

# Remarkable diversity in a little red dot: a comprehensive checklist of known ant species in Singapore (Hymenoptera: Formicidae) with notes on ecology and taxonomy

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**ABSTRACT.** Despite a legacy of extensive deforestation, the 720 km<sup>2</sup> city state of Singapore still harbours impressively diverse flora and fauna. Given increasing evidence of global insect declines, we urgently need to better document and protect local insect diversity. Numerous species of ants (Hymenoptera, Formicidae) have been recorded or described from Singapore since its founding in 1819. However, it has been over a century since Hugo Viehmeyer (1916) documented a total of 159 species found in the country. Here, we present an updated comprehensive checklist of all named species and subspecies of ants found in Singapore, with specimen collection data, and notes on taxonomy and ecology in the local context. We compiled the list based on museum collections material (the Zoological Reference Collection), primary literature sources, and verified records from known overseas repositories. We documented a total of 409 nominal species and subspecies, also a few notable morphospecies, from 10 subfamilies and 100 genera. These include new records for 121 species and 10 genera. Another 96 species and subspecies have types designated from Singapore; of these, 34 are currently considered as endemic. We also raised nine subspecies to species and synonymized two species, providing reasons justifying each status change: 1) *Camponotus (Tanaemyrmex) carinifer* **stat. n.**, 2) *Camponotus (Tanaemyrmex) tinctus* **nom. rev.**, 3) *Paraparatrechina malaccana* **stat. n.**, 4) *Aphaenogaster simulans* Forel, 1915 **stat. n.**, 5) *Myrmicaria adpressipilosa* **stat. n.**, 6) *Vollenhovia minuta* **stat. n.**, 7) *Vollenhovia brevicornis* (Emery, 1893) = *V. fridae* Forel, 1913 **syn. n.**, 8) *Hypoponera javana* **stat. n.**, 9) *Hypoponera singaporensis* **stat. n.**, 10) *Mesoponera javana* **stat. n.** Most species are considered native to Indomalaya, including 13 cosmopolitan tramps. Only 10 other species are presumed exotic to the region. At the time of writing, Singapore can be deemed the city with the highest recorded ant diversity in the world. Despite the sheer

numbers, this list remains incomplete, with more species awaiting discovery or taxonomic resolution in future. The immense diversity of ants in Singapore is mainly threatened by continued decimation of remnant forest habitats and encroaching urban developments.

<b>Keywords</b>	Southeast Asia, biodiversity, natural history, museum collections
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## INTRODUCTION

The Republic of Singapore is an independent tropical island nation in Southeast Asia, the colloquial ‘little red dot’ situated at the southernmost tip of the Malay Peninsula on the Equator. Singapore has a total land area of approximately 720 square kilometres (Singapore Land Authority, 2021), including 64 smaller offshore islands. Despite its small area and relative youth as a recognized sovereignty (albeit initially governed as a British colony), substantial historical records since its founding attest to the island nation’s diverse flora and fauna, including the ants (see Brook et al. 2003, Supplementary Information). Sir Thomas Stamford Raffles founded Singapore as a colonial British trading outpost in 1819, under the name of the British East India Company.

A spill-over effect of increased commerce and human traffic that followed the colony’s establishment in 1819, was that faunal material from Singapore was made available to foreign experts residing elsewhere. The earliest formal records of ants identified from Singapore date back to the early-mid 1800s to early 1900s. These comprised mostly scattered, independent species descriptions based on material from multiple collectors, and were usually nested within publications of broader geographic scope.

The first arguably comprehensive list of ants from Singapore, though not a ‘checklist’ by strict definition, was created by Frederick Smith – then assistant curator in the zoological department of the British Museum – in 1857. He compiled a larger catalogue of hymenopteran insects from Borneo, Mount Ophir, Malacca, and Singapore col-

lected by renowned explorer cum naturalist Alfred Russel Wallace. Within this catalogue, Smith identified and roughly described 24 ant species from Singapore. In 1858, Smith published another similar catalogue, this time documenting hymenopterans in the British Museum collections. He identified 29 ant species collected from Singapore in the museum holdings. Over subsequent years, ant species records from Singapore, including many presumably new discoveries, were published discretely by various well-known entomologists such as Carlo Menozzi (e.g., Menozzi 1926), Gustave Mayr (e.g., Mayr 1897), Carlo Emery (e.g., Emery 1893b; 1896b; 1925), and Auguste-Henri Forel (e.g., Forel 1893; 1907b; 1911b; 1912b; 1913b).

In 1916 (some sources indicate 1915 to be the correct publication date; we abide by 1916 in this paper for consistency), the first species checklist dedicated to ants from Singapore was realized, with the publication of “Ameisen von Singapore” (Viehmeyer 1916), albeit including a few species described from neighbouring countries. In the article, Dresden entomologist and schoolmaster Hugo Viehmeyer identified 159 ant species from Singapore, describing several in painstaking detail, based on material collected by Hans Friedrich Overbeck, a German mercantile trader and Malaya-ologist (Taylor 2014). Overbeck resided mainly in Singapore before 1914 (Taylor 2014), during which he amassed ant specimens mostly from his own back garden (Overbeck 1924), and also select localities including some in Malaysia or Indonesia.

In 1951, Chapman and Capco presented a checklist of ants of Asia, among which 143 species were indicated to be found in Singapore, albeit with misreported localities and nomenclatural er-

rors. This checklist, extensive as it seemed, paled in comparison to Viehmeier's (1916) seminal work in terms of taxonomic rigour and descriptive detail. Following Chapman and Capco (1951), no formal attempts have been made to properly document Singapore's whole ant fauna until now.

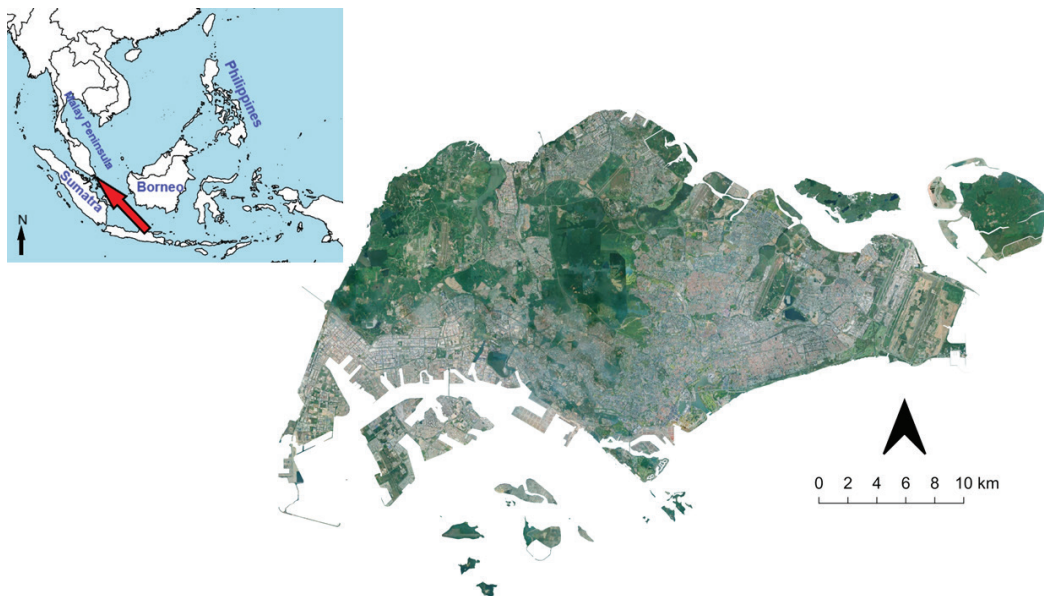
Given mounting evidence and recent concerns over global insect declines (Saunders et al. 2020; Halsch et al. 2021), conservation bodies worldwide have increasingly emphasized on the urgent need to document and understand insect diversity at local scales. This applies even to urbanized cities, which have been shown to support significant biodiversity despite lacking perceivably good habitats (Brassard et al. 2021). Conservation decisions are effective only if informed by accurate data on species diversity and distributions. Thus, species checklists are crucial resources for biological conservation, highlighting threatened taxa and their habitats that require prioritized protection.

We here present an updated and comprehensive checklist of ant species in Singapore, with details on an unprecedented scale. We document all nominal species and subspecies identified from available material and/or literature, from the 1800s post-founding till present. We also include speci-

men collection data, notes on observed habitat and ecology, and comments on taxonomy or other relevant information for every listed species.

## MATERIAL AND METHODS

Material examined for the purposes of this checklist were from the Zoological Reference Collection (ZRC), housed in the Lee Kong Chian Natural History Museum (previously known as the Raffles Museum of Biodiversity Research), and the Seiki Yamane Collection (SKYC). Invaluable contributions of material from the 1960s – early 1990s were made by the late Professor Dennis H. Murphy, a fervent collector of hexapods and legendary entomologist from (what was then known as) the University of Malaya (Chan 1991). Murphy's collections, distributed across the ZRC and other repositories worldwide, have been indispensable for numerous species discoveries in Singapore. Material available for the compilation of this checklist were collected in the 1960s until the late 2000s, mostly from nature reserves and variable pockets of spontaneous or human-modified vegetation interspersing the larger urban matrix on the main island, or scattered across the surrounding offshore islands (Fig. 1).



**Fig. 1.** Map of Singapore with current day satellite imagery. The largest forest reserve, the Central Catchment Nature Reserve, forms a major part of the green area at the centre of the map. Base map vector by Teo Siyang. Satellite imagery based on Fair Use, from Google Maps – Imagery©2021 TerraMetrics, Map data©2021. Map projection: SVY21. Inset: Map of Southeast Asia with red arrow indicating Singapore's geographic position.

Spontaneous vegetation – defined as vegetation naturally developed without human intervention – occupies less than 28% of total land area in modern Singapore (Yee et al. 2016), and is mostly found in protected reserves. These reserves encompass small tracts of inland primary forest and substantial areas of abandoned agricultural lands (Corlett 1992; O’Dempsey 2014). The largest of these reserves is the Central Catchment Nature Reserve (CCNR) – comprising ca. 1622 ha. of gazetted catchment areas surrounding three major reservoirs – MacRitchie, Peirce and Seletar (Corlett 1992; O’Dempsey 2014). Besides the CCNR, dispersed remnants of primary rainforest are also found in the 71 ha. Bukit Timah Nature Reserve (BTNR), and around ca. 15 ha. of freshwater swamp forest in an area known as Nee Soon (Corlett 1992). Primary lowland dipterocarp forest and freshwater swamp forest together occupy less than 1% of total land area (Yee et al. 2011, 2016). Remnant spontaneous vegetation predominantly consists of secondary vegetation or forests – floral communities regenerated on previously exploited land through natural succession (Yee et al. 2016).

The subsection ‘Material not physically examined’ refers to accessioned specimens in other formal repositories which we did not physically examine for this study. These include not just museums, but also some private and well-curated collections. All material listed in this checklist are of the worker caste, unless specified otherwise.

For the subsection ‘Literature’, only primary literature sources explicitly stating the direct examination and identification of physical specimens from Singapore were cited per relevant species, for greater information reliability. Secondary literature sources that cite primary sources but do not indicate involvement of actual specimens were omitted for brevity.

Significant baseline data of existing species records were gleaned from the Global Ant Biodiversity Database (GABI) (Guénard et al. 2017), albeit subject to extensive cross-checking against other reputable online public databases such as AntCat (Bolton 2021) and AntWeb (California Academy of Science, 2022), with error rectification where necessary.

## Abbreviations of specimen repositories

<b>ANIC</b>	Australian National Insect Collection, CSIRO, Australia
<b>BMNH</b>	British Museum of Natural History, London, United Kingdom
<b>CASC</b>	California Academy of Sciences, San Francisco, USA
<b>DEIC</b>	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
<b>FMNH</b>	The Field Museum of Natural History, Chicago, USA
<b>HKUC</b>	Hong Kong University Collections, Hong Kong, Republic of China
<b>HNHM</b>	Hungarian Natural History Museum, Budapest, Hungary
<b>JKWC</b>	James K. Wetterer Collection, Florida, USA
<b>MCZ</b>	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA
<b>MHNG</b>	Muséum d’Histoire Naturelle Geneva, Geneva, Switzerland
<b>MNHN</b>	Muséum National d’Histoire Naturelle, Paris, France
<b>MNHU</b>	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany [may be synonym of ZMHB]
<b>MSC</b>	Mostafa Sharaf Collection, Riyadh, Saudi Arabia
<b>MSNG</b>	Museo Civico di Storia Naturale di Genova “Giacomo Doria”, Genoa, Italy
<b>NHMB</b>	Naturhistorisches Museum, Basel, Switzerland
<b>NHMW</b>	Naturhistorisches Museum Wien, Vienna, Austria
<b>OUMNH</b>	Oxford University Museum of Natural History, Oxford, United Kingdom
<b>PSWC</b>	Philip S. Ward Collection, University of California, Davis, C.A., USA
<b>RBINS</b>	Royal Belgian Institute of Natural Sciences, Brussels, Belgium
<b>SKYC</b>	Seiki Yamane Collection, Kagoshima, Japan
<b>THNHM</b>	Thailand Natural History Museum, National Science Museum, Pathum Thani, Thailand

<b>UCDC</b>	University of California, Davis, Collection, Davis, CA, USA
<b>USNM</b>	Smithsonian National Museum of Natural History, United States National Museum, Washington, D.C., USA
<b>ZCW</b>	Zettel Collection Wien, Vienna, Austria
<b>ZMHB</b>	Zoologisches Museum der Humboldt-Universität zu Berlin, part of Museum für Naturkunde Berlin, Germany
<b>ZRC</b>	Zoological Reference Collection, Lee Kong Chian Natural History Museum, National University of Singapore, Singapore

else in the world. We also raised nine subspecies to species, and synonymized two original species based on our own assessment of available specimens and online type images, and original descriptions where possible.

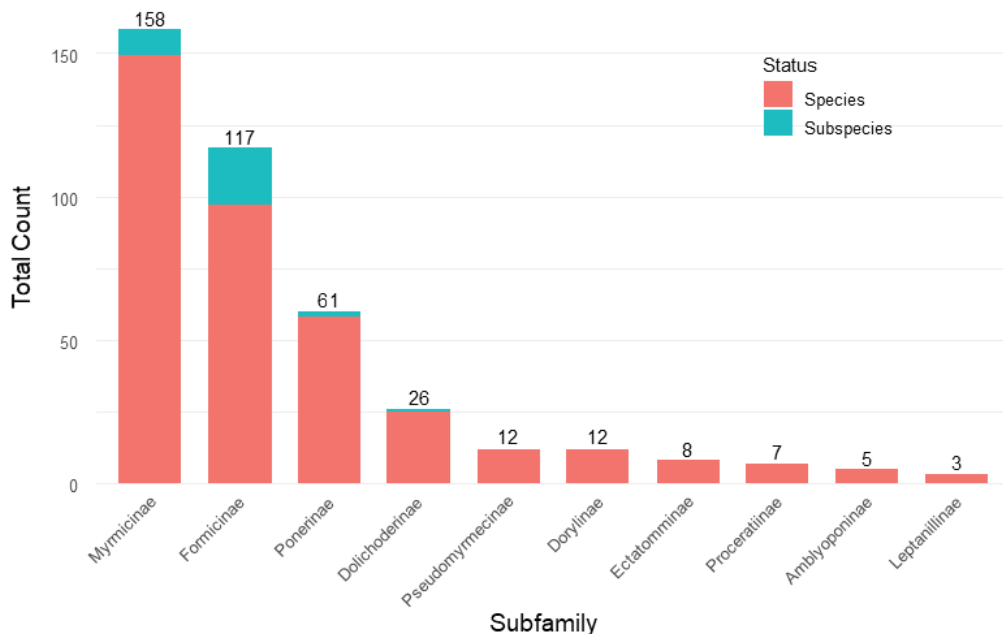
We recorded 100 genera, including 10 new genus records: Amblyoponinae – *Mysitrium*; Dolichoderinae – *Ochetellus*; Dorylinae – *Parasyscia*, *Syscia*; Ectatomminae – *Holcoponera*; Formicinae – *Gesomyrmex*; Myrmicinae – *Aphaenogaster*, *Gauromyrmex* and *Lordomyrma*; Ponerinae – *Myopias*. The top three most speciose subfamilies were (species and subspecies counts in parentheses): Myrmicinae (158), Formicinae (117) and Ponerinae (61) (Fig.2).

## RESULTS AND DISCUSSION

### Ant diversity in Singapore

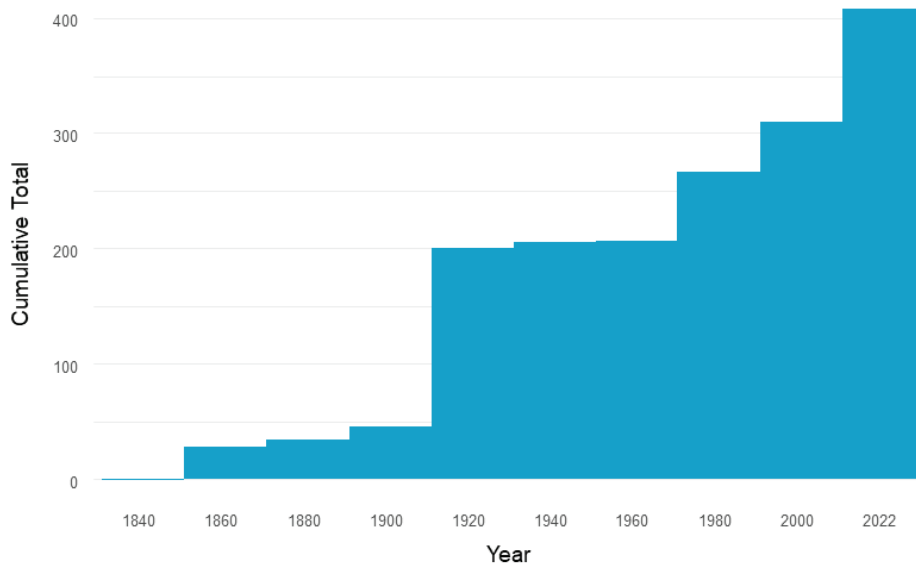
A total of 409 nominal ant species and subspecies from 10 subfamilies were identified from ZRC material, the available literature, or other known curated records. Our list surpasses Viehmeier's (1916) list (i.e., 159 species) by ca. 150%. Of these, 121 constitute new formal species records from Singapore. Another 96 species (and subspecies) were first described and/or have designated types from Singapore. Thirty-four of these are currently known only from Singapore and nowhere

The full checklist and corresponding information mentioned are summarized in Table 1. Newly established species that were raised from subspecies are indicated with suffixes 'stat. n.' (novel status) or 'nom. rev.' (revived species name) in the same table. Synonymized species are also indicated with the suffix 'syn. n.' (novel synonymy). Detailed information on each species is provided at the end of this section, under 'Species Accounts'. Reasons justifying any taxonomic changes can be found under 'Remarks' per relevant species section.



**Fig. 2.** Number of nominal species and subspecies per subfamily in Singapore. Unnamed morphospecies are not included in species counts.





**Fig. 3.** Accumulation graph of total known species (including subspecies) collected and/or recorded over time in years (1850 – present).

In addition to the full checklist, we have also compiled a list of 91 species and subspecies that were last known to be collected more than 100 years ago from the time of writing, i.e., 2022 (Table 2). While it is possible that these species might have gone extinct locally, we cannot make a definite conclusion given the greater likelihood of incomplete sampling and identification bottlenecks. Over the course of examining ZRC material, we noted that many specimens could not be confidently identified to nominal species – some of these may correspond to species listed in Table 2.

Further, we flagged 14 species and subspecies currently known only from Singapore, but which have not been collected for more than a century (Table 3). The current statuses of these forms may require critical evaluation, and at least a few might be synonyms of more widespread, recognized species. We listed possibly synonymous species and their known biogeographic distributions where relevant.

The substantial volume of unidentifiable material also implies that the present checklist is likely an under-representation of Singapore's true ant fauna. Moreover, the accumulation curve of new species records over time appears to rise with no signs of reaching a plateau (Fig. 3), suggest-

ing that more species await discovery. We have included details for a few outstanding unnamed morphospecies that may warrant further taxonomic attention in future, including the first local records of the doryline genus *Syscia*, and the myrmicine genus *Lordomyrma*. These unnamed species are excluded from the final checklist tally.

### Exotics and natives

Singapore's present topography is the culmination of a relentless trajectory of land use changes against a historical backdrop of colonization and agriculture (O'Dempsey 2014), followed by rapid urbanization and industrialization after the second world war (Yee et al. 2011). Given this unique environmental context and Singapore's status as a hub for international commerce, we expected the local ant fauna to be dominated by exotics and cosmopolitan tramp species.

Contrary to expectations, we found only ten species considered exotic to Indomalaya – which Singapore is part of – including seven recognized cosmopolitan tramps defined by Wetterer (2015): *Pheidole megacephala*, *Monomorium monomorium*, *Solenopsis geminata*, *Strumigenys eggersi*, *S. emmae*, *S. membranifera*, *S. rogeri*, *Sylophopsis subcoeca*, *Technomyrmex difficilis* and *Trichomyrmex destructor*.

**Table 1.** Summarized checklist of named ant species (and subspecies) found in Singapore (SG). For ‘Year First Collected/Recorded’, the year of first collection is given precedence if both years are known. Species found only in Singapore (at the time of writing) are in bold.

