntWeb
Hagensia afrc-sz01		CNM	PGH	AFRC*	CASENT0889737	AntWeb
Hagensia havilandi havilandi	(Forel, 1901)	RFL	HGR	SAMC	SAM-HYM-C005766, SAM-HYM-C005953	AntWeb
Hagensia havilandi marleyi	Arnold, 1926	CNM, PGH	PGH	AFRC*	CASENT0889736, CASENT0888244, CASENT0813002	AntWeb
Hagensia peringueyi	Emery, 1899	CNM	PGH	AFRC*	CASENT0889738	AntWeb
Hypoponera dulcis	(Forel, 1907)	CNM	PGH	AFRC*	CASENT0889691, CASENT0889692	AntWeb
*Hypoponera meridia*_cf		PSW	BB	PSWC	CASENT0270531	AntWeb
*Hypoponera spei*_cf		PSW	BB	PSWC	CASENT0270532	AntWeb
Leptogenys afrc-sz01		CNM	PGH	AFRC*	CASENT0889580, CASENT0889581	AntWeb
Leptogenys intermedia	Emery, 1902	CNM	PGH	AFRC*	CASENT0889574, CASENT0889576,	AntWeb
		PSW	PSW	PSWC	CASENT0889719, CASENT0270561	
Leptogenys leiothorax	Prins, 1965	CNM	PGH	AFRC*	CASENT0889578, CASENT0889579	AntWeb
Leptogenys schwabi	Forel	CNM	PGH	AFRC*	CASENT0889709	AntWeb
Mesoponera caffraria	(Smith, 1858)	CNM	PGH	AFRC*	CASENT0889693–CASENT0889696	AntWeb
Odontomachus troglodytes	Santschi, 1914	CNM	PGH	AFRC*	CASENT0889612, CASENT0889613, CASENT0889713	AntWeb
Ophthalmopone berthoudi	Forel, 1890	CNM	PGH	AFRC*	CASENT0889708	AntWeb
Plectroctena mandibularis	Smith, 1858	CNM	PGH	AFRC*	CASENT0889697–CASENT0889700, CASENT0889791	AntWeb
Streblognathus peetersi	Robertson, 2002	CNM	PGH	AFRC*	CASENT0889583,	AntWeb
		JAW	HGR	SAMC	SAM-HYM-C012782, SAM-HYM-C012788	
PSEUDOMYRMECINAE						
Tetraponera emeryi	Forel, 1911	PSW	PSW	PSWC	CASENT0794411–	AntWeb
			PSW	SAMC	CASENT0794415, SAM-HYM-C017590, SAM-HYM-C017591	
Tetraponera natalensis	(Smith, 1858)	CNM	PGH	AFRC*	CASENT0889689,	AntWeb
		PSW	PSW	PSWC	CASENT0889690,	
		PSW	PSW	SAMC	CASENT0795255, CASENT0795256, SAM-HYM-C017596	

Abbreviations:

Collectors and Determiners

AJP = André J. Prins

B = Buchanan

BB = Barry Bolton

BBB = Bonnie B. Blaimer

CNM = Cebisile Magagula

GA = George Arnold

HGR = Hamish G. Robertson

JAW = J.A.Warrens

JEC = Jan E. Crafford

JHG = Johannes H. Grobler

NMN = Nokuthula Mbanyana-Nhleko

NR = Nicole Rasoamanana

PGH = Peter G. Hawkes

PSW = Philip S. Ward

RFL = Reginald F. Lawrence

RG = R. L. Ghent

VBW = Vincent B. Whitehead

Source institutions holding vouchers

AFRC = AfriBugs Collection, Pretoria, South Africa

ENMNH = Eswatini National Museum of Natural History, Eswatini

NHMUK = Natural History Museum, London, United Kingdom

SAMC = Iziko South African Museum Collection, Cape Town, South Africa

PSWC = Philip S. Ward Collection, Davis, California

UCDC = UC Davis Collection, Davis, California

* indicates as yet non-databased duplicates housed in EMNH