Subfamily	Scientific Name	Year First Collected/Recorded	Type Locality SG	New Lit. Record
Amblyoponinae	<i>Myopopone castanea</i> (Smith, 1860)	1970		
Amblyoponinae	<i>Mystrium camillae</i> Emery, 1889	2017		x
Amblyoponinae	<i>Prionopelta kraepelini</i> Forel, 1905	2012		x
Amblyoponinae	<i>Stigmatomma besucheti</i> (Baroni Urbani, 1978)	1964		
Amblyoponinae	<i>Stigmatomma reclinatum</i> (Mayr, 1879)	1964		x
Dolichoderinae	<i>Chronoxenus dalyi</i> (Forel, 1895)	1916		
Dolichoderinae	<i>Chronoxenus wroughtonii</i> (Forel, 1895)	1985		x
Dolichoderinae	<i>Dolichoderus affinis</i> Emery, 1889	1916		
Dolichoderinae	<b><i>Dolichoderus crawleyi</i> Donisthorpe, 1917</b>	1917	x	
Dolichoderinae	<i>Dolichoderus indrapurensis</i> Forel, 1912	1968		x
Dolichoderinae	<i>Dolichoderus sulcaticeps</i> (Mayr, 1870)	1916		
Dolichoderinae	<i>Dolichoderus thoracicus</i> Smith, 1860	1863		
Dolichoderinae	<i>Iridomyrmex anceps</i> (Roger, 1863)	1916		
Dolichoderinae	<i>Ochetellus glaber</i> (Mayr, 1862)	2007		x
Dolichoderinae	<i>Philidris cordata</i> (Smith, 1859)	1911		
Dolichoderinae	<i>Philidris laevigata</i> (Emery, 1895)	1916		
Dolichoderinae	<i>Philidris myrmecodiae</i> (Emery, 1887)	2014		x
Dolichoderinae	<i>Tapinoma andamanense capsincola</i> Forel, 1911	1916		
Dolichoderinae	<i>Tapinoma glaucum</i> (Viehmeyer, 1916)	1916	x	
Dolichoderinae	<i>Tapinoma indicum</i> Forel, 1895	1916		
Dolichoderinae	<i>Tapinoma melanocephalum</i> (Fabricius, 1793)	1857		
Dolichoderinae	<i>Technomyrmex albipes</i> (Smith, 1861)	1916		
Dolichoderinae	<i>Technomyrmex difficilis</i> Forel, 1892	≤ 1948		
Dolichoderinae	<i>Technomyrmex elatior</i> Forel, 1902	1916		
Dolichoderinae	<i>Technomyrmex horni</i> Forel, 1912	1989		
Dolichoderinae	<i>Technomyrmex kraepelini</i> Forel, 1905	1967		
Dolichoderinae	<i>Technomyrmex pratensis</i> (Smith, 1860)	1994		x
Dolichoderinae	<i>Technomyrmex schimmeri</i> Viehmeyer, 1916	1916	x	
Dolichoderinae	<i>Technomyrmex strenuus</i> Mayr, 1872	1872	x [part]	
Dolichoderinae	<i>Technomyrmex textor</i> Forel, 1909	2016		x
Dolichoderinae	<i>Technomyrmex vitiensis</i> Mann, 1921	1979		x
Dorylinae	<i>Aenictus camposi</i> Wheeler & Chapman, 1925	1967		x
Dorylinae	<i>Aenictus cylindripetiolus</i> Jaitrong & Yamane, 2013	2016		x
Dorylinae	<i>Aenictus gracilis</i> Emery, 1893	1967		x
Dorylinae	<b><i>Aenictus seletarius</i> Wong &amp; Guénard, 2016</b>	2015	x	
Dorylinae	<i>Aenictus shuckardi</i> Forel, 1901	1916		
Dorylinae	<i>Aenictus yamanei</i> Wiwatwitaya & Jaitrong, 2011	2017		x

Subfamily	Scientific Name	Year First Collected/Recorded	Type Locality SG	New Lit. Record
Dorylinae	<i>Dorylus laevigatus</i> (Smith, 1857)	1916		
Dorylinae	<i>Lioponera hewitti</i> (Wheeler, 1919)	2014		x
Dorylinae	<b><i>Lioponera singaporensis</i> (Viehmeyer, 1916)</b>	1916	x	
Dorylinae	<i>Ooceraea biroi</i> (Forel, 1907)	1907	x	
Dorylinae	<i>Parasyscia dohertyi</i> (Emery, 1902)	1968		x
Dorylinae	<i>Simopone bakeri</i> Menozzi, 1926	1926	x	
Ectatomminae	<i>Holcponera cribrata</i> (Emery, 1900)	1988		
Ectatomminae	<i>Stictoponera bicolor</i> (Emery, 1889)	2016		x
Ectatomminae	<i>Stictoponera binghamii</i> (Forel, 1900)	1916		
Ectatomminae	<i>Stictoponera coxalis</i> (Roger, 1860)	1967		x
Ectatomminae	<i>Stictoponera gabata</i> (Lattke, 2004)	2016		
Ectatomminae	<b><i>Stictoponera hyalina</i> (Lattke, 2004)</b>	1967	x	
Ectatomminae	<i>Stictoponera ortostoma</i> (Lattke, 2004)	1967	x	
Ectatomminae	<i>Stictoponera posteropsis</i> Gregg, 1951	1981		x
Formicinae	<i>Acropyga acutiventris</i> Roger, 1862	1967		
Formicinae	<i>Acropyga inezae</i> Forel, 1912	2019		x
Formicinae	<i>Acropyga oceanica</i> Emery, 1900	2004		
Formicinae	<i>Acropyga rubescens</i> Forel, 1894	1916		
Formicinae	<i>Anoplolepis gracilipes</i> (Smith, 1857)	1857	x	
Formicinae	<i>Camponotus (Karavaievia) overbecki</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Camponotus (Myrmamblys) adustus</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Camponotus (Myrmamblys) bedoti</i> Emery, 1893	1907		
Formicinae	<i>Camponotus (Myrmamblys) bellus</i> Forel, 1908	1916		
Formicinae	<i>Camponotus (Myrmamblys) ephippiatus</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Camponotus (Myrmamblys) gretae</i> Forel, 1902	1916		
Formicinae	<i>Camponotus (Myrmamblys) reticulatus</i> Roger, 1863	1976		x
Formicinae	<b><i>Camponotus (Myrmamblys) reticulatus sericellus</i> Viehmeyer, 1916</b>	1916	x	
Formicinae	<i>Camponotus (Myrmosaulus) camelinus</i> (Smith, 1857)	1857	x	
Formicinae	<i>Camponotus (Myrmosericus) parius</i> Emery, 1889	1994		
Formicinae	<i>Camponotus (Myrnotarsus) nigricans enganensis</i> Forel, 1916	1916		
Formicinae	<i>Camponotus (Myrnotarsus) quadrisectus hians</i> Forel, 1907	1897	x	
Formicinae	<b><i>Camponotus (Myrnotarsus) quadrisectus margaritae</i> Forel, 1907</b>	1897	x	
Formicinae	<i>Camponotus (Tanaemyrmex) albosparsus</i> Bingham, 1903	1996		
Formicinae	<i>Camponotus (Tanaemyrmex) arrogans</i> (Smith, 1858)	1858	x	



Subfamily	Scientific Name	Year First Collected/Recorded	Type Locality SG	New Lit. Record
Formicinae	<i>Camponotus (Tanaemyrmex) carinifer</i> Viehmeyer, 1916 <b>stat.n.</b>	1916	x	
Formicinae	<i>Camponotus (Tanaemyrmex) festinus eximius</i> Emery, 1900	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) festinus simaluranus</i> Forel, 1915	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) irritans</i> (Smith, 1857)	≤ 2000		
Formicinae	<b><i>Camponotus (Tanaemyrmex) maculatus obfuscatus</i> Viehmeyer, 1916</b>	1916	x	
Formicinae	<i>Camponotus (Tanaemyrmex) maculatus subnudus</i> Emery, 1889	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) maxwellensis</i> Forel, 1913	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) mitis</i> (Smith, 1858)	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) tinctus</i> (Smith, 1858), <b>nom. rev.</b>	1916		
Formicinae	<i>Camponotus (Tanaemyrmex) variegatus</i> (Smith, 1858)	1858	x [part]	
Formicinae	<i>Camponotus (Tanaemyrmex) variegatus fuscithorax</i> Dalla Torre, 1893	1916		
Formicinae	<i>Colobopsis badia</i> (Smith, 1857)	1857	x	
Formicinae	<i>Colobopsis leonardi</i> (Emery, 1889)	1916		
Formicinae	<i>Colobopsis leonardi gracilentata</i> (Viehmeyer, 1916)	1916	x	
Formicinae	<i>Colobopsis moeschi lygaea</i> (Viehmeyer, 1916)	1916	x	
Formicinae	<i>Colobopsis rothneyi</i> (Forel, 1893)	1916		
Formicinae	<b><i>Colobopsis rothneyi krafti</i> (Forel, 1901)</b>	1901	x	
Formicinae	<i>Colobopsis vitrea</i> (Smith, 1860)	1916		
Formicinae	<i>Colobopsis vitrea angustula</i> (Emery, 1925)	1870		
Formicinae	<i>Colobopsis vitrea vittatula</i> (Forel, 1913)	1916		
Formicinae	<i>Dinomyrmex gigas</i> (Latreille, 1802)	1857		
Formicinae	<i>Echinopla lineata</i> Mayr, 1862	1975		
Formicinae	<i>Echinopla melanarctos</i> Smith, 1857	1857	x	
Formicinae	<i>Echinopla rugosa</i> André, 1892	1916		
Formicinae	<i>Euprenolepis procera</i> (Emery, 1900)	2012		x
Formicinae	<i>Gesomyrmex spatulatus</i> Cole, 1949	1969		x
Formicinae	<b><i>Lepisiota rothneyi splendida</i> (Viehmeyer, 1916)</b>	1916	x	
Formicinae	<i>Myrmoteras (Myagrotaras) bakeri</i> Wheeler, 1919	1965		x
Formicinae	<i>Myrmoteras barbouri</i> Creighton, 1930	1965		
Formicinae	<i>Nylanderia birmana</i> (Forel, 1902)	2021		x
Formicinae	<i>Nylanderia bourbonica</i> (Forel, 1886)	2012		
Formicinae	<i>Nylanderia clandestina</i> (Mayr, 1870)	1916		
Formicinae	<i>Nylanderia kraepelini</i> (Forel, 1905)	2021		x
Formicinae	<i>Nylanderia yerburyi</i> (Forel, 1894)	1912		

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Formicinae	<i>Oecophylla smaragdina</i> (Fabricius, 1775)	1916		
Formicinae	<i>Overbeckia subclavata</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Paraparatrechina malaccana</i> (Viehmeyer, 1916) <b>stat.n.</b>	1985		x
Formicinae	<i>Paraparatrechina opaca</i> (Emery, 1887)	2014		x
Formicinae	<i>Paratrechina longicornis</i> (Latreille, 1802)	1931		
Formicinae	<i>Plagiolepis bicolor</i> Forel, 1901	1916		
Formicinae	<i>Plagiolepis exigua</i> Forel, 1894	1916		
Formicinae	<i>Polyrhachis (Campomyrma) creusa</i> Emery, 1897	1916		
Formicinae	<i>Polyrhachis (Chariomyrma) arcuata</i> (Le Guillou, 1842)	1907		
Formicinae	<b><i>Polyrhachis (Chariomyrma) modesta</i> Smith, 1857</b>	1857	x	
Formicinae	<i>Polyrhachis (Cyrtomyrma) laevisissima</i> Smith, 1858	1916		
Formicinae	<i>Polyrhachis (Cyrtomyrma) lepida</i> Kohout, 2006	2014		x
Formicinae	<i>Polyrhachis (Myrma) beccarii</i> Mayr, 1872	2015		
Formicinae	<i>Polyrhachis (Myrma) carbonaria</i> Smith, 1857	1962		x
Formicinae	<i>Polyrhachis (Myrma) hosei</i> Donisthorpe, 1942	2014		x
Formicinae	<i>Polyrhachis (Myrma) illaudata</i> Walker, 1859	1973		
Formicinae	<i>Polyrhachis (Myrma) inermis</i> Smith, 1858	2014		x
Formicinae	<i>Polyrhachis (Myrma) nigropilosa</i> Mayr, 1872	1926		
Formicinae	<i>Polyrhachis (Myrma) obesior</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Polyrhachis (Myrma) orsylla</i> Smith, 1861	1907		
Formicinae	<i>Polyrhachis (Myrma) orsylla ritsemai</i> Mayr, 1883	1916		
Formicinae	<i>Polyrhachis (Myrma) proxima</i> Roger, 1863	1893		
Formicinae	<i>Polyrhachis (Myrma) pruinosa</i> Mayr, 1872	1913		
Formicinae	<i>Polyrhachis (Myrma) striata</i> Mayr, 1862	1893		
Formicinae	<i>Polyrhachis (Myrma) striatorugosa</i> Mayr, 1862	1989		x
Formicinae	<i>Polyrhachis (Myrma) villipes</i> Smith, 1857	1916		
Formicinae	<i>Polyrhachis (Myrma) vindex</i> Smith, 1857	1962		x
Formicinae	<i>Polyrhachis (Myrmatopa) charaxa</i> Smith, 1860	1896		
Formicinae	<i>Polyrhachis (Myrmatopa) flavicornis</i> Smith, 1857	1857	x	
Formicinae	<i>Polyrhachis (Myrmatopa) leviuscula</i> Viehmeyer, 1916	1912	x	
Formicinae	<i>Polyrhachis (Myrmatopa) piliventris</i> Smith, 1858	1858	x	
Formicinae	<i>Polyrhachis (Myrmatopa) varicolor</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Polyrhachis (Myrmhopla) abdominalis</i> Smith, 1858	1995		
Formicinae	<i>Polyrhachis (Myrmhopla) armata</i> (Le Guillou, 1842)	1916		
Formicinae	<i>Polyrhachis (Myrmhopla) armata defensa</i> Smith, 1857	1857	x	
Formicinae	<i>Polyrhachis (Myrmhopla) bicolor</i> Smith, 1858	1916		
Formicinae	<i>Polyrhachis (Myrmhopla) bicolor aurinasis</i> Forel, 1901	1907		
Formicinae	<i>Polyrhachis (Myrmhopla) chalybea</i> Smith, 1857	1857	x [part]	
Formicinae	<i>Polyrhachis (Myrmhopla) cryptoceroides</i> Emery, 1887	2016		x

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Formicinae	<i>Polyrhachis (Myrmhopla) dives</i> Smith, 1857	1857	x	
Formicinae	<i>Polyrhachis (Myrmhopla) hector</i> Smith, 1857	1857	x	
Formicinae	<i>Polyrhachis (Myrmhopla) hippomanes ceylonensis</i> Emery, 1893	1916		
Formicinae	<i>Polyrhachis (Myrmhopla) lucidula</i> Emery, 1893	1916		
Formicinae	<i>Polyrhachis (Myrmhopla) muelleri</i> Forel, 1893	1893	x	
Formicinae	<i>Polyrhachis (Myrmhopla) saevissima</i> Smith, 1860	2012		x
Formicinae	<i>Polyrhachis (Myrmhopla) thailandica</i> Kohout, 2006	2016		x
Formicinae	<i>Polyrhachis (Myrmhopla) tibialis parsis</i> Emery, 1900	1916		
Formicinae	<i>Polyrhachis (Myrmothrinax) frauenfeldi</i> Mayr, 1862	1916		
Formicinae	<i>Polyrhachis (Myrmothrinax) saigonensis</i> Forel, 1886	1916		
Formicinae	<i>Polyrhachis (Myrmothrinax) textor</i> Smith, 1857	1916		
Formicinae	<i>Polyrhachis (Myrmothrinax) thrinax inconstans</i> Viehmeyer, 1916	1916	x	
Formicinae	<i>Polyrhachis (Myrmothrinax) thrinax overbecki</i> Dorow, 1995	1916	x	
Formicinae	<i>Polyrhachis (Polyrhachis) bellicosa</i> Smith, 1859	1916		
Formicinae	<i>Polyrhachis (Polyrhachis) olybria</i> Forel, 1912	1967		
Formicinae	<i>Polyrhachis (Polyrhachis) ypsilon</i> Emery, 1887	1875	x	
Formicinae	<i>Prenolepis jerdoni</i> Emery, 1893	1916		
Formicinae	<i>Prenolepis subopaca</i> Emery, 1900	1967		
Formicinae	<b><i>Pseudolasius badius</i> Viehmeyer, 1916</b>	1916	x	
Formicinae	<b><i>Pseudolasius circularis</i> Viehmeyer, 1916</b>	1916	x	
Formicinae	<i>Pseudolasius ludovici</i> Forel, 1913	1916		
Formicinae	<i>Pseudolasius martini</i> Forel, 1911	1916		
Formicinae	<b><i>Pseudolasius mayri duplicatus</i> Viehmeyer, 1916</b>	1916	x	
Formicinae	<i>Pseudolasius trimorphus</i> Karavaiev, 1929	2018		x
Leptanillinae	<b><i>Leptanilla havilandi</i> Forel, 1901</b>	1901	x	
Leptanillinae	<b><i>Leptanilla hypodracos</i> Wong &amp; Guénard, 2016</b>	2015	x	
Leptanillinae	<i>Protanilla rafflesi</i> Taylor, 1990	1964	x	
Myrmicinae	<i>Acanthomyrmex ferox</i> Emery, 1893	1981		x
Myrmicinae	<i>Aphaenogaster simulans</i> Forel, 1915 <b>stat. n.</b>	2016		x
Myrmicinae	<i>Calyptomyrmex beccarii</i> Emery, 1887	1916		
Myrmicinae	<i>Calyptomyrmex loweryi</i> Shattuck, 2011	2016		x
Myrmicinae	<i>Cardiocondyla kagutsuchi</i> Terayama, 1999	2003		
Myrmicinae	<i>Cardiocondyla obscurior</i> Wheeler, 1929	2015		x
Myrmicinae	<i>Cardiocondyla strigifrons</i> Viehmeyer, 1922	2017		
Myrmicinae	<i>Cardiocondyla tjobodana</i> Karavaiev, 1935	1995		x
Myrmicinae	<i>Cardiocondyla wroughtonii</i> (Forel, 1890)	1912		
Myrmicinae	<i>Carebara affinis</i> (Jerdon, 1851)	1916		

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Myrmicinae	<i>Carebara castanea</i> Smith, 1858	2015		x
Myrmicinae	<i>Carebara diversa</i> (Jerdon, 1851)	1916		
Myrmicinae	<b><i>Carebara overbecki</i> (Viehmeier, 1916)</b>	1916	x	
Myrmicinae	<i>Carebara silenus</i> (Smith, 1858)	1858	x	
Myrmicinae	<i>Cataulacus granulatus</i> (Latreille, 1802)	1876		
Myrmicinae	<i>Cataulacus horridus</i> Smith, 1857	1916		
Myrmicinae	<i>Cataulacus latissimus</i> Emery, 1893	1974		
Myrmicinae	<i>Cataulacus praetextus</i> Smith, 1867	1916		
Myrmicinae	<i>Crematogaster anthracina</i> Smith, 1857	1857	x	
Myrmicinae	<i>Crematogaster aurita</i> Karavaiev, 1935	2015		x
Myrmicinae	<i>Crematogaster borneensis</i> André, 1896	1916		
Myrmicinae	<i>Crematogaster brunnea ruginota</i> Santschi, 1928	1916		
Myrmicinae	<i>Crematogaster coriaria</i> Mayr, 1872	2017		x
Myrmicinae	<i>Crematogaster decamera</i> Forel, 1910	1916		
Myrmicinae	<i>Crematogaster difformis</i> Smith, 1857	1857	x	
Myrmicinae	<i>Crematogaster dohrni artifex</i> Mayr, 1878	1878	x	
Myrmicinae	<b><i>Crematogaster egidyi szaboi</i> Forel, 1913</b>	1898	x	
Myrmicinae	<i>Crematogaster ferrarii</i> Emery, 1888	1916		
Myrmicinae	<i>Crematogaster inflata</i> Smith, 1857	1857	x	
Myrmicinae	<i>Crematogaster linsenmairi</i> Feldhaar, Maschwitz & Fiala, 2016	1916	x	
Myrmicinae	<i>Crematogaster modiglianii</i> Emery, 1900	1985		x
Myrmicinae	<b><i>Crematogaster overbecki</i> Viehmeier, 1916</b>	1916	x	
Myrmicinae	<i>Crematogaster rogenhoferi</i> Mayr, 1879	1916		
Myrmicinae	<i>Crematogaster sewardi</i> Forel, 1901	1983		
Myrmicinae	<b><i>Crematogaster subnuda discinodis</i> Emery, 1893</b>	1893	x	
Myrmicinae	<i>Crematogaster treubi</i> Emery, 1896	1916		
Myrmicinae	<i>Crematogaster yappi</i> Forel, 1901	2012		x
Myrmicinae	<i>Crematogaster (Orthocrema) bandarensis</i> Forel, 1913	2016		x
Myrmicinae	<i>Crematogaster (Orthocrema) longipilosa</i> Forel, 1907	1912		
Myrmicinae	<i>Crematogaster (Orthocrema) myops</i> Forel, 1911	1988		
Myrmicinae	<i>Crematogaster (Orthocrema) quadriruga</i> Forel, 1911	1994		x
Myrmicinae	<b><i>Dilobocondyla fulva</i> Viehmeier, 1916</b>	1916	x	
Myrmicinae	<i>Erromyrmex latinodis</i> (Mayr, 1872)	1916		
Myrmicinae	<i>Eurhopalothrix heliscata</i> Wilson & Brown, 1985	1983	x	
Myrmicinae	<i>Eurhopalothrix omnivaga</i> Taylor, 1990	2015		x
Myrmicinae	<i>Eurhopalothrix procera</i> (Emery, 1897)	1991		x
Myrmicinae	<i>Gauromyrmex acanthinus</i> (Karavaiev, 1935)	2017		x
Myrmicinae	<i>Liomyrmex gestroi</i> (Emery, 1887)	1969		
Myrmicinae	<i>Lophomyrmex bedoti</i> Emery, 1893	1916		

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Myrmicinae	<i>Mayriella transfuga</i> Baroni Urbani, 1977	1968		
Myrmicinae	<i>Meranoplus bicolor</i> (Guérin-Méneville, 1844)	1916		
Myrmicinae	<i>Meranoplus malaysianus</i> Schödl, 1998	2017		x
Myrmicinae	<i>Meranoplus mucronatus</i> Smith, 1857	1980		x
Myrmicinae	<b><i>Metapone murphyi</i> Wang, Yamada &amp; Eguchi, 2019</b>	1981	x	
Myrmicinae	<b><i>Monomorium atomum procax</i> Forel, 1911</b>	1911	x	
Myrmicinae	<b><i>Monomorium butteli demochrum</i> Viehmeyer, 1916</b>	1916	x	
Myrmicinae	<i>Monomorium floricola</i> (Jerdon, 1851)	1916		
Myrmicinae	<b><i>Monomorium hospitum</i> Viehmeyer, 1916</b>	1916	x	
Myrmicinae	<i>Monomorium monomorium</i> Bolton, 1987	2012		
Myrmicinae	<i>Monomorium pharaonis</i> (Linnaeus, 1758)	1857		
Myrmicinae	<i>Myrmecina bandarensis</i> Forel, 1913	2012		x
Myrmicinae	<i>Myrmecina magnificens</i> Wong & Guénard, 2016	2015	x	
Myrmicinae	<i>Myrmecina maryatia</i> Okido, Ogata & Hosoishi, 2020	2017		x
Myrmicinae	<i>Myrmecaria adpressipilosa</i> Santschi, 1928 <b>stat. n.</b>	1974		x
Myrmicinae	<i>Myrmecaria arachnoides</i> (Smith, 1857)	1916		
Myrmicinae	<i>Myrmecaria arachnoides lutea</i> Emery, 1900	1922		
Myrmicinae	<i>Myrmecaria luteiventris</i> Emery, 1900 <b>[see Remarks in text]</b>	1922		
Myrmicinae	<i>Myrmecaria melanogaster</i> Emery, 1900	1973		x
Myrmicinae	<i>Paratopula demeta</i> Bolton, 1988	2016		x
Myrmicinae	<i>Paratopula oculata</i> Smith, 1857	1988		
Myrmicinae	<i>Pheidole aglae</i> Forel, 1913	1916		
Myrmicinae	<i>Pheidole aristotelis</i> Forel, 1911	1968		
Myrmicinae	<i>Pheidole binghamii</i> Forel, 1902	2016		x
Myrmicinae	<i>Pheidole cariniceps</i> Eguchi, 2001	2012		
Myrmicinae	<i>Pheidole clypeocornis</i> Eguchi, 2001	2012		
Myrmicinae	<i>Pheidole elisae</i> Emery, 1900	2016		
Myrmicinae	<i>Pheidole fervens</i> Smith, 1858	1858	x	
Myrmicinae	<i>Pheidole hortensis</i> Forel, 1913	2016		x
Myrmicinae	<i>Pheidole magretti</i> Emery, 1887	2018		x
Myrmicinae	<i>Pheidole megacephala</i> (Fabricius, 1793)	1901		
Myrmicinae	<i>Pheidole nodgii</i> Forel, 1905	1916		
Myrmicinae	<i>Pheidole nodgii verlatenensis</i> Wheeler, 1937	2016		x
Myrmicinae	<i>Pheidole parva</i> Mayr, 1865	2012		
Myrmicinae	<i>Pheidole plagiaria</i> Smith, 1860	1989		
Myrmicinae	<i>Pheidole plinii</i> Forel, 1911	1911	x	
Myrmicinae	<i>Pheidole rinae</i> Emery, 1900	1916		
Myrmicinae	<i>Pheidole rugifera</i> Eguchi, 2001	2016		x

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Myrmicinae	<i>Pheidole sexspinosa</i> Mayr, 1870	1977		
Myrmicinae	<i>Pheidole singaporensis</i> Özdikmen, 2010	1857	x	
Myrmicinae	<i>Pheidole singaporensis conicollis</i> (Emery, 1900)	1916		
Myrmicinae	<i>Pheidole singaporensis continentis</i> (Forel, 1911)	1916		
Myrmicinae	<i>Pheidole tandjongensis</i> Forel, 1913	2016		x
Myrmicinae	<i>Pheidole tjibodana</i> Forel, 1905	2016		x
Myrmicinae	<i>Pheidole umbonata</i> Mayr, 1870	2012		x
Myrmicinae	<i>Pristomyrmex bicolor</i> Emery, 1900	1987		x
Myrmicinae	<i>Pristomyrmex brevispinosus</i> Emery, 1887	2016		x
Myrmicinae	<i>Pristomyrmex costatus</i> Wang, 2003	1994		
Myrmicinae	<i>Pristomyrmex picteti</i> Emery, 1893	2003		
Myrmicinae	<i>Pristomyrmex punctatus</i> (Smith, 1860)	1916		
Myrmicinae	<i>Proatta butteli</i> Forel, 1912	1916		
Myrmicinae	<b><i>Rhopalomastix glabricephala</i> Wang, Yong &amp; Jaitrong, 2018</b>	2016	x	
Myrmicinae	<i>Rhopalomastix javana</i> Wheeler, 1929	2017		
Myrmicinae	<i>Rhopalomastix johorensis</i> Wheeler, 1929	1916	x	
Myrmicinae	<b><i>Rhopalomastix murphyi</i> Wang, Yong &amp; Jaitrong, 2018</b>	1981	x	
Myrmicinae	<b><i>Rhopalomastix striata</i> Wang, Yong &amp; Jaitrong, 2018</b>	2016	x	
Myrmicinae	<b><i>Rhopalomastix tenebra</i> Wang, Yong &amp; Jaitrong, 2018</b>	1983	x	
Myrmicinae	<i>Rostromyrmex pasohensis</i> Rosciszewski, 1994	1988		x
Myrmicinae	<i>Rotastruma recava</i> Bolton, 1991	1973	x [part]	
Myrmicinae	<i>Solenopsis geminata</i> (Fabricius, 1804)	1897		
Myrmicinae	<b><i>Solenopsis overbecki</i> Viehmeyer, 1916</b>	1916	x	
Myrmicinae	<i>Strumigenys chapmani</i> Brown, 1954	2016		x
Myrmicinae	<i>Strumigenys eggersi</i> Emery, 1890	2014		
Myrmicinae	<i>Strumigenys emmae</i> (Emery, 1890)	1909		
Myrmicinae	<i>Strumigenys epyna</i> Bolton 2000	2016		x
Myrmicinae	<i>Strumigenys extemena</i> (Taylor, 1968)	1965	x	
Myrmicinae	<i>Strumigenys godeffroyi</i> Mayr, 1866	1916		
Myrmicinae	<i>Strumigenys juliae</i> Forel, 1905	2000		
Myrmicinae	<i>Strumigenys koningsbergeri</i> Forel, 1905	1990		x
Myrmicinae	<i>Strumigenys kraepelini</i> Forel, 1905	1968		
Myrmicinae	<i>Strumigenys membranifera</i> Emery, 1869	2014		x
Myrmicinae	<i>Strumigenys mitis</i> (Brown, 2000)	2000		
Myrmicinae	<i>Strumigenys mutica</i> Brown, 1949	2000		
Myrmicinae	<i>Strumigenys nanzanensis</i> Lin & Wu, 1996	2016		x
Myrmicinae	<i>Strumigenys nepalensis</i> Baroni Urbani & De Andrade, 1994	2000		
Myrmicinae	<i>Strumigenys rofocala</i> Bolton, 2000	2000		



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Myrmicinae	<i>Strumigenys roganus</i> Bolton, 2000	2000		
Myrmicinae	<i>Strumigenys rogeri</i> Emery, 1890	1993		x
Myrmicinae	<i>Strumigenys signea</i> Forel, 1905	2000		
Myrmicinae	<i>Strumigenys sublamina</i> Brown, 1959	2017		x
Myrmicinae	<i>Strumigenys sydorata</i> Bolton, 2000	2017		x
Myrmicinae	<i>Strumigenys szalayi</i> Emery, 1897	1979		
Myrmicinae	<i>Sylophopsis australica</i> (Forel, 1907)	2014		x
Myrmicinae	<i>Sylophopsis sechellensis</i> (Emery, 1894)	2014		
Myrmicinae	<i>Sylophopsis subcoeca</i> (Emery, 1894)	2014		
Myrmicinae	<i>Tetramorium aptum</i> Bolton, 1977	≤ 1990		x
Myrmicinae	<i>Tetramorium bicarinatum</i> (Nylander, 1846)	1916		
Myrmicinae	<i>Tetramorium curtulum</i> Emery, 1895	2014		x
Myrmicinae	<i>Tetramorium eleates</i> Forel, 1913	2017		x
Myrmicinae	<i>Tetramorium insolens</i> (Smith, 1861)	2015		x
Myrmicinae	<i>Tetramorium kheperra</i> (Bolton, 1976)	2014		x
Myrmicinae	<i>Tetramorium lanuginosum</i> Mayr, 1870	1916		
Myrmicinae	<i>Tetramorium meshena</i> (Bolton, 1976)	1990		x
Myrmicinae	<i>Tetramorium obtusidens</i> Viehmeyer, 1916	1916	x	
Myrmicinae	<i>Tetramorium pacificum</i> Mayr, 1870	1985		
Myrmicinae	<i>Tetramorium pulchellum</i> Emery, 1897	1916		
Myrmicinae	<i>Tetramorium scabrum</i> Mayr, 1879	1916		
Myrmicinae	<i>Tetramorium smithi</i> Mayr, 1879	1916		
Myrmicinae	<i>Tetramorium tonganum</i> Mayr, 1870	2014		
Myrmicinae	<i>Tetramorium walshi</i> (Forel, 1890)	1912		
Myrmicinae	<i>Trichomyrmex destructor</i> (Jerdon, 1851)	1899		
Myrmicinae	<i>Trichomyrmex mayri</i> (Forel, 1902)	1911		
Myrmicinae	<i>Tyrannomyrmex rex</i> Fernández, 2003	2015		
Myrmicinae	<i>Vollenhovia brevicornis</i> (Emery, 1893) = <i>V. fridae</i> Forel, 1913, <b>syn.nov.</b>	1964		x
Myrmicinae	<i>Vollenhovia minuta</i> Viehmeyer, 1916 <b>stat. n.</b>	2015		
Myrmicinae	<i>Vollenhovia escherichi</i> Forel, 1911	2016		x
Myrmicinae	<b><i>Vollenhovia overbecki</i> Viehmeyer, 1916</b>	1916	x	
Myrmicinae	<i>Vollenhovia penetrans</i> (Smith, 1857)	2016		x
Myrmicinae	<i>Vollenhovia rufiventris</i> Forel, 1901	1916		
Ponerinae	<i>Anochetus agilis</i> Emery, 1901	1916		
Ponerinae	<i>Anochetus graeffei</i> Mayr, 1870	1916		
Ponerinae	<i>Anochetus incultus</i> Brown, 1978	1967		x
Ponerinae	<i>Anochetus muzziolii</i> Menozzi, 1932	2016		x
Ponerinae	<i>Anochetus rugosus</i> (Smith, 1857)	1857	x	
Ponerinae	<i>Anochetus tua</i> Brown, 1978	1968		x

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Ponerinae	<i>Brachyponera luteipes</i> (Mayr, 1862)	2014		x
Ponerinae	<i>Brachyponera obscurans</i> (Walker, 1859)	2015		
Ponerinae	<i>Buniapone amblyops</i> (Emery, 1887)	1916		
Ponerinae	<b><i>Centromyrmex feae greeni</i> Forel, 1901</b>	1901	x	
Ponerinae	<i>Centromyrmex hamulatus</i> (Karavaiev, 1925)	1973		x
Ponerinae	<i>Cryptopone butteli</i> Forel, 1913	1962		x
Ponerinae	<i>Cryptopone testacea</i> Emery, 1893	2019		x
Ponerinae	<i>Diacamma geometricum</i> (Smith, 1857)	1857	x	
Ponerinae	<i>Diacamma pallidum</i> (Smith, 1858)	1989		x
Ponerinae	<i>Diacamma rugosum</i> Le Guillou, 1842	1907		
Ponerinae	<i>Diacamma vagans</i> (Smith, 1860)	1893		
Ponerinae	<i>Ectomyrmex leeuwenhoekii</i> (Forel, 1896)	1916		
Ponerinae	<i>Ectomyrmex overbeckii</i> (Viehmeyer, 1916)	1916	x	
Ponerinae	<i>Emeryopone buttelreepeni</i> Forel, 1912	1968		
Ponerinae	<i>Euponera malayana</i> (Wheeler, 1929)	1987		
Ponerinae	<i>Euponera sharpi</i> Forel, 1901	1901	x	
Ponerinae	<i>Harpegnathos venator</i> (Smith, 1858)	1974		
Ponerinae	<i>Hypoponera confinis</i> (Roger, 1860)	1912		
Ponerinae	<b><i>Hypoponera confinis epinotalis</i> (Viehmeyer, 1916)</b>	1916	x	
Ponerinae	<i>Hypoponera javana</i> (Forel, 1905) <b>stat. n.</b>	1907		
Ponerinae	<i>Hypoponera malayana</i> (Wheeler, 1929)	2019		x
Ponerinae	<i>Hypoponera pygmaea</i> (Forel, 1907)	2017		x
Ponerinae	<b><i>Hypoponera singaporensis</i> (Viehmeyer, 1916) stat. n.</b>	1916	x	
Ponerinae	<i>Hypoponera truncata</i> (Smith, 1860)	2021		x
Ponerinae	<i>Hypoponera zwaluwenburgi</i> (Wheeler, 1933)	1964		x
Ponerinae	<i>Leptogenys borneensis</i> Wheeler, 1919	1967		
Ponerinae	<i>Leptogenys chinensis</i> (Mayr, 1840)	2016		x
Ponerinae	<i>Leptogenys diminuta</i> (Smith, 1857)	1964		x
Ponerinae	<i>Leptogenys hemioptica</i> Forel, 1901	1967		x
Ponerinae	<i>Leptogenys iridescens</i> (Smith, 1857)	1967		x
Ponerinae	<i>Leptogenys kraepelini</i> Forel, 1905	2014		
Ponerinae	<i>Leptogenys mutabilis</i> (Smith, 1861)	1990		x
Ponerinae	<i>Leptogenys myops</i> (Emery, 1887)	1987		x
Ponerinae	<i>Leptogenys pangui</i> Xu, 2000	1975		x
Ponerinae	<i>Leptogenys peuqueti</i> (André, 1887)	1916		
Ponerinae	<i>Leptogenys pompiloides</i> (Smith, 1857)	1857	x [part]	
Ponerinae	<i>Leptogenys processionalis</i> (Jerdon, 1851)	1962		x
Ponerinae	<i>Mesoponera rubra</i> (Smith, 1857)	1857	x	
Ponerinae	<i>Mesoponera javana</i> (Forel, 1905) <b>stat. n.</b>	1969		x

Subfamily	Scientific Name	Year First Collected/Recorded	Type Locality SG	New Lit. Record
Ponerinae	<i>Myopias mayri</i> (Donisthorpe, 1932)	2018		x
Ponerinae	<i>Odontomachus litoralis</i> Wang, Yamada & Yamane, 2020	1977	x	
Ponerinae	<i>Odontomachus malignus</i> Smith, 1859	2020		
Ponerinae	<i>Odontomachus rixosus</i> Smith, 1857	1857	x	
Ponerinae	<i>Odontomachus simillimus</i> Smith, 1858	1962		
Ponerinae	<i>Odontoponera denticulata</i> (Smith, 1858)	1858	x	
Ponerinae	<i>Odontoponera transversa</i> (Smith, 1857)	1857	x	
Ponerinae	<i>Parvaponera darwinii</i> (Forel, 1893)	1916		
Ponerinae	<i>Platythyrea parallela</i> (Smith, 1859)	1916		
Ponerinae	<i>Platythyrea sagei</i> Forel, 1900	1916		
Ponerinae	<i>Ponera menglana</i> Xu, 2001	1968		x
Ponerinae	<i>Ponera swezeyi</i> (Wheeler, 1933)	2005		x
Ponerinae	<b><i>Pseudoneoponera havilandi</i> (Forel, 1901)</b>	1901	x	
Ponerinae	<i>Pseudoneoponera insularis</i> (Emery, 1889)	1916		
Ponerinae	<i>Pseudoneoponera rufipes</i> (Jerdon, 1851)	1967		x
Ponerinae	<i>Pseudoneoponera tridentata</i> (Smith, 1858)	1916		
Proceratiinae	<i>Discothyrea bryanti</i> (Wheeler, 1917)	1967		x
Proceratiinae	<i>Discothyrea sauteri</i> Forel, 1912	1967		x
Proceratiinae	<i>Probolomyrmex vietii</i> Eguchi, Yoshimura & Yamane, 2006	2012		x
Proceratiinae	<i>Probolomyrmex watanabei</i> Tanaka, 1974	1968		x
Proceratiinae	<i>Proceratium deelemani</i> Perrault, 1981	1968		
Proceratiinae	<i>Proceratium malesianum</i> De Andrade, 2003	2019		x
Proceratiinae	<i>Proceratium papuanum</i> Emery, 1897	2016		x
Pseudomyrmecinae	<i>Tetraoponera allaborans</i> (Walker, 1859)	1916		
Pseudomyrmecinae	<i>Tetraoponera attenuata</i> Smith, 1877	1907		
Pseudomyrmecinae	<i>Tetraoponera crassiuscula</i> (Emery, 1900)	1916		
Pseudomyrmecinae	<i>Tetraoponera difficilis</i> (Emery, 1900)	1912		
Pseudomyrmecinae	<i>Tetraoponera extenuata</i> Ward, 2001	1962	x	
Pseudomyrmecinae	<i>Tetraoponera inversinodis</i> Ward, 2001	1993		x
Pseudomyrmecinae	<i>Tetraoponera modesta</i> (Smith, 1860)	1916		
Pseudomyrmecinae	<i>Tetraoponera nitida</i> (Smith, 1860)	1916		
Pseudomyrmecinae	<i>Tetraoponera pilosa</i> (Smith, 1858)	1916		
Pseudomyrmecinae	<i>Tetraoponera rufonigra</i> (Jerdon, 1851)	1916		
Pseudomyrmecinae	<i>Tetraoponera vivax</i> Ward, 2001	2001	x	
Pseudomyrmecinae	<i>Tetraoponera volucris</i> Ward, 2001	2001	x	
	Total		96	121

**Table 2.** List of species and subspecies last collected in Singapore > 100 years ago (from 2022).

Subfamily	Scientific Name	Latest Known Collection Date
Dolichoderinae	<i>Chronoxenus dalyi</i> (Forel, 1895)	≤ 1916
Dolichoderinae	<i>Technomyrmex elatior</i> Forel, 1902	≤ 1916
Dolichoderinae	<i>Technomyrmex strenuus</i> Mayr, 1872	≤ 1872
Dorylinae	<i>Aenictus shuckardi</i> Forel, 1901	≤ 1916
Dorylinae	<i>Lioponera singaporensis</i> (Viehmeyer, 1916)	≤ 1916
Formicinae	<i>Acropyga rubescens</i> Forel, 1894	≤ 1916
Formicinae	<i>Camponotus (Karavaevia) overbecki</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Camponotus (Myrmamblys) adustus</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Camponotus (Myrmamblys) bellus</i> Forel, 1908	≤ 1916
Formicinae	<i>Camponotus (Myrmamblys) ephippiatus</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Camponotus (Myrmamblys) gretae</i> Forel, 1902	≤ 1916
Formicinae	<i>Camponotus (Myrmosaulus) camelinus</i> (Smith, 1857)	≤ 1857
Formicinae	<i>Camponotus (Myrmotarsus) quadrisectus hians</i> Forel, 1907	1897
Formicinae	<i>Camponotus (Tanaemyrmex) festinus eximius</i> Emery, 1900	≤ 1916
Formicinae	<i>Camponotus (Tanaemyrmex) maculatus obfuscatus</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Camponotus (Tanaemyrmex) maculatus subnudus</i> Emery, 1889	≤ 1916
Formicinae	<i>Camponotus (Tanaemyrmex) maxwellensis</i> Forel, 1913	≤ 1916
Formicinae	<i>Camponotus (Tanaemyrmex) mitis</i> (Smith, 1858)	≤ 1916
Formicinae	<i>Camponotus (Tanaemyrmex) variegatus fuscithorax</i> Dalla Torre, 1893	≤ 1916
Formicinae	<i>Colobopsis badia</i> (Smith, 1857)	≤ 1916
Formicinae	<i>Colobopsis leonardi gracilentia</i> (Viehmeyer, 1916)	≤ 1916
Formicinae	<i>Colobopsis moeschi lygaea</i> (Viehmeyer, 1916)	≤ 1916
Formicinae	<i>Colobopsis rothneyi</i> (Forel, 1893)	≤ 1916
Formicinae	<i>Colobopsis rothneyi krafti</i> (Forel, 1901)	≤ 1916
Formicinae	<i>Colobopsis vitrea angustula</i> (Emery, 1925)	≤ 1916
Formicinae	<i>Colobopsis vitrea vittatula</i> (Forel, 1913)	≤ 1916
Formicinae	<i>Echinopla melanarctos</i> Smith, 1857	≤ 1857
Formicinae	<i>Echinopla rugosa</i> André, 1892	≤ 1916
Formicinae	<i>Lepisiota rothneyi splendida</i> (Viehmeyer, 1916)	≤ 1916
Formicinae	<i>Nylanderia clandestina</i> (Mayr, 1870)	≤ 1916
Formicinae	<i>Nylanderia yerburyi</i> (Forel, 1894)	≤ 1912
Formicinae	<i>Overbeckia subclavata</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Plagiolepis bicolor</i> Forel, 1901	≤ 1916
Formicinae	<i>Plagiolepis exigua</i> Forel, 1894	≤ 1916
Formicinae	<i>Polyrhachis (Campomyrma) creusa</i> Emery, 1897	≤ 1916
Formicinae	<i>Polyrhachis (Charatomyrma) modesta</i> Smith, 1857	≤ 1857
Formicinae	<i>Polyrhachis (Myrma) obesior</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Polyrhachis (Myrma) orsylla</i> Smith, 1861	≤ 1907
Formicinae	<i>Polyrhachis (Myrma) orsylla ritsemai</i> Mayr, 1883	≤ 1916

Subfamily	Scientific Name	Latest Known Collection Date
Formicinae	<i>Polyrhachis (Myrma) striata</i> Mayr, 1862	≤ 1893
Formicinae	<i>Polyrhachis (Myrmatopa) charaxa</i> Smith, 1860	≤ 1912
Formicinae	<i>Polyrhachis (Myrmatopa) flavicornis</i> Smith, 1857	≤ 1857
Formicinae	<i>Polyrhachis (Myrmatopa) piliventris</i> Smith, 1858	≤ 1858
Formicinae	<i>Polyrhachis (Myrmatopa) varicolor</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Polyrhachis (Myrmhopla) armata defensa</i> Smith, 1857	≤ 1857
Formicinae	<i>Polyrhachis (Myrmhopla) bicolor aurinasis</i> Forel, 1901	≤ 1907
Formicinae	<i>Polyrhachis (Myrmhopla) hector</i> Smith, 1857	≤ 1857
Formicinae	<i>Polyrhachis (Myrmhopla) hippomanes ceylonensis</i> Emery, 1893	≤ 1916
Formicinae	<i>Polyrhachis (Myrmhopla) lucidula</i> Emery, 1893	≤ 1916
Formicinae	<i>Polyrhachis (Myrmhopla) muelleri</i> Forel, 1893	≤ 1901
Formicinae	<i>Polyrhachis (Myrmhopla) tibialis parsis</i> Emery, 1900	≤ 1916
Formicinae	<i>Polyrhachis (Myrmothrinax) saigonensis</i> Forel, 1886	≤ 1916
Formicinae	<i>Polyrhachis (Myrmothrinax) textor</i> Smith, 1857	≤ 1916
Formicinae	<i>Polyrhachis (Myrmothrinax) thrinax inconstans</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Polyrhachis (Myrmothrinax) thrinax overbecki</i> Dorow, 1995	≤ 1916
Formicinae	<i>Polyrhachis (Polyrhachis) bellicosa</i> Smith, 1859	≤ 1916
Formicinae	<i>Polyrhachis (Polyrhachis) ypsilon</i> Emery, 1887	1875
Formicinae	<i>Pseudolasius badius</i> Viehmeyer, 1916	≤ 1916
Formicinae	<i>Pseudolasius ludovici</i> Forel, 1913	≤ 1916
Formicinae	<i>Pseudolasius martini</i> Forel, 1911	≤ 1916
Formicinae	<i>Pseudolasius mayri duplicatus</i> Viehmeyer, 1916	≤ 1916
Leptanillinae	<i>Leptanilla havilandi</i> Forel, 1901	≤ 1901
Myrmicinae	<i>Cardiocondyla strigifrons</i> Viehmeyer, 1922	< 1920
Myrmicinae	<i>Crematogaster brunnea ruginota</i> Santschi, 1928	≤ 1916
Myrmicinae	<i>Crematogaster decamera</i> Forel, 1910	≤ 1916
Myrmicinae	<i>Crematogaster dohrni artifex</i> Mayr, 1878	≤ 1916
Myrmicinae	<i>Crematogaster egidyi szaboi</i> Forel, 1913	1898
Myrmicinae	<i>Crematogaster linsenmairi</i> Feldhaar, Maschwitz & Fiala, 2016	≤ 1916
Myrmicinae	<i>Crematogaster overbecki</i> Viehmeyer, 1916	≤ 1916
Myrmicinae	<i>Dilobocondyla fulva</i> Viehmeyer, 1916	≤ 1916
Myrmicinae	<i>Erromyrma latinodis</i> (Mayr, 1872)	≤ 1916
Myrmicinae	<i>Monomorium atomum procax</i> Forel, 1911	≤ 1916
Myrmicinae	<i>Monomorium butteli demochrum</i> Viehmeyer, 1916	≤ 1916
Myrmicinae	<i>Monomorium hospitum</i> Viehmeyer, 1916	≤ 1916
Myrmicinae	<i>Myrmicaria arachnoides</i> (Smith, 1857)	≤ 1916
Myrmicinae	<i>Myrmicaria arachnoides lutea</i> Emery, 1900	≤ 1916
Myrmicinae	<i>Pheidole nodgii</i> Forel, 1905	≤ 1916
Myrmicinae	<i>Pheidole rinae</i> Emery, 1900	≤ 1916
Myrmicinae	<i>Pheidole singaporensis conicollis</i> (Emery, 1900)	≤ 1916

Subfamily	Scientific Name	Latest Known Collection Date
Myrmicinae	<i>Pheidole singaporensis continentis</i> (Forel, 1911)	≤ 1916
Myrmicinae	<i>Tetramorium pulchellum</i> Emery, 1897	≤ 1916
Myrmicinae	<i>Tetramorium scabrum</i> Mayr, 1879	≤ 1916
Myrmicinae	<i>Trichomyrmex mayri</i> (Forel, 1902)	≤ 1911
Ponerinae	<i>Anochetus rugosus</i> (Smith, 1857)	≤ 1857
Ponerinae	<i>Centromyrmex feae greeni</i> Forel, 1901	≤ 1901
Ponerinae	<i>Hypoconerina confinis</i> (Roger, 1860)	≤ 1912
Ponerinae	<i>Hypoconerina confinis epinotalis</i> (Viehmeyer, 1916)	≤ 1916
Ponerinae	<i>Leptogenys pompiloides</i> (Smith, 1857)	≤ 1857
Ponerinae	<i>Platythyrea sagei</i> Forel, 1900	≤ 1916
Ponerinae	<i>Pseudoneoponera havilandi</i> (Forel, 1901)	≤ 1901
Pseudomyrmecinae	<i>Tetraoponera crassiuscula</i> (Emery, 1900)	≤ 1916
	Total	91

**Table 3.** List of species known only from Singapore (at time of writing) and not collected for > 100 years. Possible synonyms and their known regions of occurrence are also indicated where relevant. (\*) - see comments on species validity under 'Remarks' for each species in the main text.

Species/Subspecies	Possible Synonyms	Biogeographic Region/s
<i>Camponotus maculatus obfuscatus</i>	<i>Camponotus maculatus</i> , <i>Camponotus maculatus subnudus</i>	Afrotropics, Indomalaya, Malagasy, Nearctic, Neotropics, Oceania, Palearctic
<i>Colobopsis rothneyi krafti</i>	<i>Colobopsis rothneyi</i>	Indomalaya
<i>Lepisiota rothneyi splendida</i> *	<i>Lepisiota rothneyi</i> , <i>Lepisiota rothneyi sundaica</i>	Indomalaya
<i>Polyrhachis modesta</i>	Unable to assess - only holotype queen is known	NA
<i>Pseudolasius badius</i>	Unable to assess - only holotype queen is known	NA
<i>Leptanilla havilandi</i> *	NA*	NA
<i>Crematogaster egidyi szaboi</i> *	<i>Crematogaster egidyi</i> , <i>Crematogaster egidyi spinozai</i>	Indomalaya, Palearctic
<i>Monomorium atomum procax</i> *	<i>Monomorium atomum</i>	Indomalaya, Palearctic
<i>Monomorium butteli demochrum</i>	<i>Sylophopsis sechellensis</i> ; other <i>Sylophopsis</i> spp.	Afrotropics, Australasia, Indomalaya, Malagasy, Neotropics, Oceania
<i>Monomorium hospitum</i> *	<i>Monomorium floricola</i>	Afrotropics, Australasia, Indomalaya, Malagasy, Nearctic, Neotropics, Oceania, Palearctic
<i>Centromyrmex feae greeni</i>	<i>Centromyrmex feae</i>	Afrotropics, Indomalaya
<i>Hypoconerina confinis epinotalis</i>	<i>Hypoconerina confinis</i>	Australasia, Indomalaya, Oceania



Species/Subspecies	Possible Synonyms	Biogeographic Region/s
<i>Pseudolasius mayri duplicatus</i>	Unable to assess - only holotype queen and type males are known	NA
<i>Pseudoneoponera havilandi</i> *	NA*	NA

Another 13 species are considered cosmopolitan tramps presumed native to Indomalaya (Wetterer 2015), although their exact native range remains uncertain: *Anoplolepis gracilipes*, *Cardiocondyla obscurior*, *Cardiocondyla wroughtonii*, *Monomorium floricola*, *Monomorium pharaonis*, *Nylanderia bourbonica*, *Ooceraea biroi*, *Paratrechina longicornis*, *Sylophopsis sechellensis*, *Tapinoma melanocephalum*, *Technomyrmex vitiensis*, *Tetramorium bicarinatum*, *Tetramorium lanuginosum*. These species are common in urban or semi-urban settings, sometimes in man-made infrastructure, where they often occur in abundance. Some species such as the yellow crazy ant — *Anoplolepis gracilipes* — however, have occasionally been reported from primary or old secondary forests (see Species Accounts).

Singapore's complex land use history probably helped shape a unique ant fauna comprising myriad species largely native to Indomalaya. These species tend to reside mainly in nature reserves or spontaneous vegetation fragments scattered throughout the urban matrix or across offshore islands. Aside from existing reserves, the value of forest remnants in supporting the native ant fauna cannot be discounted. Secondary forests or patches of spontaneous vegetation can be treasure troves of unexpected ant diversity. New species, such as *Rhopalomastix* spp. for example, were only recently discovered in abandoned plantation or waste woodland forests (see Species Accounts). The nation's first records of *Lordomyrma* were also derived from abandoned wasteland forests about to be cleared to make way for urban infrastructure. Further, the rare arboreal genus *Gesomyrmex*, was stumbled upon entirely by chance on the crown of a large fallen tree in an urban residential district (see Species Accounts).

### Future outlook

Ant diversity in Singapore is astounding – it exceeds all known records of ant diversity in other cities worldwide at the time of writing (i.e., 6–213 species in 108 other cities; see Table 1 in Bras-

sard et al. 2021). Despite the impressive numbers, the checklist remains, admittedly, incomplete. A plethora of ant species that thrive in unexplored and more inaccessible domains such as the canopy, deep soil layers, or restricted forests designated as military training grounds, are possibly unaccounted for. Ants from cryptic strata usually require unique trapping techniques, and are rarely encountered in regular ecological surveys or generalized sampling schemes. For example, elusive hypogaeic species such as *Aenictus seletarius* and *Leptanilla hypdracos* were discovered using customized subterranean pitfall traps (Wong & Guénard, 2016a,c).

Substantial material that cannot be reliably identified to nominal species further exacerbate the situation. In particular, most available specimens of hyperdiverse but taxonomically unresolved genera such as *Camponotus*, *Nylanderia* and *Tapinoma* could only be differentiated to coded morphospecies. In future when more taxonomic insights are gained on these hyperdiverse groups using advanced integrated approaches, the current checklist should be revised.

The fact that even presumably degraded forest remnants can support surprising arrays of native and/or new ant species, warrants an urgent need to protect these fragments from impending development and inevitable destruction. Many native species may likely be eliminated before they can be discovered or described. Most species on our list found in scattered forest fragments and not protected reserves, also await a grim fate because of imminent urbanization. Precious diversity could be forever lost with every patch of forest carelessly cleared. Nevertheless, we hope that this compilation provides valuable insights on Singapore's immense but potentially vulnerable insect fauna. Data presented in the checklist can serve as a baseline to support regional research, and also contribute towards informing future conservation decisions in the country.

## SPECIES ACCOUNTS

### AMBLIOPONINAE (4 genera, 5 species)

#### *Myopopone castanea* (Smith, 1860)

**Material examined.** University Campus (Bukit Timah), Oct 1970, D.H. Murphy leg., ZRC\_HYM\_0000266; Mandai forest, 7 Jun 2018, W. Wang leg., hand collection (night), ZRC\_ENT00007262.

**Material not physically examined.** ANIC32-026171 - 026172, RWTacc.68.67 (ANIC).

**Literature.** Yong et al. (2017).

**Localities:** Mandai forest; Pulau Ubin; University Campus (Bukit Timah).

**Habitat/Ecology.** This species was found in disturbed secondary forest or such forest fragments in semi-urban settings, sometimes in soil at the bases of large trees.

#### *Mystrium camillae* Emery, 1889

**Material examined.** Mandai Road, 8 Jun 2017, G.W. Yong leg., ZRC\_ENT00000924.

**Material not physically examined.** CASENT0172325, ANTC6550 (ANIC).

**Literature.** None. New record.

**Localities.** Mandai Road – 12.5-mile Mandai Road, near Bukit Mandai.

**Habitat/Ecology.** Found in secondary forest bush litter.

#### *Prionopelta kraepelini* Forel, 1905

**Material examined.** Males, Prince George's Park Residences (NUS), 1.292389°N, 103.778694°E, 3-10 Jun 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0041602, 46318; Sungei Buloh Wetland Reserve, 1°26'46.3"N 103°43'49.9"E, 7-14 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP0017406.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** Prince George's Park Residences (National University of Singapore, Kent Ridge campus); Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** This species was collected from disturbed secondary forest fragments in urban or semi-urban settings, and also mangroves.

**Remarks.** This species was identified primarily from males collected via malaise traps. Considering the hypogaecic nature of *P. kraepelini*, it is unlikely that the species nests in actual mangroves – the tidal zone that undergoes periodic inundation. Winged males collected from mangrove malaise traps may have originated from drier grounds in adjacent back mangroves.

#### *Stigmatomma besucheti* (Baroni Urbani, 1978)

**Material examined.** None available.

**Material not physically examined.** ANIC32-016286-16287(ANIC); CASENT0172194, ANTC6446 (CASC); CASENT0195513, ANIC32016287 (CASC – current repository).

**Literature.** Esteves & Fisher (2016).

**Localities.** Bukit Timah Nature Reserve (BTNR); University Campus (Bukit Timah).

**Habitat/Ecology.** Found in *Imperata* grassland; also in degraded coastal hill forest on granite (i.e., BTNR).

**Remarks.** This species has not been recorded from anywhere outside the Malagasy region except for Singapore. The type series was collected in Seychelles, specifically from La Digue island in 1975, possibly from soil samples (Esteves & Fisher 2016). Morphological differences have been noted between specimens from Seychelles and Singapore, but because of inadequate material to ascertain character variation, these specimens were tentatively considered conspecific (Esteves & Fisher 2016). It is quite possible that *S. besucheti* may be more widespread outside the Malagasy region, but is rarely collected and/or identified because of its elusive hypogaecic nature.

#### *Stigmatomma reclinatum* (Mayr, 1879)

**Material examined.** Locality and collection date unavailable, D.H. Murphy leg., ZRC\_HYM\_0000265; Bukit Timah Nature Reserve, BT06, 1.35284N, 103.77995E, 11 Jan 2017, W. Wang leg., ZRC\_HYM\_0000571; Bukit Timah Nature Reserve, 1 May 2015, W. Wang leg., ZRC\_HYM\_0000572; Central Catchment Nature Reserve, 10 Aug 2011, E.J.Y. Soh leg., Gangsa 1, ZRC\_HYM\_0001751.

**Material not physically examined.** Male, CASENT0172223, ANTC6464 (ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; University of Malaya (now known as the Bukit Timah campus of the National University of Singapore).

**Habitat/Ecology.** This species was found mainly in primary or old/mature secondary forest, usually in leaf litter or soil at bases of trees.

#### DOLICHODERINAE (7 genera, 26 species)

##### *Chronoxenus dalyi* (Forel, 1895)

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as '*Bothriomyrmex wroughtoni* subsp. *dalyi*'].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** This species was found in a garden, specifically at the foot of a hollow tree, in passages like those made by termites.

**Remarks.** This species is only known from Singapore based on literature records at the time of writing.

##### *Chronoxenus wroughtonii* (Forel, 1895)

**Material examined.** Alate queens, Pulau Semakau, 1°12'04.5"N 103°45'46.1"E, SMN2, 17-24 Oct 2013, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP0015382; same locality as previous, 15-22 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP0017738; along Mandai Road, ex. *Manis javanica*, 12 Jun 1985, collector unknown, ZRC\_ENT00007307 [*Chronoxenus* sp.1.of. SKY]; locality unknown, 14 Apr 1993, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road; Pulau Semakau.

**Habitat/Ecology.** Individual workers were found in *Manis javanica* (pangolin) stomach contents – the pangolin was roadkill found on Mandai Road. Exact origins of these *C. wroughtonii* specimens could not therefore

be verified, but might be postulated to be secondary forest distributed along Mandai Road. Alate queens were also collected in replanted mangrove forest on an offshore island landfill.

**Remarks.** *Chronoxenus wroughtonii* is currently known from Central, South and East Asia, and parts of Southeast Asia including the Philippines, while its subspecies – *C. wroughtonii javanus* (Forel, 1909), is known only from Indonesia (Java) (antmaps.org - accessed Jan 2022; Janicki et al. 2016). We compared the specimens with type images of both species and subspecies on AntWeb, and found greater similarities with *C. wroughtonii*. Hence, at the time of writing we consider the two queens to be *C. wroughtonii*, but this putative conclusion may be changed when more material of both species are made available for examination in future.

##### *Dolichoderus affinis* Emery, 1889

**Material examined.** Island Club, 30 Jun 1964, D.H. Murphy leg., ZRC\_HYM\_0000799.

**Material not physically examined.** Queen types, FOCOL2780-2781 (ZMHB). Non-types – Singapore Botanic Gardens, 5 Aug 2014, J.K. Wetterer leg., vial #479 (JKWC).

**Literature.** Viehmeyer (1916), Overbeck (1924).

**Localities.** Queen type locality – Bukit Timah Road. Island Club. Singapore Botanic Gardens.

**Habitat/Ecology.** This species was found in public or private gardens, in one instance, under the bark of a branch of a dead tree.

**Remarks.** Type locality in Myanmar (Emery 1889), but queen type described from Singapore (Viehmeyer 1916).

##### *Dolichoderus crawleyi* Donisthorpe, 1917

**Material examined.** Namly Avenue, 28 Apr 1985, D.H. Murphy leg., DHM-SG85-Doli2, ZRC\_ENT00027902.

**Material not physically examined.** Syntype; CASENT0902970, ANTC22527 (BMNH).

**Literature.** Type – Donisthorpe (1917).

**Localities.** Specific type locality unknown. Namly Avenue.

**Habitat/Ecology.** The type series was found associated with *Lecanium* sp. (coccids) in hollow stems of a *Macaranga* tree. Also found under bark of unknown trees.

**Remarks.** Type locality in Singapore.

#### ***Dolichoderus indrapurensis* Forel, 1912**

**Material examined.** None available.

**Material not physically examined.** ANIC32-061444, RWTAcc.68.18 (ANIC).

**Literature.** None. New record.

**Localities.** Nee Soon

**Habitat/Ecology.** Specific information uncertain, but possibly either swamp forest or old secondary forest inferring from locality.

#### ***Dolichoderus sulcaticeps* (Mayr, 1870)**

**Material examined.** End of Rifle Range Road, stagnant pool, 28 Apr 1993, collector unknown, ZRC\_HYM\_0000246.

**Material not physically examined.** Male and queen of *Hypoclinea sulcaticeps*, FOCOL2769-2770 (ZMHB).

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Dolichoderus (Hypoclinea) sulcaticeps*].

**Localities.** Bukit Timah Road; Rifle Range Road.

**Habitat/Ecology.** The ants were found in pasteboard nests underneath leaves; parts of nests used to keep coccids.

**Remarks.** Type locality in Borneo (Mayr 1870), but the male and queen were first described from Singapore (Viehmeyer 1916).

#### ***Dolichoderus thoracicus* Smith, 1860**

**Material examined.** Rifle Range Road, Feb 2015, R.Z.B. Quek leg., ZRC\_ENT00007860; Pulau Ubin, Jalan Sam Heng, 1.412604°N, 103.99317°E, 4 Dec 2016, G.W. Yong and M.K.L. Wong leg., ZRC\_HYM\_0001110; Pulau Ubin, Outward Bound School grounds, 1.416622°N, 103.99443°E, 4 Dec 2016, G.W. Yong and M.K.L. Wong leg., ZRC\_HYM\_0001111; Upper Thomson Nature Park, 9 Dec 2017, Sk. Yamane leg. (SKYC). Dealate queens, Ulu Sembawang Park, 1.4177°N,

103.79063°E, 14 Jul 2017, W. Wang leg., ZRC\_HYM\_0001738.

**Material not physically examined.** Multiple specimens in ZRC. Type of '*Hypoclinea sellaris*', FOCOL2773 (ZMHB).

**Literature.** Roger (1863) [as type of '*Hypoclinea sellaris*']; Dill (2002).

**Localities.** Bukit Timah Nature Reserve; Lower Peirce Reservoir; National University of Singapore (Kent Ridge campus); Nee Soon; Pulau Ubin; Rifle Range Road; Sime Road; Ulu Sembawang Park; Upper Thomson Nature Park.

**Habitat/Ecology.** These ants were mostly found in disturbed secondary and wasteland forests, swamp forest, and also in an urban city park.

**Remarks.** A locally common and globally widespread tramp species, usually gregarious and numerous where it occurs. Probably a species complex (Dill 2002), substantial morphological variation among different allopatric populations has been observed. At the time of writing, we treat these variants as conspecific until more compelling evidence for species delineation is made available in future. If more species are delimited from this complex, the perceived trampy nature of *D. thoracicus* may be disproved.

#### ***Iridomyrmex anceps* (Roger, 1863)**

**Material examined.** Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000358 – 359; Changi sand dunes, 21 Nov 1982, D.H. Murphy leg., ZRC\_HYM\_0000631. Alates, Pulau Semakau replanted mangrove, 1°12'04.5"N 103°45'46.1"E, SMN2, 6-13 Jun 2013, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP0015281; same locality and collectors as previous, 17-24 Oct 2013, ZRC\_BDP0015381; same locality and collectors as previous, 21-28 Nov 2013, ZRC\_BDP0015369-15370; Pulau Semakau old mangrove fragment, 1°12'23.9"N 103°45'37.6"E, SMO3, 30 Apr – 7 Mar 2013, J. Puniamoorthy et al. leg., ZRC\_BDP0016225; same locality and collectors as previous, 22-29 Nov 2012, ZRC\_BDP0015244.

**Material not physically examined.** Non-types, ANIC32-038822, 59573 (ANIC). Non-types, J.K. Wetterer leg. (JKWC) - Kallang, Riverside Park, 29 Jul 2014, vial #372; Punggol, by MRT station, 30 Jul 2014, vial #390; Pasir Panjang, by MRT station, 5 Aug 2014, vial #482; Singapore Botanic Gardens, 5 Aug 2014, vial #479.

**Literature.** Viehmeyer (1916), Overbeck (1924).

**Localities.** Bukit Timah Road; Changi, Loyang Industrial Estate; Pasir Panjang; Pasir Ris Park; Pulau Semakau; Pulau Ubin; Punggol; Riverside Park (Kallang); Singapore Botanic Gardens.

**Habitat/Ecology.** Often found in gardens, urban parks, and disturbed secondary forests. Winged alates collected from malaise traps set up in both replanted and old-growth mangroves on an offshore island landfill.

**Remarks.** This species is afflicted with substantial taxonomic uncertainty, and different geographic forms may actually comprise a species complex. It is considered endemic to the Indomalayan region where it was first described, and appears globally widespread. It seems to be a rather resilient species, able to adapt to and thrive in a broad range of different habitat types.

### *Ochetellus glaber* (Mayr, 1862)

**Material examined.** Chestnut Avenue wasteland, 11 Jul 2009, H.K. Lua leg., LHK 505, sweepnet, ZRC\_HYM\_0000182; Tuas West Drive marshland, 31 Mar 2007, H.K. Lua leg., ZRC\_HYM\_0000183; Upper Thomson Nature Park, 9 Dec 2017, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Chestnut Avenue; Tuas; Upper Thomson Nature Park.

**Habitat/Ecology.** Associated mostly with young secondary habitat in Singapore, including wasteland forest fragments in semi-urban settings, and marshland. These ants were also commonly observed at forest margins. Nests were found in dead twigs, rotting wood or under stones.

**Remarks.** This species may have been introduced locally, though it can be considered native to the Indo-Australian region that includes Singapore. This conjecture cannot be verified at the time of writing because of deficient data.

### *Philidris cordata* (Smith, 1859)

**Material examined.** Rifle Range Road, 6 Dec 2017, W. Wang leg., WW-SG17-Phil1, ZRC\_ENT00028313; Sungei Buloh Wetland Reserve, 28 Mar 2018, W. Wang leg., WW-SG18-Phil1, ZRC\_ENT00000958; Bukit Timah Nature Reserve, BT05, 1.35386°N, 103.77988°E, 28 Dec 2016, W. Wang leg., WW-SG16-010, ZRC\_HYM\_0000503; Bukit Batok East Avenue 6, BB8, 1.34304°N, 103.76235°E, 28-30 Aug 2016, G.W. Yong leg., trunk pitfall trap, ZRC\_HYM\_0001544; Upper Thomson Nature Park, UT5, 1.38311°N, 103.79839°E, 11-13 Sep 2016, G.W. Yong leg., pitfall, ZRC\_HYM\_0001545; Kent Ridge Park, 7 Dec 2017, W. Wang leg., WW-SG17-043, hand collection (day), ZRC\_ENT00014138.

**Material not physically examined.** CASENT0909511, ANTC31950 (MHNG) [type of '*Philidris cordata fuscus jactans*'].

**Literature.** Forel (1911) [as type of '*Philidris cordata fuscus jactans*'].

**Localities.** Bukit Batok East; Upper Thomson Nature Park.

**Habitat/Ecology.** Found mostly in young secondary habitat in Singapore, including disturbed scrub in parks and abandoned plantation forests, also sometimes in primary forest and mangroves. Nests have been found in fallen twigs and behind bark of dead trees; semi-carton nests were frequently found linked to extensive trunk trails made of similar substrate.

**Remarks.** Due to taxonomic ambiguities at the time of writing, two subspecies — *P. cordata fusca* and *P. cordata protensa* — have been included in this section. It is possible that these subspecies may be raised to species status in future if more empirical evidence are made available. *Philidris cordata fusca* appears limited to primary and disturbed secondary forests, while *P. cordata protensa* has only



been found in mangroves. First local record of this species is as type of '*Philidris cordata fuscus jactans* (Forel, 1911)' - now considered an unavailable quadrinomial.

These ants are typically found in extreme abundance, sometimes in semi-carton nest extensions or satellites on tree trunks or base of trees, often linked by pervasive/extensive trunk trails. Arguably, such trunk trails and carton nest building behaviour may be only demonstrated by one subspecies — *P. cordata fusca*.

### ***Philidris laevigata* (Emery, 1895)**

**Material examined.** Rifle Range Road, 6 Dec 2017, W. Wang leg., hand collection (day), WW-SG17-045, ZRC\_ENT00014140.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as '*Iridomyrmex levigatus*']; Baroni Urbani (1977) [as '*Iridomyrmex laevigatus jactans*'].

**Localities.** Ayer Terjun (archaic place name); Botanic Gardens; Bukit Timah Nature Reserve; Chua Chu Kang; Pulau Bulang; Rifle Range Road; Ulu Beri

**Habitat/Ecology.** Found mostly in primary or mature secondary habitat in Singapore, including native-dominated secondary forest. Colonies have been observed in (hollows of) bamboo and hollow branches, in bark fissures or under loose bark of trees, covered up with earth. The ants typically form carton trunk trails near and around bases of trees.

### ***Philidris myrmecodiae* (Emery, 1887)**

**Material examined.** MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., SG14-SKY-02, ZRC\_HYM\_0000468.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** MacRitchie Reservoir

**Habitat/Ecology.** This species appears associated with primary and/or old/mature secondary forests. Nests were found in dead twigs or branches.

**Remarks.** This species was originally described as a variant of *Iridomyrmex cordatus* (now known as *Philidris cordata*), and was ob-

served to consist of many 'intermediary' forms with broad colour variation. We are unable to distinctly differentiate between *Philidris cordata protensa* and this species based on original descriptions and available type images online, especially since both species have been reported to have broad intra-species variation including light- and dark-coloured morphs. With more compelling evidence in future, it is possible that the material treated as *P. myrmecodiae* in this study may be *P. cordata protensa* or other species closely affiliated with *P. cordata*. Workers tend to be numerous and aggressive where they occur; trunk trails often extensive and constructed pervasively around the central colony location.

### ***Tapinoma andamanense capsincola* Forel, 1911**

**Material examined.** Males and workers, I-cube building (NUS), 1.29347, 103.77633, May-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Prince George's Park Residences (NUS), 1.29239, 103.77869, 1-8 Apr 2015, same collectors as previous, ZRC\_BDP0046251; University Hall (NUS), 1.29711, 103.77658, 1-16 Sep 2015, same collectors as previous, ZRC\_BDP0042894.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924).

**Localities.** Bukit Timah Road; National University of Singapore campus (multiple locations).

**Habitat/Ecology.** Colonies were found in a garden, specifically in a dry branch of a *Jambu* tree, in withered bamboo, and in hollow twigs of mangosteen trees. More recent specimens were collected in malaise traps mostly set up in disturbed secondary forest fragments, in semi-urban settings.

**Remarks.** At the time of writing, *Tapinoma andamanense* Forel, 1903 is only known by its holotype queen collected from Andaman Island, India. Without queen specimens from Singapore for comparison, we cannot justify the raising of the subspecies *capsincola* to species. According to original descriptions of *T. andamanense capsincola*, however, the subspecies queen has a somewhat shorter head that is broader posteriorly.



***Tapinoma glaucum* (Viehmeyer, 1916)**

**Material examined.** Singapore, locality and collection date not specified, D.H. Murphy leg., ZRC\_HYM\_0000617.

**Material not physically examined.** Type, FO-COL2860 (ZMHB).

**Literature.** Type - Viehmeyer (1916) [as type of *Semonius glaucus*]; Overbeck (1924) [as *Semonius glaucus*].

**Localities.** Bukit Timah Road [type]

**Habitat/Ecology.** The type series was collected from a garden.

**Remarks.** Type locality in Singapore. While exact collection date is unknown, we estimate the ZRC specimen to have been collected between 1965 to 1990, when collector D.H. Murphy was active. This minute species may arguably be distinguished from other similar congeners by the following combination: 1) its overall dark bluish-greenish shimmer, 2) very finely, densely reticulate head and body surfaces, 3) mesosoma slightly shorter than head, 4) pronotum in dorsal view nearly twice as wide as long, 5) funicular segments 2-4 (segment 1 being basal-most) distinctly wider than long.

***Tapinoma indicum* Forel, 1895**

**Material examined.** Alates, University Town (NUS), 1.306222°N, 103.774583°E, 20-27 May 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0045129; same locality and collectors as previous, 1-8 Jul 2015, malaise trap, ZRC\_BDP0045948; Prince George's Park Residences (NUS), 1.292389°N, 103.778694°E, 17-24 Jun 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0044384.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924).

**Localities.** Bukit Timah Road; Prince George's Park Residences, University Town (both part of the National University of Singapore campus).

**Habitat/Ecology.** This species was found in a garden - colony in decaying wood on the ground, in tree stumps slightly above ground surface, nesting between stem and loose bark, closed

up with earth. Alates were found in disturbed secondary or wasteland forest patches, also grassy patches adjoining urban human dwellings.

**Remarks.** Species similar to *T. melanocephalum*, but may be differentiated partly by its generally lighter brown (head and mesosoma not blackish as in the latter) and relatively more uniform body colour. The two species can also be distinguished based on funicular segments – the third funicular segment (numbered from the basalmost segment) in *T. indicum* is wider than long, whereas in *T. melanocephalum* the same segment is distinctly longer than wide. In addition, funicular segments 4-8 of *T. indicum* are each at least as wide as long, while in *T. melanocephalum* these segments are clearly longer than wide.

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

**Material examined.** Bukit Timah Nature Reserve, BT06, 1.35284°N, 103.77995°E, 11 Jan 2017, W. Wang leg., WW-SG17-005, ZRC\_HYM\_0000573; queen, Lee Kong Chian Natural History Museum, level 1M lab, 14 Nov 2018, J. Tan leg., ZRC\_ENT00007577; males, Prince George's Park Residences (NUS), 1.292389N, 103.778694E, 20-27 May 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0046763; same locality and collectors as previous, 3-10 Jun 2015, malaise trap, ZRC\_BDP0041599; Sungei Buloh, 8 Jan 2014, Sk. Yamane leg., SG14-SKY-33 (SKYC).

**Material not physically examined.** Syntype of *Myrmica pellucida*, CASENT0903062, ANTC22648 (BMNH). Non-types, J.K. Wetterer leg. (JKWC) – Bishan, by MRT station, 31 Jul 2014, vial #424; City Hall, by church, 29 Jul 2014, vial #374; Harbourfront, Jul-Aug 2014, vials #385, 472; Hougang, 30 Jul 2014, vial #402; Kallang, Riverside Park, 29 Jul 2014, vial #372; Katong, 27-28 Jul 2014, vials #328, 332, 345; Marine Parade, Jul-Aug 2014, vials #358, 368, 435; Mountbatten, by MRT station, 4 Aug 2014, vial #465; Outram Park, by MRT station, 29 Jul 2014, vial #380; Pasir Panjang, by MRT station, 5 Aug 2014, vial #483; Punggol, 30 Jul 2014, vials #390,

392; Queenstown, 29 Jul 2014, vial #383; Serangoon, 30 Jul 2014, vial #389; Tai Seng, 31 Jul 2014, vial #422.

**Literature.** Viehmeyer (1916), Overbeck (1924); Shattuck (1994); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bishan; Bukit Timah Nature Reserve; Bukit Timah Road; City Hall; Harbourfront; Hougang; Katong; Marine Parade; Mountbatten; National University of Singapore campus; Outram Park; Pasir Panjang; Pulau Semakau; Pulau Ubin; Punggol; Queenstown; Riverside Park (Kallang); Serangoon; Sungei Buloh; Tai Seng.

**Habitat/Ecology.** Found in a broad range of habitats. Garden – colonies found under loose bark, closed up with earth, and in branches lying on the ground. Also collected from disturbed secondary forests and mangrove backforests. In mangroves, the ants were found nesting in a dead twig on a tree. Often observed and/or collected in urban settings, such as parks and inside household compounds or residences.

**Remarks.** A globally widespread tropical tramp species with unknown native range. Commonly known as the ‘ghost ant’, alluding to its pale gaster and legs that contrast sharply with blackish brown head and mesosoma.

### *Technomyrmex albipes* (Smith, 1861)

**Material examined.** Pulau Ubin village, 7 Jan 2014, Sk. Yamane leg., SG14-SKY-17, ZRC\_HYM\_0000437; Sungei Buloh, 8 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000438. Male, Prince George’s Park Residences (NUS), 1.292389N, 103.778694E, 19–26 Aug 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0047424.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924); Bolton (2007).

**Localities.** Bukit Timah Hill; Bukit Timah Road; Nee Soon; Prince George’s Park Residences (NUS); Pulau Ubin; Sungei Buloh.

**Habitat/Ecology.** Colonies were found in a garden — in rotten wood, hollow branches and withered bamboo. The ants were also found in disturbed secondary, swamp forests, and mangroves, where a colony was found in a dead twig on a tree.

**Remarks.** Known to be a highly successful tramp species able to nest and forage in both ground-level and arboreal environments (Bolton 2007), also commonly found in parks and other urban settings elsewhere.

### *Technomyrmex difficilis* Forel, 1892

**Material examined.** Alates and workers, Mandai mangroves, 23 May 1979, D.H. Murphy leg., DHM-SG79-001, ZRC\_ENT00048398.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2007).

**Localities.** Botanic Gardens; Kent Ridge; Mandai mangroves.

**Habitat/Ecology.** This species was mostly found in urban parks and gardens. In mangroves, the ants were found nesting in decayed branches of *Avicennia* sp.

**Remarks.** Frequently confused with *T. albipes*, but can be distinguished from the latter species by the presence of setae on the head dorsum behind the level of the posterior margin of the eye, also a longer and more slender pronotum (Bolton 2007). Considered native to the Malagasy region, the species is suggested to have started spreading across Southeast Asia and Oceania more than 60 years ago (Wetterer 2013). This species is estimated to have been first collected from Singapore around or earlier than 1948 (Wetterer 2013).

### *Technomyrmex elatior* Forel, 1902

**Material examined.** None available.

**Material not physically examined.** Syntypes of ‘*Technomyrmex albipes* var. *cordiformis*’, FO-COL2874 – 2875 (ZMHB).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as ‘*Technomyrmex albipes* var. *cordiformis*’]; Bolton (2007).

**Localities.** Ayer Terjun (archaic place name)

**Habitat/Ecology.** A colony of this species was found in a broken and hollowed piece of a tree branch, forest type unknown.

**Remarks.** This species is only known from one locality in Singapore — Ayer Terjun; area now urbanized and developed.

### *Technomyrmex horni* Forel 1912

**Material examined.** None available.

**Material not physically examined.** CASENT0249786, PSW10256-3 (PSWC, Davis).

**Literature.** Bolton (2007).

**Localities.** Bukit Timah

**Habitat/Ecology.** Specimen from Bukit Timah indicated to be from rainforest - possibly the specific location should be Bukit Timah Nature Reserve.

**Remarks.** This species and *T. schimmeri* are currently the only members of a complex with indistinct inter-species boundaries (Bolton 2007). The two species are almost indistinguishable morphologically, taking into account the morphological variability among different populations per species. Should more material and other forms of evidence, such as DNA, be made available for analyses in future, this treatment may be revised.

### *Technomyrmex kraepelini* Forel, 1905

**Material examined.** Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-53, ZRC\_HYM\_0000464; same locality and collection data, SG14-SKY-51, ZRC\_HYM\_0000465; Lower Peirce Reservoir, 28 Jul 1990, H.K. Lua leg., ZRC\_HYM\_0000229. ZRC\_BDP0016044; University Town (NUS), 1.306222°N, 103.774583°E, 8-15 Jul 2015, M.S. Foo and W. Wang leg., malaise trap, ZRC\_BDP0046474. Alate, Pulau Ubin, Sg. Assam, 1.42126°N, 103.94836°E, PU3, 27 Oct – 3 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP0016044.

**Material not physically examined.** ANIC32-044947, D3-9 (ANIC).

**Literature.** Bolton (2007); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Batok; Bukit Timah; Lower Peirce Reservoir; Mandai Road; Seletar; Tuas West Drive; University Town (NUS); Upper Peirce Reservoir.

**Habitat/Ecology.** Typically found foraging at ground level, often on/in leaf litter. Can be found in different types of secondary forest:

abandoned plantation, native-dominated and waste woodland. Sometimes also found in marshland.

**Remarks.** Winged alates of this species have been identified from samples of malaise traps set up in disturbed spontaneous vegetation patches in urban or semi-urban settings, and in mangroves.

### *Technomyrmex pratensis* (Smith, 1860)

**Material examined.** Locality and collector data unavailable, NS138C, 1994, ZRC\_HYM\_0000112; MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., SG14-SKY-01, ZRC\_HYM\_00000467; Bukit Timah Nature Reserve, BT06, 1.35284°N, 103.77995°E, 11 Jan 2017, W. Wang leg., ZRC\_HYM\_0000580; Upper Thomson Nature Park, 9 Dec 2017, ex. leaf litter, Sk. Yamane leg., SG-17-SKY-37, -40 (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; MacRitchie Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** In mature and/or abandoned plantation secondary forests. Nests were found in leaf litter, rotting wood or living trees such as *Macaranga* sp.

### *Technomyrmex schimmeri* Viehmeyer, 1916

**Material examined.** Upper Thomson Nature Park, 9 Dec 2017, W. Wang leg., ZRC\_ENT00000776; Kent Ridge, KR02\_05, 2017, W.N. Lam leg., ZRC; Nee Soon, 17 Aug 2017, W.N. Lam leg., ZRC; MacRitchie Reservoir, 9 Jan 2014, ex. leaf litter, Sk. Yamane leg., SG14-SKY-36 (SKYC).

**Material not physically examined.** Types, including 1 queen, FOCOL2877 – 2879 (ZMHB).

**Literature.** Type – Viehmeyer (1916). Overbeck (1924); Bolton (2007).

**Localities.** Type locality – Bukit Timah Road. Bukit Batok; Kent Ridge; near I-cube building; MacRitchie Reservoir; Nee Soon; Upper Thomson Nature Park.

**Habitat/Ecology.** The type series was found in withered bamboo in a garden. This species was also collected from scrubland, and abandoned plantation secondary forest, usually in leaf litter sometimes at bases of trees. Specimens have also been collected from liquid contents of *Nepenthes* pitchers.

**Remarks.** Type locality in Singapore.

***Technomyrmex strenuus* Mayr, 1872**

**Material examined.** None available.

**Material not physically examined.** Syntype - CASENT0903048, ANTC22633 (BMNH).

**Literature.** Syntype – Mayr (1872). Bolton (2007).

**Localities.** Unavailable.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Original type locality is in Borneo (Mayr 1872), but specimen from Singapore also designated as syntype.

***Technomyrmex textor* Forel, 1909**

**Material examined.** Mandai Road, M1D, 1.41258°N, 103.79839°E, 8 Jun 2017, W. Wang leg., ZRC\_ENT00000951; Mandai Road, 21 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001638.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road.

**Habitat/Ecology.** Native-dominated secondary forest. Some foragers collected behind bark of *Macaranga gigantea* tree.

**Remarks.** This species is distinguishable by its relatively small size and pale light-brown body, characters atypical of most other congeners.

***Technomyrmex vitiensis* Mann, 1921**

**Material examined.** Mandai Road, 1.41468, 103.79779, ZRC\_ENT00048978; alates, Pulau Semakau New Fragment, 2012 – 2013, J. Puniamorthy et al. leg., malaise trap, ZRC\_BDP multiple; Pulau Semakau Old Fragment, SMO3, Nov 2012, same collectors as previous, malaise trap, ZRC\_BDP0016539; queen, Sungei Buloh Wetland Reserve, SB2,

1°26'47.7"N, 103°43'49.9"E, 12-19 Dec 2012, same collectors as previous, malaise trap, ZRC\_BDP0016345.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road; Pulau Semakau; Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** This species was collected from both old growth and newly replanted mangroves, and in native-dominated secondary forest more inland.

**Remarks.** Winged alates collected using malaise traps set up in mangrove forests on an offshore island landfill – Pulau Semakau, part of the Mangrove Insect Project (MIP) 2012 – 2013.

**DORYLINAЕ (7 genera, 12 species)**

***Aenictus camposi* Wheeler & Chapman, 1985**

**Material examined.** Nee Soon Swamp Forest, at base of pipeline, 01°23.062'N, 103°48.684'E, Feb 2015, W. Wang leg., Cryo-Acam\_NS1-NS2, ZRC; Bukit Timah Nature Reserve, 28 Mar. (year unavailable), D.H. Murphy leg., C2-7, ZRC\_HYM\_0000005-6; Bukit Timah Nature Reserve, 24 Aug 1967, D.H. Murphy leg., Pitfall B8-31, ZRC\_HYM\_0000256.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Nee Soon Forest.

**Habitat/Ecology.** Found in forest, sometimes in leaf litter or part of bivouac under soil. Also collected from ground pitfall traps.

***Aenictus cylindripetiolus* Jaitrong & Yamane, 2013**

**Material examined.** Central Catchment Nature Reserve (fringe), 1.41138°N, 103.80653°E, 29 Nov 2016, G.W. Yong & Ben Ho leg., ZRC\_HYM\_0000293.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Central Catchment Nature Reserve

**Habitat/Ecology.** This species was discovered in a native-dominated secondary forest fragment, forming a fast-moving ant trail under leaf litter.

**Remarks.** Active ant trail found in the evening.

***Aenictus gracilis* Emery, 1893**

**Material examined.** None available.

**Material not physically examined.** ANIC32-059592, Shattuck.1345388838 (ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** The original label indicates ‘degraded coastal hill forest on granite’, but this is not an entirely accurate description of the actual habitat type in BTNR. The ants were probably found in either primary or old/mature secondary forest.

***Aenictus seletarius* Wong & Guénard, 2016**

**Material examined.** Holotype, Seletar Trail, ca. 40 m, 1.392467°N, 103.801308°E, 25.vii.2015, M.K.L. Wong leg., subterranean pitfall trap, ZRC\_ENT00000663; Seletar Trail, 1.39625°N, 103.802994°E, 15 Jul 2015, M.K.L. Wong leg., SPT15, pitfall trap, ZRC\_ENT00000669.

**Material not physically examined.** Unknown.

**Literature.** Type – Wong & Guénard (2016).

**Localities.** Seletar Trail (near Central Catchment Nature Reserve)

**Habitat/Ecology.** This small species was collected from rainforest, deep in soil, using subterranean pitfall traps.

**Remarks.** Type locality in Singapore.

***Aenictus shuckardi* Forel, 1901**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** In literature, this species was identified only from a single male collected at a lit-lamp. No workers are known to have been collected from the same locality till present day.

***Aenictus yamanei* Wiwatwitaya & Jaitrong, 2011**

**Material examined.** Nee Soon forest, 1.382794°N, 103.806499°E, 23 Oct 2017, W.N. Lam leg., NS09-GL, ZRC\_ENT00000748.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon forest

**Habitat/Ecology.** Swamp forest, found in contents of *Nepenthes gracilis* pitcher.

**Remarks.** Species identified from only a single worker in pitcher contents.

***Dorylus laevigatus* (Smith, 1857)**

**Material examined.** Lower Peirce Reservoir, Forest A, 7 Aug 1990, Zoology Dept. 3<sup>rd</sup> year project, ZRC\_ENT00000191; Central Catchment Nature Reserve, Venus Loop, SPT15, 1.355491, 103.815777, 15 Jun 2015, M.K.L. Wong leg., subterranean pitfall trap, ZRC\_ENT00000671; Rifle Range Road, 6 Dec 2017, Sk. Yamane leg., SG17-SKY-02, ZRC\_ENT00000879. Male alates; 3 Pandan Valley, 16 Sep 2016, Y.C. Tay leg., ZRC\_HYM\_0001734; Chun Tin Road, 24 Dec 2009, C.M. Yang leg., ZRC\_ENT00014107-14108; Ang Mo Kio Drive, ITE Headquarters, 29 Sep 2020, H.F. Loo & S.K. Koh leg., on carpet in pantry, ZRC\_ENT00028565; Pasir Panjang Road, 20 Jan 2021, J. Ho leg., ZRC\_ENT00047779.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Dorylus (Dichthadia) levigatus* var. *breviceps*].

**Localities.** (Only localities where workers were found are given here, as male occurrences are not accurate inferences of nest locations) Central Catchment Nature Reserve; Lower Peirce Reservoir; Rifle Range Road.

**Habitat/Ecology.** Primary and/or mature secondary forest — colonies were found in soil.

**Remarks.** Considered a kind of Old World ‘army ant’ — a general term for ants characterized by cooperative group foraging/predatory tactics and nomadic behaviour. Solitary male alates have been reported from urban residential or commercial areas away from forested areas — these are isolated incidences of males dispersed far from their original nest sources.



***Lioponera hewitti* (Wheeler, 1919)**

**Material examined.** Nee Soon forest, 30 Dec 2014, W. Wang leg., ZRC\_ENT00007302.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon

**Habitat/Ecology.** This species was found in secondary swamp forest, where individuals were collected from rotting wood.

**Remarks.** Slight morphological differences from *L. hewitti* in its original description, but this may be variation between allopatric populations, thus we treat the Singapore specimens as conspecific to those from Borneo. This tentative species record may be changed should new evidence be made available in future indicating heterospecificity.

***Lioponera singaporensis* (Viehmeyer, 1916)**

**Material examined.** None available.

**Material not physically examined.** Syntype of *Cerapachy singaporensis*, CASENT0911265, ANTC33507 (NHMB). Types of *Phyracaces singaporensis*, FOCOL0335-336 (DEIC); Fo-Col0807-0809 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Phyracaces singaporensis*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A colony of this species was found in the hollow branch of a mangosteen tree, in a garden.

**Remarks.** Type locality in Singapore.

***Ooceraea biroi* (Forel, 1907)**

**Material examined.** Mandai, 1.40699, 103.77853, 19 Sep 2015, M.K.L. Wong leg., leaf litter, Berlese extraction, ZRC\_ENT00000670; Pearl's Hill City Park, 21 Aug 2017, J. Choi leg., Jchoi-SG17-01, ZRC\_HYM\_0001748; MacRitchie forest, 30 Aug 1982, D.H. Murphy leg., ZRC\_ENT00027945.

**Material not physically examined.** Paralectotype of *Cerapachys (Syscia) biroi*, CASENT0907059, ANTC27237 (MHNG). Syntype of *C. biroi*, CASENT0916710, ANTC44062 (HNHM Budapest).

**Literature.** Type – Forel (1907) [*Cerapachys (Syscia) biroi*].

**Localities.** MacRitchie; Mandai; Pearl's Hill City Park.

**Habitat/Ecology.** Both mature and young secondary forests, also cultivated land in urban or semi-urban settings such as parks. Nests were often found in soil under rocks, or in old rotten logs typically filled with soil or abandoned termite nest residue. Individuals were sometimes collected from leaf litter.

**Remarks.** Type locality in Singapore.

***Parasyscia dohertyi* (Emery, 1902)**

**Material examined.** Bukit Timah Nature Reserve, Feb-Mar 1968, D.H. Murphy leg., A122-8, ZRC\_HYM\_0000724

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** A single worker was found in either primary or old/mature secondary forest.

**Remarks.** This is the first local record of *Parasyscia*. The specimen mostly conforms with the holotype of *P. dohertyi*, based on online type images and descriptions in Wilson (1959). However, we observed a few differences between the Singapore specimen and the holotype that may warrant a reassessment of species in future, should more local material be available: 1) head slightly wider, CI 91 compared to CI 88 in the holotype; 2) posteroventral corner of head projected distinctly as rounded lobe (projection more shallow in the holotype); 3) generally smaller in size, petiole and postpetiole widths 0.58 and 0.68 mm respectively (0.66 and 0.80 mm in the holotype).

***Simopone bakeri* Menozzi, 1926**

**Material examined.** Nee Soon swamp, 13 Jun 1994, D.H. Murphy leg., ZRC\_HYM\_0000831.

**Material not physically examined.** Holotype (IEUB). Dealate queen, CASENT0173045, ANTC8121 (MCZ).

**Literature.** Type – Menozzi (1926). Taylor (1966); Brown (1975); Bolton & Fisher (2012).



**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** This arboreal species is associated with primary and/or mature secondary forests in Singapore, including swamp forest.

**Remarks.** Rarely observed or collected mainly because of its apparent arboreal nature. Type locality in Singapore.

***Syscia* cf.sp.3.of.SKY (\*excluded from official named species count)**

**Material examined.** Queen and worker, Mandai Lake Road, 1°24'36.5"N, 103°47'04.0", 53m, 18 July 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028290.

**Material not physically examined.** Unknown.

**Literature.** None. New genus record.

**Localities.** Mandai Lake Road

**Habitat/Ecology.** The ants were found in disturbed mature secondary forest, in leaf litter and upper soil substrate.

**Remarks.** This is the first record of the genus *Syscia* in Singapore, though we were unfortunately unable to identify it to named species. The species confers mostly with *Syscia* sp.3.of.SKY. Of known species, it looks most similar to *Syscia chalahdanyakiji* Jaitrong et al., 2020, but with nine antennal segments (instead of 11 in *S. chalahdanyakiji*), and head with strong posteroventral lamellate flange.

## ECTATOMMINAE (2 genera, 8 species)

***Holcaponera cribrata* (Emery, 1900)**

**Material examined.** Central Catchment Nature Reserve, 14 Sep 2011, E.J.Y. Soh leg., MaindiT.15, ZRC\_ENT00028674; Bukit Timah, 1.35130, 103.77859, 31 Jul 2015, M.K.L. Wong leg., pitfall trap, ZRC\_ENT00000673.

**Material not physically examined.** Specimens collected by D.H. Murphy and R.W. Taylor from Peirce Reservoir in 1988, examined by Lattke (2004) but depositories unknown.

**Literature.** Lattke (2004) [as *Gnamptogenys cribrata*].

**Localities.** Bukit Timah, Central Catchment Nature Reserve; Peirce Reservoir.

**Habitat/Ecology.** This species was found in primary or mature secondary forests in Singapore.

**Remarks.** Genus initially determined as *Gnamptogenys*, but present species combination generated in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera bicolor* (Emery, 1889)**

**Material examined.** Khatib wasteland, 1.41122, 103.82862, 20 Apr 2016, M.K.L. Wong leg., ZRC\_ENT00000672.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Khatib

**Habitat/Ecology.** This species was found in a waste woodland forest.

**Remarks.** At the time of writing, this species is known from only one locality in Singapore. Genus initially determined as *Gnamptogenys*, but present species combination revived in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera binghamii* (Forel, 1900)**

**Material examined.** Mandai, Bird Park Buffer, 17 Jul 2019, J. Tan & N. Chin leg., JTNC-MIS-002, Mandai Insect Survey, ZRC\_ENT00013543; Bukit Timah forest, Apr 1968, D.H. Murphy leg., ZRC\_HYM\_0000611-612; same locality as previous, 17 Mar 1967, D.H. Murphy leg., ZRC\_HYM\_0000615-616.

**Material not physically examined.** Type male – FOCOL0867 (ZMHB).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Stictoponera binghami* (sic)].

**Localities.** Bukit Timah; Mandai.

**Habitat/Ecology.** Found mostly in primary or mature secondary forests, as well as young secondary habitat in Singapore. Individuals have been collected from forest litter and soil samples; nests can be found in cavities of fallen rotting/decaying wood or branches. In one instance, a nest was found in a large fallen rotting branch alongside a *Leptogenys* colony.

**Remarks.** The first local record of this species was a male type specimen identified and described by Viehmeyer (1916), based on material collected by Hans Overbeck. Genus initially determined as *Gnamptogenys*, but present species combination revived in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera coxalis* (Roger, 1860)**

**Material examined.** Bukit Timah Nature Reserve, 25 May 1967, D.H. Murphy leg., ZRC\_HYM\_0000250; Mandai Road, 5 Dec 2016, G.W.J. Yong leg., ZRC\_HYM\_0001005; Dairy Farm, 22 Jun 2012, Zestin Soh leg., ZRC\_ENT00028676.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Dairy Farm; Mandai Road.

**Habitat/Ecology.** Found in primary or mature secondary forests in Singapore, including native-dominated secondary forest. Nests were found in fallen rotting wood and leaf litter.

**Remarks.** Some examined ZRC material were originally identified as '*Gnamptogenys costata* (Emery, 1889)', but that was considered a junior synonym of '*G. coxalis*' (Lattke & Delsinne 2016). Genus initially determined as *Gnamptogenys*, but present species combination revived in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera gabata* (Lattke, 2004)**

**Material examined.** Bukit Batok East Avenue 6, 1.34218, 103.76316, 27-29 Sep 2016, G.W.J. Yong et al. leg., BB2GPc422, ZRC\_ENT00028675.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok East

**Habitat/Ecology.** Abandoned plantation secondary forest.

**Remarks.** This species is currently only known from a single specimen in Singapore. Genus originally described as *Gnamptogenys*, but present species combination generated in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera hyalina* (Lattke, 2004)**

**Material examined.** None available.

**Material not physically examined.** Holotype – ANIC32-017682, Ab2-10 (ANIC). Non-type – ANIC32-017682, Ab2-10 (ANIC).

**Literature.** Type - Lattke (2004) [as *Gnamptogenys hyalina*].

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** Associated with primary and/or mature secondary forest; small colony found in dry bracket fungus on log.

**Remarks.** Type locality in Singapore. Original label describes habitat as 'degraded coastal hill forest on granite', but this does not accurately describe the inland BTNR forest. Genus initially determined as *Gnamptogenys*, but present species combination generated in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera ortostoma* (Lattke, 2004)**

**Material examined.** Bukit Timah Forest, 17 Mar 1967, D.H. Murphy leg., forest litter/soil, Berlese extraction, #N-13, ZRC\_HYM\_0000614 – 616.

**Material not physically examined.** Holotype – ANIC32-017689, N-13Ab4-20 (ANIC). Non-type – ANIC32-017690, N-13Ab4-20 (ANIC).

**Literature.** Type - Lattke (2004) [as *Gnamptogenys ortostoma*].

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** Associated with primary and/or mature secondary forest; in leaf litter.

**Remarks.** Type locality in Singapore. Original label describes habitat as 'degraded coastal hill forest on granite', but this does not accurately describe the inland BTNR forest. Genus initially determined as *Gnamptogenys*, but present species combination generated in Camacho et al. (2022) based on phylogenetic evidence.

***Stictoponera posteropsis* Gregg, 1951**

**Material examined.** Bukit Timah Nature Reserve, collection date unknown, D.H. Murphy leg., pitfall B7-2, ZRC\_HYM\_0000613.

**Material not physically examined.** FMN-HINS0002821931, FMHD\_81-282 (FMNH).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** Associated with primary and/or mature secondary forests. Individuals can be found on the forest floor, and in tree buttress litter. Genus initially determined as *Gnamp-togenys*, but present species combination revived in Camacho et al. (2022) based on phylogenetic evidence.

#### FORMICINAE (19 genera, 117 species)

##### *Acropyga acutiventris* Roger, 1862

**Material examined.** Bukit Timah Nature Reserve, near BT08, 31 May 2017, W. Wang leg., WW-SG17-025, ZRC\_ENT00000971; Central Catchment Nature Reserve, 16 Feb 2016, G.W.J. Yong leg., ZRC\_HYM\_0000996; Prince George's Park Residences (National University of Singapore), 1.29239, 103.77869, 24 Mar – 1 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0001, ZRC\_BDP0044267; Mandai Lake Road, Northern Node buffer area (Rainforest Park), MIS\_L02\_LL, 1°24'36.5"N, 103°47'04.0", 53 m a.s.l., 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028297; same locality as previous, 8 Sep 2020, N. Chin, L. Tan & C. Goh leg., NCTG\_MIS\_022, ZRC\_ENT00047801.

**Material not physically examined.** ANIC32-018494, Shattuck1345243946 (ANIC); ANIC32-018649, Shattuck1345244635/1345244638/1345244641 (ANIC).

**Literature.** LaPolla (2004).

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Lake Road; Prince George's Park Residences (NUS); Singapore Botanic Gardens.

**Habitat/Ecology.** Usually associated with primary and/or secondary forests at varying levels of disturbance in Singapore, including back mangrove forest, and disturbed but well-developed secondary forest fragments in urban or semi-urban settings (e.g. parkland). Nests were found in soil, soil mounds or rotten trunks and logs; individuals were often found at high densities from leaf litter and top soil, also under wood.

##### *Acropyga inezae* Forel, 1912

**Material examined.** Nee Soon Swamp Forest, plot Q6, 3 Sep 2019, W. Wang leg., WW-SG19-001, ZRC\_ENT00013859.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** Freshwater swamp forest – nest found in hummock, soil matrix around tree roots.

##### *Acropyga oceanica* Emery, 1900

**Material examined.** None available.

**Material not physically examined.** Workers from Singapore as indicated in LaPolla (2004), exact depository not specified.

**Literature.** LaPolla (2004).

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** Primary and/or mature secondary forest.

**Remarks.** Habitat described as 'degraded coastal hill forest on granite' transcribed from original labels, however this is an inaccurate description of forest types in the BTNR.

##### *Acropyga rubescens* Forel, 1894

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Acropyga acutiventris rubescens*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** At the time of writing, this species appears to be known in Singapore based only on literature records.

##### *Anoplolepis gracilipes* (Smith, 1857)

**Material examined.** Bukit Timah Nature Reserve, ZRC\_ENT00000343; same locality as previous, ZRC\_ENT00000361; Central Catchment Nature Reserve, Venus Loop, 1.35549, 103.81578, ZRC\_ENT00000729; Seletar Trail, 1.39097, 103.79952, ZRC\_ENT00000730; Pulau Ubin, ZRC\_ENT0007859; same locality as previous, ZRC\_HYM\_0000378; Mandai, ZRC\_ENT00013534; Mandai,

Northern Node, 1.40842, 103.78319, 54 m a.s.l., ZRC\_ENT00013870; Mandai, Bird Park Buffer, near L10, 1.40536, 103.78228, 73 m a.s.l., ZRC\_ENT00013882; Kent Ridge Park, ZRC\_HYM\_0000376; MacRitchie Reservoir, ZRC\_HYM\_0000377; Pulau Sentosa, ZRC\_HYM\_0000911; Pulau Ubin, Outward Bound School grounds, 1.41662, 103.99443, ZRC\_HYM\_0001160; Kranji Road, 1.42638, 103.75413, ZRC\_HYM\_0001179; same locality as previous, 7 Sep 2016, ZRC\_HYM\_0001192, 1195; same locality as previous, 5-7 Sep 2016, pitfall trap, ZRC\_HYM\_0001193-1194, 1196; Mandai Road 3, M3D, 1.41119, 103.80513, ZRC\_HYM\_0001180; Sunset Way, 1.32609, 103.77187, 22-24 Aug 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001187; same locality as previous, 21-23 Aug 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001197-1198, 1200; same locality and collection data as previous, trunk pitfall trap, ZRC\_HYM\_0001199; Bukit Batok East Avenue 6, 1.34304, 103.76235, 27-29 Sep 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001201, 1203-1206; same locality as previous, 28-30 Aug 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001189; same locality as previous, 30 Aug – 1 Sep 2016, G.W. Yong leg., trunk pitfall trap, ZRC\_HYM\_0001190-1191; Seletar Link, 7 Dec 2015, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000730; same locality as previous, 16-18 Oct 2016, G.W. Yong leg., trunk pitfall trap, ZRC\_HYM\_0001217, 1220-1221, 1224; same locality as previous, 23-25 Oct 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001210 – 1211; same locality as previous, 16 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001218, 1222, 1226; same locality as previous, 18 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001219, 1223, 1225, 1227; same locality as previous, 23 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001208, 1212, 1214-1215; same locality as previous, 25 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001209, 1213, 1216; Upper Thomson Nature Park, 1.38311, 103.79835, 9-11 Oct 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001265-1266; same locality as previous, 2-4 Oct 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001267 –

1269; same locality as previous, 4 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001270.

**Material not physically examined.** Syntypes – CASENT0102951, ANTC5313 (OUMNH); CASENT0103001, ANTC5357 (OUMNH); CASENT0903237, ANTC23099 (BMNH) Non-types - numerous specimens from multiple localities, both catalogued and uncatalogued (ZRC); ANIC32-012878, RWTacc.68.25 (ANIC); ANIC32-012879, RWTacc.68.8 (ANIC).

**Literature.** Type – Smith (1857) [as *Formica gracilipes*]. Viehmeyer (1916), Overbeck (1924) [both as *Plagiolepis longipes*]; Wetterer (2005); Tan & Corlett (2012); Yong et al. (2017).

**Localities.** Bukit Batok East Avenue; Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Kranji Road; MacRitchie Reservoir; Mandai; National University of Singapore (Kent Ridge/Clementi campus); Nee Soon; Pulau Ubin; Seletar Link; Seletar Trail; Sentosa; Singapore Botanic Gardens; Sunset Way; Upper Thomson Nature Park.

**Habitat/Ecology.** Broad range of different habitats of varying levels of disturbance in Singapore, including primary and mature secondary forests, degraded wasteland forests and spontaneous vegetation fragments in urban or semi-urban settings. These ants have very generalized foraging and nesting habits, typically found at high densities and extremely pervasive where they occur. Nests can be found under stones or in fallen rotting wood and logs.

**Remarks.** Singapore is the type locality of this infamous global invasive species. *Anoplolepis gracilipes* (Smith, 1857) was originally a junior synonym of *Anoplolepis longipes* (Jerdon, 1851) (synonymy by Emery 1887); hence *Anoplolepis gracilipes* (Smith, 1857) became the first available replacement name for *Anoplolepis longipes* (Jerdon, 1851) (Bolton, 1995: 67), since the latter was identified as a junior primary homonym of *Pheidole longipes* (Latreille, 1802). Colonies can be polydomous and/or polygynous (forming ‘supercolonies’), with overwhelmingly numerous queens and workers. Colony dispersal by ‘budding’ has been documented for this highly invasive species.



***Camponotus (Karavaievia) overbecki* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0910416, ANTC32748 (MHNG); FOCOL2490-2493 [as types of *Camponotus (Myrmosphincta) dolichoderoides* subsp. *overbecki*] (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbecki (1924) [both as *Camponotus (Myrmosphincta) dolichoderoides* subsp. *overbecki*].

**Localities.** Mandai Road.

**Habitat/Ecology.** These ants were originally found in pasteboard nests under the leaves of a tree.

**Remarks.** Type locality in Singapore.

***Camponotus (Myrmamblys) adustus* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Type – FOCOL2281 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmamblys) bellus* subsp. *adustus*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – type specimens were caught with a sweepnet over foliage.

**Remarks.** Type locality in Singapore.

***Camponotus (Myrmamblys) bedoti* Emery, 1893**

**Material examined.** Prince George's Park Residences (NUS), 1.292389, 103.778694, Mar-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-49, ZRC\_HYM\_0000445-446; Pulau Semakau, 2012-2014, J. Puniamoorthy et al. leg., malaise trap, mangroves, ZRC\_BDP (multiple); Sungei Buloh Wetland Reserve, SB1, 21-28 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29595, mangroves, ZRC\_BDP0017497; Pulau Ubin, 4 Dec 2016, G.W. Yong leg., ZRC\_ENT00027980.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907) [as *Camponotus reticulatus bedoti*]; Viehmeyer (1916); Overbeck (1924); Wang et al. (2018a).

**Localities.** Bukit Timah Road; Prince George's Park Residences (NUS); Pulau Semakau; Pulau Ubin; Sungei Buloh Wetland Reserve; Upper Peirce Reservoir.

**Habitat/Ecology.** Associated with both mature and young secondary habitats in Singapore, including mangrove back forest and disturbed secondary forest fragments in urban or semi-urban settings. Colonies have been found in dead twigs on trees.

***Camponotus (Myrmamblys) bellus* Forel, 1908**

**Material examined.** None available.

**Material not physically examined.** Minor workers, queens and males, FOCOL2289-2296 (ZMHB).

**Literature.** First description of queen – Forel (1912). First descriptions of minor worker and male – Viehmeyer (1916); Overbeck 1924.

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – colonies in withered bamboo, and in hollow branches of trees.

**Remarks.** This species was first described based on a soldier collected from Indonesia. The queen, minor worker and male for the species were described later on based on specimens collected from Singapore.

***Camponotus (Myrmamblys) ephippiatus* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Type – FOCOL2280, FOCOL2280 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – type specimens were caught with a sweepnet over foliage.

**Remarks.** Type locality in Singapore.

***Camponotus (Myrmamblys) gretae* Forel, 1902**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Camponotus (Colobopsis) gretae*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** The only literature record of this species in Singapore is that of a single queen collected from a lamp in a garden (Viehmeyer 1916; Overbeck 1924).

***Camponotus (Myrmamblys) reticulatus* Roger, 1863**

**Material examined.** Mandai mangrove, 2 Nov 1976, D.H. Murphy leg., ZRC\_HYM\_0000945; alate queen and worker, same locality as previous, 2 Oct 1970, D.H. Murphy leg., ZRC\_HYM\_0000633; Namly Avenue, 25 Apr 1985, D.H. Murphy leg., forest, ZRC\_HYM\_0000946; Kent Ridge, 24 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000947-949.

**Material not physically examined.** Unknown.

**Literature.** None; new record.

**Localities.** Kent Ridge; Mandai mangrove; Namly Avenue.

**Habitat/Ecology.** This species is usually associated with both mature and young secondary habitats in Singapore, mostly disturbed forest fragments in urban or semi-urban parklands, and mangrove forests. The ants can be found in damp logs, sometimes on the ground under *Eugenia* plants, in close association with planthoppers (Flatidae). In mangroves, a nest was found in a twig of *Sonneratia*.

**Remarks.** This species is superficially similar to *C. bedoti*, especially in the unique convex lateral profile of the propodeal dorsum. Minor workers of *C. reticulatus* can be differentiated from *C. bedoti* based on the following (*C. bedoti* traits in parentheses): 1) largely dark reddish-brown in colour, with front edge of head including malar area brownish-yellow (largely black, including the malar area), 2) entire body generally densely reticulate-punctate, appearing rather dull or weakly shining

(body largely finely reticulate-punctate and shiny, gaster sparsely punctate and shining, sometimes superficially reticulate), 3) body covered with dense appressed hairs or pubescence (body with much sparser pubescence, the gaster especially with dispersed punctures bearing standing hairs), 4) dorsum of propodeum more strongly depressed, i.e., propodeal ‘saddle’ more distinct (propodeal dorsum weakly depressed, propodeal saddle indistinct).

***Camponotus (Myrmamblys) reticulatus sericellus* Viehmeyer, 1916**

**Material examined.** Queen, Prince George’s Park Residences (NUS), 1.292389, 103.778694, 1-8 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0005, ZRC\_BDP0046220; Sime forest, collection date and collector unknown, ZRC\_ENT00048388.

**Material not physically examined.** Types – CASENT0910532, ANTC32839 (MHNG); FOCOL2283 – 2288 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmamblys) bedoti* subsp. *sericellus*]. Wang et al. (2018a).

**Localities.** Type locality – Bukit Timah Road. Prince George’s Park Residences (NUS); Sime forest.

**Habitat/Ecology.** Type specimens of this subspecies were collected from a garden, “between bark and stem” on a Chiku (*Manilkara zapota*) tree. More recent specimens were sampled from disturbed secondary forest fragments in semi-urban settings.

**Remarks.** Type locality in Singapore. Minor workers of *C. reticulatus sericellus* resemble those of *C. reticulatus*, though the latter appear to have somewhat shorter antennal scapes. At the time of writing, we have insufficient viable material (i.e., aged queen specimen of *C. reticulatus* in poor condition, no major workers available for comparison) to confidently assess distinguishing features between the two forms. Thus, we maintain *status quo* for the subspecies *sericellus*.



***Camponotus (Myrmosaulus) camelinus* (Smith, 1857)**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0901905, ANTC21350 (OUMNH). Non-type – CASENT0906945, ANTC27560 (BMNH).

**Literature.** Type – Smith (1857) [as *Formica camelinata*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore.

***Camponotus (Myrmosericus) parius* Emery, 1889**

**Material examined.** Lee Kong Chian Natural History Museum (NUS), 29 Mar 2018, W. Wang leg., WW-SG18-Campo1, ZRC\_ENT00000919; MacRitchie Catchment Reservoir, 20 Apr 1994, collector unknown, NS 123B, ZRC\_HYM\_0000109; MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000404; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg. (SKYC); Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000405; Choa Chu Kang Avenue 2, Block 273, 1 Mar 2017, D.J. Court leg., ZRC\_HYM\_0001723; University Hall (NUS), 1.297111, 103.776583, 12-19 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0084, ZRC\_BDP0047532; Prince George's Park Residences (NUS), 1.292389, 103.778694, 8-15 Jul 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0061, ZRC\_BDP0045928; same locality as previous, 1-8 Sep 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0093, ZRC\_BDP0047461; Pulau Tekukor, 9 Dec 2016, G.W. Yong leg., ZRC\_ENT00027978; St. John's Island, 1.220167, 103.847472, 11 May 2016, J.S. Ascher et al. leg., ZRC\_ENT00047855; City Hall, 29 Jul 2014, J.K. Wetterer leg., ZRC\_ENT00054652; Outram Park, same collector and date as previous, ZRC\_ENT00054653; Serangoon, 30 Jul 2014, same collector as previous, ZRC\_ENT00054654; Marine Parade, 1 Aug 2014, same collector as previous, ZRC\_ENT00054655; Kranji, 2 Aug 2014, same col-

lector as previous, ZRC\_ENT00054656; Singapore Botanic Gardens, 5 Aug 2014, same collector as previous, ZRC\_ENT00054659; Pasir Panjang, same collector and date as previous, ZRC\_ENT00054660.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a) [misidentified as *Camponotus rufoglaucus*].

**Localities.** Choa Chu Kang Avenue 2; City Hall; Kranji; National University of Singapore (Kent Ridge/Clementi campus); MacRitchie Reservoir; Marine Parade; Outram Park; Pasir Panjang; Pulau Tekukor; Pulau Ubin; Serangoon; Singapore Botanic Gardens; St. John's Island; Upper Peirce Reservoir.

**Habitat/Ecology.** This species is often associated with young secondary habitat in Singapore, also commonly observed close to human infrastructure in urban or semi-urban settings. Nests were typically seen in soil in cultivated grassland or grass patches near roadside trees. Colony presence is often conspicuous with narrow nest entrance usually surrounded by a relatively (much) wider outer ring of sandy soil.

**Remarks.** Often mistaken for the other more well-known black *Camponotus* species — *C. auriventris*, *C. parius* can be distinguished from the latter mainly by the absence of a deep metanotal groove (in *C. auriventris* the metanotal groove is visible as a deep indentation between mesonotum and propodeum in lateral view), also a smoother sculpture with fine whitish pubescence.

*Camponotus parius* also closely resembles *C. rufoglaucus* in general habitus. Workers of the two species can be differentiated by colour – *C. parius* is almost entirely uniformly black, while *C. rufoglaucus* is typically black with varying amounts of reddish-brown. Body colour, however, might be unreliable because of the broad variation apparent in the latter species. The species may also be distinguished based on condition of standing pilosity. In *C. parius* workers, standing hairs on entire dorsum are sparse, laterally-projecting hairs almost absent along sides of head in full-face view except in anterior portion closer to mandibular base. In contrast, *C. rufoglaucus* workers have denser and more numerous standing

hairs on entire dorsum, especially the mesosoma; in full-face view, sides of head lined with many laterally-projecting hairs.

***Camponotus (Myrmotarsus) nigricans enganensis* Forel, 1916**

**Material examined.** Alate queen, Lee Kong Chian Natural History Museum (NUS), on staircase linking to NUS Museum, 21 Sep 2020, J.S. Tan leg., ZRC\_ENT00028320.

**Material not physically examined.** FOCOL2338 [as type of *Camponotus (Myrmotarsus) nigricans* subsp. *nitidiceps*] (ZMHB).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Myrmotarsus) nigricans* subsp. *nitidiceps*].

**Localities.** Bukit Timah Road. Single alate queen found at LKCNHM building compound may have dispersed from nest in unknown distant location, exact locality of original nest unverifiable.

**Habitat/Ecology.** Queens have been found attracted to lamps in a garden.

**Remarks.** This species was originally described based on the queen. Appearance of workers currently unknown. May be more common than might be inferred from relatively rare occurrences of alate queens.

***Camponotus (Myrmotarsus) quadrisectus hians* Forel, 1907**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0910508-910509, ANTC32820-3282 (MHNG); CASENT0922412, ANTC43615 (HNHM, Budapest).

**Literature.** Type – Forel (1907).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore.

***Camponotus (Myrmotarsus) quadrisectus margaritae* Forel, 1907**

**Material examined.** Island Club forest, 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000890-892.

**Material not physically examined.** Syntypes – CASENT0910510, ANTC32822 (MHNG); CASENT0922409, ANTC43612 (HNHM, Budapest).

**Literature.** Type – Forel (1907).

**Localities.** Island Club forest (Central Catchment Nature Reserve).

**Habitat/Ecology.** Workers of this species were collected from primary or old/mature secondary forest, where they were found in a carton nest at the foot of a tree. The ants were reportedly found together with an unnamed *Crematogaster* species.

**Remarks.** Type locality in Singapore.

***Camponotus (Tanaemyrmex) albosparsus* Bingham, 1903**

**Material examined.** Prince George's Park Residences (NUS), 1.292389, 103.778694, 8-15 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0009, ZRC\_BDP0046879; same locality and collectors as previous, 5-12 Aug 2015, malaise trap, NUS0077, ZRC\_BDP0047381; Pulau Semakau, 2012-2014, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); Nee Soon Swamp Forest, NS2, 28 Mar-4 Apr 2012, J. Puniamoorthy et al. leg., malaise trap Reg. 29158, ZRC\_BDP0015966; locality unknown, 23 Jul 1996, Sk. Yamane leg., ZRC\_HYM\_0000430-431; Kent Ridge Park, 11 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Non-types, J.K. Wetterer leg. (JKWC) – Amber Road, Katong, 28 Jul 2014, vial #339; Pasir Panjang, by MRT station, 5 Aug 2014, vial #484; Punggol, by MRT station, 30 Jul 2014, vial #390; Serangoon, 30 Jul 2014, vial #389; Singapore Botanic Gardens, 5 Aug 2014, vial #480.

**Literature.** Li (2006) [as *Camponotus bedoti albosparsus*]; Wang et al. (2018a).

**Localities.** Amber Road (Katong); Kent Ridge Park; Nee Soon Swamp Forest; Pasir Panjang; Prince George's Park Residences (NUS); Pulau Semakau; Punggol; Serangoon; Singapore Botanic Gardens.

**Habitat/Ecology.** Found in both mature and young secondary habitats, including disturbed secondary forest fragments in urban or semi-urban settings, mangrove and swamp forests in Singapore. Individuals were usually found in open areas around or near forest fringes or edges, sometimes under stones, and at bases of trees, close to man-made infrastructure.

**Remarks.** Workers of this species are typically distinguished from other congeners by a pair of large pale-whitish patches/dots, on each of the first two gastral tergites respectively.

***Camponotus (Tanaemyrmex) arrogans* (Smith, 1858)**

**Material examined.** Bukit Timah Nature Reserve, BT03, 1.34913, 103.77914, 17 May 2017, W. Wang leg., old secondary forest, WW-SG17-053, ZRC\_ENT00027972.

**Material not physically examined.** Syntype – CASENT0903598, ANTC23456 (BMNH).

**Literature.** Type – Smith (1858) [as *Formica arrogans*]. Emery (1896) [as *Camponotus maculatus arrogans*]; Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary and old or mature secondary habitat in Singapore. In old secondary forest, nest-mates have been collected from the surface of a buttress root of a large tree, presumably in the vicinity of the actual nest. It is unclear exactly where actual nests may be located, i.e., in tree cavities or amidst buttress litter.

**Remarks.** Type locality in Singapore.

***Camponotus (Tanaemyrmex) carinifer* Viehmeyer, 1916 stat. n.**

*Camponotus (Myrmoturba) tinctus* var. *carinifer* Viehmeyer, 1916: 156 (s.q.)

Subspecies of *Camponotus irritans*: Bolton, 1995: 91.

**Material examined.** Prince George's Park Residences (NUS), 1.292389, 103.778694, 15-22

Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0013, ZRC\_BDP0045404; same locality and collectors as previous, 29 Jul-5 Aug 2015, malaise trap, NUS0073, ZRC\_BDP0047331; same locality and collectors as previous, 23-30 Sep 2015, malaise trap, NUS0105, ZRC\_BDP0047294; Mandai mangroves, 17 Nov 1978, D.H. Murphy leg., ZRC\_HYM\_0000881; same locality and collector as previous, 1975, ZRC\_HYM\_0000882; Sungei Buloh Wetland Reserve, 14 Mar 2018, M.S. Foo leg., back mangrove, ZRC\_ENT00000911.

**Material not physically examined.** Types – CASENT0910154 [cotype major of *C. (Myrmoturba) tinctus* var. *carinifer*], ANTC32547 (MHNG); FOCOL2391-2396 [queens and workers of *C. tinctus* var. *carinifer*] (ZMHB).

**Literature.** Types - Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmoturba) tinctus* var. *carinifer*]. Wang et al. (2018a) [identified as *Camponotus irritans*].

**Localities.** Jurong Road; Mandai mangroves; Prince George's Park Residences (NUS); Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** This species was found mainly in disturbed young or mature secondary forest fragments in semi-urban settings, close to man-made infrastructure. The type series was collected from a nest in a rotting dead tree trunk along a road. In mangroves, a colony was found nesting in a rotting branch of the mangrove plant *Rhizophora*.

**Remarks.** Prior to this study, *C. carinifer* was treated as a subspecies of *Camponotus irritans* (Smith, 1857). However, upon comparisons of type images and original descriptions, we believe *C. carinifer* is sufficiently distinct to be considered a separate species.

The original description of *C. irritans* was based on "normal" minor workers (not majors/soldiers), specifically a large worker (12.7 mm) and a smaller one (6.4 mm). We noted that the maximum size for non-major workers in *C. irritans* appears larger than in local minors of *C. carinifer* – the latter never exceeds 10 mm in total length. Further, even majors of *C. carinifer* are at most around 10 - 11 mm in length, at least for specimens from Singapore.

Based on our observations, large minor workers of *C. carinifer* can be distinguished from those of *C. irritans* by the following (*C. irritans* traits in parentheses): 1) mesosoma not elongate, in dorsal view pronotum as wide as head, rounded and not much narrowed anteriorly (mesosoma elongate and slender, pronotum narrower than head, distinctly tapered and narrowed anteriorly), 2) posterior margin of head very weakly and broadly convex in full face view (posterior margin of head strongly convex), 3) petiole in profile narrower and more squamiform, weakly tapered towards apex (petiole longer, strongly tapered towards apex), 4) apex of scape and most of antenna flagellum light yellowish-brown, reddish-brown at the tips (apex of scape and entire flagellum ferruginous).

*Camponotus carinifer* is very similar to *Camponotus tinctus* (Smith, 1858) (nom. rev., see relevant species section below). In fact, the minor workers are almost indistinguishable from each other. The two species can still be differentiated based on major workers and queens. We discuss this in greater detail under Remarks for *C. tinctus*.

***Camponotus (Tanaemyrmex) festinus eximius*  
Emery, 1900**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on a single literature record of a queen caught at a lit-lamp in a garden.

***Camponotus (Tanaemyrmex) festinus simaluranus*  
Forel, 1915**

**Material examined.** Major worker, Nee Soon, 14 Apr 1993, Sk. Yamane leg., swamp forest (SKYC).

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Dinomyrmex) inezae* var. *simalurana*].

**Localities.** Bukit Timah Road; Nee Soon.

**Habitat/Ecology.** In the only literature record of this subspecies in Singapore, the ants were reportedly found in the trunk of a garden tree with cavities created by termites. More recently, a major worker was collected from swamp forest.

***Camponotus (Tanaemyrmex) irritans* (Smith, 1857)**

**Material examined.** Lee Kong Chian Natural History Museum bus stop, 13 Jan 2017, S.H. Tan leg., nest in junction box, WW-SG17-007, ZRC\_HYM\_0000575; Kranji Road, Sep-Nov 2016, G.W. Yong et al. leg., ZRC\_ENT00057823-57827; Upper Thomson Nature Park, 11-13 Sep 2016, G.W. Yong et al. leg., ZRC\_ENT00057828; Seletar Link, 23-25 Oct 2016, same collectors as previous, ZRC\_ENT00057829; Mandai Road, 29 Nov – 1 Dec 2016, G.W. Yong et al. leg., ZRC\_ENT00057830; Sunset Way, 31 Aug 2016, G.W. Yong et al. leg., ZRC\_ENT00057831.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a) - but see Remarks for *Camponotus carinifer*.

**Localities.** Kranji Road; Lee Kong Chian Natural History Museum (NUS); Mandai Road; Seletar Link; Sunset Way.

**Habitat/Ecology.** These ants appear to be quite tolerant of degraded or disturbed environments, able to thrive in areas near man-made infrastructure as well as young or mature secondary forest fragments. A colony was even found nesting inside an outdoor electrical junction box next to a building in urban settings. The ants are commonly observed (unverified sightings), sometimes photographed, but not collected. The species is probably more widespread locally than is represented in formal museum holdings, not limited to the two localities listed in this section. In recent times, these ants have apparently also become increasingly popular in the local pet trade.

**Remarks.** As mentioned before (see Remarks for *C. carinifer*), *C. irritans* was first described based on two minor workers – a large one (>12 mm) and another roughly half its size (which Smith defined as truly ‘minor’). The



major worker was never formally described. This is problematic with regards to species delimitation, especially for species of the subgenus *Tanaemyrmex*, as the worker caste can be extremely polymorphic.

Within each colony sample we examined, we observed a broad spectrum of intermediate worker forms, varying mainly in head shape, size, and body colours. Nevertheless, the elongate and slender habitus, characteristic of *C. irritans* as it was first described, persists across all variants, including teneral individuals. It is difficult to clearly define the boundaries separating ‘majors’ from ‘minors’ because of the apparent continuum of forms. As expected, Smith’s (1857) original description and the online type image of *C. irritans* matched only with a few individuals per sample. Major workers, also variable in head shape, resemble those of *Camponotus carin* Emery, 1889 and other close relatives. Minor workers of different species of *Camponotus* can be almost identical to each other. Some minor workers of the *C. irritans* colonies we examined, for example, closely matched the original description and type image for *Camponotus mitis* (Smith, 1858), except for petiole shape. Consequently, we cannot overlook the possibility that specimens we currently recognize as “*C. irritans*” may in fact belong to another similar species of the subgenus *Tanaemyrmex*.

***Camponotus (Tanaemyrmex) maculatus obfuscatus* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – FO-COL2400-2402 (ZMHB) [as types of *Camponotus (Myrmoturba) subnuda* var. *obfuscata*]

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmoturba) subnuda* var. *obfuscata*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – type colony found in withered bamboo. A solitary type queen was also found in a rotten branch lying on the ground.

**Remarks.** Type locality in Singapore.

***Camponotus (Tanaemyrmex) maculatus subnuda* Emery, 1889**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Myrmoturba) subnuda*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – a single queen collected at a lit-lamp.

**Remarks.** At the time of writing, there are only literature records of this subspecies in Singapore.

***Camponotus (Tanaemyrmex) maxwellensis* Forel, 1913**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Myrmoturba) maculatus* subsp. *maxwellensis*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – a single queen collected in a hollow branch of a tree.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Camponotus (Tanaemyrmex) mitis* (Smith, 1858)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Myrmoturba) maculatus* subsp. *mitis*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Camponotus (Tanaemyrmex) tinctus* (Smith, 1858), nom. rev.**

*Formica tincta* Smith, 1858: 21 (q.)

Viehmeyer, 1916; 155 (s.w.); Karavaiev, 1929b: 237 (m.)

Combination in *Camponotus*: Mayr, 1862: 676.

Combination in *Camponotus (Myrmoturba)*: Forel, 1914: 267.

Combination in *Camponotus (Tanaemyrmex)*: Emery, 1925: 94.

Status as species: Mayr, 1862: 676; Mayr, 1863: 401; Roger, 1863b: 3; Mayr, 1865: 30; Mayr, 1867: 39 (redescription); Smith, 1871: 304; Dalla Torre, 1893: 254; Emery, 1896b: 371; Viehmeyer, 1916: 154; Wheeler, 1935: 40.

Junior synonym of *Camponotus luteus*: Bingham, 1903: 379.

Subspecies of *Camponotus maculatus*: Emery, 1900a: 704; Stitz, 1925: 124.

Subspecies of *Camponotus irritans*: Emery, 1920: 7, 17; Stitz, 1925: 124; Emery, 1925: 94; Karavaiev, 1929b: 237; Stitz, 1932: 736; Chapman & Capco, 1951: 248; Baltazar, 1966: 274; Bolton, 1995: 127.

**Material examined.** None available.

**Material not physically examined.** FO-COL2386-2387 [used in first descriptions of *Camponotus tinctus* workers] (ZMHB).

**Literature.** Types - Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmoturba) tinctus* var. *carinifer*, and *C. (Myrmoturba) tinctus*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A queen of this species was caught at a lit lamp in a garden. The ants were also found nesting in decaying or rotten branches.

**Remarks.** While *Camponotus tinctus* was first described based on a queen specimen from Myanmar, major and minor workers of the species were described later by Viehmeyer (1916) based on specimens from Singapore. Minor workers of this species can be distinguished from *C. irritans* using the characters detailed under Remarks for *C. carinifer* (see above).

*Camponotus tinctus* closely resembles *C. carinifer*, though major workers and queens may be differentiated by the following characters (*C. carinifer* traits in parentheses): 1) clypeus without or with very weak and indistinct median carina, (clypeus with distinct median carina), 2) posterior head margin almost flat, weakly and broadly concave (posterior head margin deeply concave medially), 3) in anterodorsal/oblique view, rear corners of head not forming rounded lobes, only slightly projected posteriorly (rear corners of head forming rounded lobes, strongly projected posteriorly).

Given the absence of more compelling observable differences, it remains possible that *C. carinifer* and *C. tinctus* are actually ecomorphs of a morphologically variable species. In this case, DNA evidence coupled to more material coverage of the two species from other parts of Indomalaya, may be key to resolving this issue.

***Camponotus (Tanaemyrmex) variegatus* (Smith, 1858)**

**Material examined.** Linden Drive, 6 Jun 1985, D.H. Murphy leg., on mango, ZRC\_HYM\_0000884.

**Material not physically examined.** Unknown.

**Literature.** Type — Smith (1858) [as *Formica variegata*].

**Localities.** Linden Drive

**Habitat/Ecology.** Unknown in Singapore context – habitat information written on original label of ZRC specimen illegible.

**Remarks.** Both Ceylon (now known as Sri Lanka) and Singapore were named as type localities in the original description of this species (Smith 1858), no lectotype was designated.

***Camponotus (Tanaemyrmex) variegatus fuscithorax* Dalla Torre, 1893**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Myrmoturba) maculatus* subsp. *mitis* var. *fuscithorax*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** These ants were found in gardens – colonies were found in the end of a branch of a dead tree, in bamboo, and under an old packing-case on the ground. Queens have also been collected from lit-lamps in gardens.

**Remarks.** The soldier, queen and male of this subspecies were first described by Viehmeyer (1916) based on specimens collected in Singapore.



***Colobopsis badia* (Smith, 1857)**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0901897, ANTC21342 (OUMNH)

**Literature.** Type – Smith (1857) [as *Formica badia*]. Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Colobopsis) badius*].

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Hill; Mandai Road.

**Habitat/Ecology.** Typically associated with primary and old secondary forest, these ants have been found in *Nepenthes* pitcher cups; colonies have been collected from inside the wood of living trees.

**Remarks.** Type locality in Singapore.

***Colobopsis leonardi* (Emery, 1889)**

**Material examined.** Sungei Buloh, 8 Jan 2013, Sk. Yamane leg., lower vegetation, ZRC\_HYM\_0000441; MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000442; Kent Ridge, 13 May 1985, D.H. Murphy leg., roadside tree trunk, ZRC\_HYM\_0000886-888; same locality as previous, 28 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000889; Bukit Timah Nature Reserve, near BT02, 1.35599, 103.77397, 25 Jan 2017, W. Wang leg., ZRC\_ENT00014152; Kranji mangrove, 2 Jul 1985, D.H. Murphy leg., dead twig and tree bole, DHM-SG85-Colo1, ZRC\_ENT00027954.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Camponotus (Colobopsis) pilosus*].

**Localities.** Bukit Timah Nature Reserve (= Bukit Timah Hill); Bukit Timah Road; Kent Ridge; Kranji; MacRitchie Reservoir; Sungei Buloh.

**Habitat/Ecology.** This species appears associated mostly with primary and old or mature secondary habitats, including mangrove forest. The ants were often found on trees or lower vegetation; nests have been collected from dead twigs and tree boles.

***Colobopsis leonardi gracilentata* (Viehmeyer, 1916)**

**Material examined.** None available.

**Material not physically examined.** Type queen – FOCOL2515 (ZMHB) [as *Camponotus (Colobopsis) pilosus* subsp. *gracilentus*].

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Colobopsis) pilosus* subsp. *gracilentus*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** This subspecies was first described and is only known based on a single queen collected from a lit-lamp in a garden; no workers have yet to be formally described. Type locality in Singapore.

***Colobopsis moeschi lygaea* (Viehmeyer, 1916)**

**Material examined.** None available.

**Material not physically examined.** Types – FOCOL2270-2271 (ZMHB) [as *Camponotus (Myrmamblyus) moeschi* var. *lygaea*].

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Camponotus (Myrmamblyus) moeschi* var. *lygaea*].

**Localities.** Ayer Terjun (archaic place name)

**Habitat/Ecology.** No information available on macrohabitat; ants of the type series were found in *Nepenthes* pitcher cups. *Nepenthes* pitcher plants are usually found in old or mature secondary forest.

**Remarks.** Type locality in Singapore.

***Colobopsis rothneyi* (Forel, 1893)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Camponotus (Colobopsis) rothneyi*].

**Localities.** Bukit Timah Hill

**Habitat/Ecology.** Deducing from its reported locality in Singapore, this species is probably associated mostly with primary and/or mature secondary forest. Nests have been found in hollow branches.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Colobopsis rothneyi krafti* (Forel, 1901)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Type queen – Forel (1901) [as *Camponotus (Colobopsis) rothneyi* r. *krafti*].

**Localities.** Unknown.

**Habitat/Ecology.** None available.

**Remarks.** Type locality in Singapore. This subspecies was first described and is only known based on a single queen collected from Singapore by Dr. H. Kraft in late May 1894 (Forel 1901). Whereabouts of the physical type specimen are unknown at the time of writing.

***Colobopsis vitrea* (Smith, 1860)**

**Material examined.** Admiralty, 4 Feb 2015, W. Wang leg., abandoned park, ZRC\_ENT00000974; Bukit Timah forest, 3 Nov 1973, D.H. Murphy leg., ZRC\_HYM\_00000968; Tyersall Istana, 9 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000969; Catchment forest (= Central Catchment Nature Reserve), 15 Sep 1964, D.H. Murphy leg., trunk, ZRC\_HYM\_0000970; Mandai forest, 15 Jan 2020, W. Wang leg., horizontal trunk of tree, ZRC\_ENT00027940; Pulau Ubin, PU1, 1°25'11.64"N, 103°56'6.252"E, 25 Aug-1 Sep 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29436, ZRC\_BDP0015995; Sungei Buloh Wetland Reserve, SB1, 1°26'46.3"N, 103°43'49.9"E, 16 m, 2012-2014, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Camponotus (Colobopsis) vitreus*].

**Localities.** Admiralty; Bukit Timah forest; Bukit Timah Road; Central Catchment Nature Reserve; Mandai forest; Pulau Ubin; Sungei Buloh Wetland Reserve; Tyersall Istana.

**Habitat/Ecology.** This species is associated with both mature and young secondary habitat in Singapore, often disturbed secondary forest fragments in urban or semi-urban settings, also abandoned park forests. Alates have been collected using malaise traps from mangrove back forests, but actual nesting sites in mangroves have yet to be found. Colonies have

been found in withered bamboo, decayed wood, and hollow twigs of mangosteen trees. Individuals were also found foraging on trunks of living trees.

***Colobopsis vitrea angustula* (Emery, 1925)**

**Material examined.** None available.

**Material not physically examined.**

CASENT0915605, ANTC34823 (NHMW)

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Camponotus (Colobopsis) vitreus* var. *angustata*].

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Road; Changi.

**Habitat/Ecology.** Colonies have been found in rotten wood and bamboo in gardens; nests seem to occupy deserted termite tunnels or cavities. One colony was reported to be nesting in the stem of a fern, hollowed out to around five feet above ground, with small round entrance holes scattered some distance apart (from each other).

**Remarks.** The very first recorded specimen of this species was an alate queen collected by Ranson in 1870, from Changi.

***Colobopsis vitrea vittatula* (Forel, 1913)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** This subspecies was first described and is only known based on a single queen from Sumatra. Likewise, the only known record of the subspecies in Singapore is that of a single queen collected from a lit-lamp in a garden.

***Dinomyrmex gigas* (Latreille, 1802)**

**Material examined.** Alate queen, Bukit Batok St. 21, 28 May 2018, Faith leg., ZRC\_ENT00000990; Bukit Timah Nature Reserve, North View Path, 15 Aug 2009, T.M. Leong et al. leg., ZRC\_6\_21680; Bukit Timah forest, 16 Jul 1965, P.H.L. leg., ZRC\_HYM\_0000939; dealate queen, Holland Close, 11 Dec 2019, K. Lim leg., ZRC\_ENT00014092; Kent Ridge, 20

Dec 1989, K. Yong leg., ZRC\_HYM\_0000156; alate queen, Lee Kong Chian Natural History Museum (NUS), ground floor, 21 Jan 2019, S.H. Tan leg., ZRC\_ENT00047825; alate queen, same locality as previous, main lobby, 12 Mar 2018, T. Mogan leg., ZRC\_ENT00000900; Lower Peirce Reservoir Road, Aug 1990, collector unknown, ZRC\_ENT00000218; Lower Peirce Reservoir, Forest B, 7 Aug 1990, collector unknown, ZRC\_ENT00000096; Lower Peirce Reservoir, Forest A, 8 Aug 1990, collector unknown, ZRC\_ENT00000118; same locality as previous, 25 Aug 1990, collector unknown, ZRC\_ENT00000185; same locality as previous, 18 Aug 1990, collector unknown, ZRC\_HM\_0000146; MacRitchie Catchment Reservoir (Reserve), 25 Apr 1994, J.C. leg., NS 125B, ZRC\_HYM\_0000070; same locality, 9 Jan 2014, Sk. Yamane leg. (SKYC); Nee Soon Swamp Forest, 7 Jun 1990, H.K. Lua leg., 106, ZRC\_HYM\_0000134; locality unknown, 25 Dec 1967, G.W. Classy leg., ZRC\_HYM\_0000940-941, 943-944; locality unknown, 2 Jan 1968, same collector as previous, ZRC\_HYM\_0000942; workers and alates, Nee Soon Swamp Forest, 2012-2014, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** CASENT0280278, PSW09574 (PSWC); FMNHINS0000045763-45764, FMNH.Emu. CE.IRN\_163906 (FMNH, Chicago, USA).

**Literature.** Smith (1857) [as *Formica gigas*]; Viehmeyer (1916), Overbeck (1924) [as *Camponotus (Dinomyrmex) gigas*]; Tan & Corlett (2012) [as *Camponotus gigas*].

**Localities.** Bukit Timah Nature Reserve (= Bukit Timah Hill); Kent Ridge; Lower Peirce Reservoir; MacRitchie Catchment Reserve; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species is associated mostly with primary and old or mature secondary habitat in Singapore, including swamp forests. These large ants have been observed nesting in huge fallen logs or rotting wood close to bases of mature trees. Solitary workers were usually found foraging over wide areas of forest, sometimes even in grassland adjacent to forest edges.

**Remarks.** Alates, typically queens, have occasionally been found in urban dwellings or residential areas somewhat far away from their original nest sites (i.e., forested areas). These locations cannot be strictly considered as 'localities' for the species, since they do not correspond to where actual nests occur. Queens are known to fly over long distances away from the source nest during dispersal.

### *Echinopla lineata* Mayr, 1862

**Material examined.** Kent Ridge, 24 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000249; Kent Ridge Park, 11 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000403; Kranji mangrove, 2 Jul 1985, D.H. Murphy leg., DHM-SG85-Poly1, ZRC\_ENT00027955; Linden Drive kampong, 27 Mar 1975, D.H. Murphy leg., ZRC\_HYM\_0000918-919; Mandai mangroves, 18 Aug 1977, D.H. Murphy leg., ZRC\_HYM\_0000917; Pulau Ubin, 1 Aug 2016, W. Wang leg., ZRC\_ENT00014151; Seletar Link, 1.40518, 103.88555, 23 Oct 2016, G.W. Yong leg., SL7GH1076, ZRC\_HYM\_0001181; Sungei Buloh, 8 Jan 2013, Sk. Yamane leg., ZRC\_HYM\_0000402.

**Material not physically examined.** CASENT0280335, PSW10245-4 (PSWC). In Zettel & Laciny (2015): Singapore Zoo, 2 Nov 2003, H. Zettel leg. (ZCW).

**Literature.** Zettel & Laciny (2015).

**Localities.** Kent Ridge; Kent Ridge Park; Kranji mangrove; Lim Chu Kang; Linden Drive kampong; Mandai mangroves; Pulau Ubin; Seletar Link; Singapore Zoo (in Mandai); Sungei Buloh.

**Habitat/Ecology.** This arboreal species was found mainly in mangroves and young secondary forests of varying quality and levels of disturbance, such as waste woodland secondary forest fragments in urban or semi-urban settings. In mangroves, the ants have been found on lower vegetation, or nesting in felled *Lumnitzera* or hollow twigs of *Lumnitzera*. In other forests, individuals have been found in hollow branches suspended in bushes under *Eugenia*, also nesting in other suspended hollow branches.

***Echinopla melanarctos* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Holotype – CASENT0901878, ANTC21323 (OUMNH).

**Literature.** Type – Smith (1857).

**Localities.** Unknown.

**Habitat/Ecology.** No information available in the Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, this species is only known by its primary type collected from Singapore.

***Echinopla rugosa* André, 1892**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A colony was found in withered bamboo in a garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on literature records.

***Euprenolepis procera* (Emery, 1900)**

**Material examined.** Nee Soon Swamp Forest, NS1, 16-23 May 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29246, ZRC\_BDP0015065; Mandai Road, 5-7 Dec 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0000513; Mandai Road 1, M1D, 5-7 Dec 2016, G.W. Yong leg., pitfall trap, M1D19GPd2571, ZRC\_HYM\_0001182; Upper Thomson Nature Park, UT1, 4 Oct 2016, G.W. Yong leg., UT11GH1898, ZRC\_HYM\_0001183.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest; Mandai Road; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with primary or mature secondary habitat, including swamp and native-dominated secondary forest, as well as young secondary habitat such as abandoned plantation forests in Singapore.

**Remarks.** These ants are usually ground-foraging and were mostly collected using pitfall traps.

***Gesomyrmex spatulatus* Cole, 1949**

**Material examined.** Nassim Road, 25 Sep 1969, D.H. Murphy leg., DHM-SG69-Geso1/2, ZRC\_HYM\_0000001-3.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nassim Road

**Habitat/Ecology.** This species was found nesting in old cerambycid mines or borings in live terminal twigs of a parasitic fig (*Ficus* sp.) on a large fallen tree. Some individuals were also observed to be swiftly running under sunlight on the same fallen tree.

**Remarks.** Specimens examined confer more with *G. spatulatus sensu lato* in terms of petiolar and clypeal shapes, though the species *G. kalshoveni* Wheeler, 1929 appears more likely in terms of known geographic distribution (Indonesia (Java), as opposed to India (Assam)). The Singapore specimens may in fact be an entirely new species with characters intermediate between *G. kalshoveni* and *G. spatulatus*. Given the lack of more compelling empirical evidence at the time of writing, we tentatively treat these specimens as conspecific to *G. spatulatus*.

***Lepisiota rothneyi splendida* (Viehmeyer, 1916)**

**Material examined.** None available.

**Material not physically examined.** Types – FOCOL2227-2229 (ZMHB) [as *Plagiolepis rothneyi* subsp. *splendida*]

**Literature.** Type – Viehmeyer (1916) [as *Acant-holepis rothneyi* subsp. *splendida*]; Overbeck (1924) [as *Plagiolepis rothneyi splendida*].

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Road.

**Habitat/Ecology.** Type specimens were collected from *Nepenthes* pitcher cups in a garden.

**Remarks.** Type locality in Singapore.

***Myrmoteras (Myagroteras) bakeri* Wheeler, 1919**

**Material examined.** Bukit Timah forest, 1965, D.H. Murphy leg., ZRC\_HYM\_0000866.

**Material not physically examined.** ANIC32-014953, Shattuck1345232391 (ANIC).

**Literature.** None. New record.



**Localities.** Bukit Timah Nature Reserve (= Bukit Timah forest).

**Habitat/Ecology.** This species was found in leaf litter in primary and/or old secondary forests in Singapore.

### *Myrmoteras barbouri* Creighton, 1930

**Material examined.** None available.

**Material not physically examined.** ANIC32-014921, Shattuck1345232397 (ANIC).

**Literature.** Moffett (1985, 1986).

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary and old or mature secondary forests in Singapore. Individuals can be found in leaf litter on forest floors. These ants have also been found in disturbed primary forest, at around 100 m elevation - a nest was found in a soil crevice beneath leaf litter.

**Remarks.** Voucher specimens of this species are unavailable in ZRC, or have not been identified from unsorted material. Original labels of material in ANIC describe habitat as 'degraded coastal hill forest on granite', but this may not be an accurate description of the forest in Bukit Timah Nature Reserve where specimens were collected.

### *Nylanderia birmana* (Forel, 1902)

**Material examined.** Lower Peirce Reservoir Park, 1.39095, 103.81041, 17 Dec 2021, W.N. Lam leg., ZRC\_ENT00057789-57790; Upper Peirce Reservoir Park, 1.38726, 103.81030, same collector and date as previous, ZRC\_ENT00057788; workers and alate queen, same locality and collector as previous, 27 Dec 2021, ZRC\_ENT00057791; MacRitchie Reservoir Park, 1.35229, 103.82450, 21 Oct 2021, same collector as previous, ZRC\_ENT00057792.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Lower Peirce Reservoir; MacRitchie Reservoir; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was collected from leaf litter in freshwater swamp forest, also native-dominated primary and/or secondary dryland forests.

**Remarks.** *Nylanderia birmana* resembles *Paratrechina longicornis* in body colour and general habitus, but can be distinguished from the latter by the following (*P. longicornis* traits in parentheses): 1) head and mesosoma finely and irregularly reticulate, weakly shining or almost matte (smooth and moderately shining, weakly shagreened), 2) antennal scapes with erect macrosetae (scapes lacking erect macrosetae), 3) mesosoma and legs relatively more robust and larger, dorsal outline of pronotum more strongly convex in lateral view (body more slender, dorsal outline of pronotum weakly convex in lateral view).

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

**Material examined.** Alate queens, Changi, 1.36206, 104.02525, 7 May 2020, mercury vapour lamp, ZRC; alate queen, Pulau Semakau New Fragment, SMN2, 1°12'04.5"N, 103°45'46.1"E, 21-28 Nov 2013, J. Puniamoorthy et al. leg., replanted mangroves, malaise trap, Reg. 30285, ZRC\_BDP0015368; alate queen, same locality and collector as previous, 13-20 Aug 2012, replanted mangroves, malaise trap, Reg. 29431, ZRC\_BDP0015362; male, Pulau Ubin, PU2, 1°24'39.1"N, 103°59'23.2"E, 22-29 Sep 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29489, ZRC\_BDP00008654.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Changi; Pulau Semakau; Pulau Ubin.

**Habitat/Ecology.** A recognized tramp species that has spread nearly worldwide to tropical or subtropical areas mainly via human commerce (Wetterer 1998), *N. bourbonica* identified from Singapore appears to occur in a fairly broad range of habitats at varied levels of human disturbance. These habitats include disturbed secondary forest fragments in semi-urban settings, also replanted mangroves and old growth mangrove forests.

**Remarks.** At the time of writing, the examined material (comprising only winged alates) could not be confidently established as *N. bourbonica* with absolute certainty. The species appears to be morphologically variable across populations, and therein lies the pos-

sibility that some of these populations may actually be different, albeit closely-related, species. In view of this taxonomic conundrum, though there are slight differences between the morphology of the Singapore specimens and that of the type images, we tentatively consider the Singapore specimens to be conspecific. Species validity should be reassessed in future when more empirical evidence such as DNA is made available for global populations of *N. bourbonica*.

#### *Nylanderia clandestina* (Mayr, 1870)

**Material examined.** None available.

**Material not physically examined.** Queen and male types – FOCOL2715-2716 (ZMHB) [as *Prenolepis clandestina*].

**Literature.** Queen and male types – Viehmeyer (1916); Overbeck (1924) [as *Prenolepis (Nylanderia) clandestina*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A colony was found under the bark of a fallen branch on the ground in a garden.

**Remarks.** While the species was first described based on a worker collected from Java (Mayr 1870), the queen and male were only described later on by Viehmeyer (1916) using specimens collected by Overbeck in Singapore.

#### *Nylanderia kraepelini* (Forel, 1905)

**Material examined.** Dairy Farm Nature Park, 1.36385, 103.77731, 15 Oct 2021, W.N. Lam leg., ZRC\_ENT00057794; MacRitchie Reservoir Park, 12-27 Oct 2021, same collector as previous, ZRC\_ENT00057796-57797, ZRC\_ENT00057800-57802; Pulau Ubin, 1.41984, 103.93272, 17 Nov 2021, same collector as previous, ZRC\_ENT00057795; workers and alate queen, Upper Peirce Reservoir Park, 11-27 Oct 2021, same collector as previous, ZRC\_ENT00057793, ZRC\_ENT00057798-57799, ZRC\_ENT00057803-57804.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Dairy Farm; MacRitchie Reservoir; Pulau Ubin; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was collected from leaf litter in primary and/or old or mature secondary dryland forests, and swamp forest. Individuals were often numerous when found.

**Remarks.** *Nylanderia kraepelini* can be distinguished from other congeners by: 1) its relative small size (i.e., 1.3 – 1.4 mm), 2) microreticulate head and gaster - in contrast with a smooth and shining mesosoma, 3) relatively small eye — roughly 6-8 ommatidia along its maximum diameter in profile.

#### *Nylanderia yerburyi* (Forel, 1894)

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1912) [as *Prenolepis yerburyi*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, there is only a single literature record of this species in Singapore (i.e., Forel 1912).

#### *Oecophylla smaragdina* (Fabricius, 1775)

**Material examined.** Bukit Batok East Avenue 6, 1.34304, 103.76235, 5 Oct 2016, G.W. Yong leg., BB6, ZRC\_HYM\_0001477-1478; same locality and collector as previous, 29 Sep 2016, ZRC\_HYM\_0001479-1481; Hougang Avenue 4, 1.34561, 103.88884, 14 Dec 2016, G.W. Yong leg., HA1GH914, ZRC\_HYM\_0001488; same locality and collector as previous, 12 Dec 2016, HA3TH932, ZRC\_HYM\_0001489; Icube, National University of Singapore, 1.293472, 103.77633, May-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Prince George's Park Residences (NUS), 1.29239, 103.77869, Apr-Jul 2015, same collectors as previous, malaise trap, ZRC\_BDP (multiple); University Town (NUS), 1.30622, 103.77458, May-Sep 2015, same collectors as previous, malaise trap, ZRC\_BDP (multiple); Kranji Road, 1.42638, 103.75413, 8-10 Nov 2016, G.W. Yong leg., KR1, ZRC\_HYM\_0001461 – 1466; same locality and collector as previous, 8 Nov 2016, KR4, ZRC\_HYM\_0001467;



same locality and collector as previous, 1 Nov 2016, KR8, ZRC\_HYM\_0001460; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000379; Seletar Link, 1.40518, 103.88555, 25 Oct 2016, G.W. Yong leg., SL4GH1019, ZRC\_HYM\_0001490; Sunset Way, 1.32609, 103.77187, Aug-Sep 2016, G.W. Yong leg., SW2, ZRC\_HYM\_0001469-1470; same locality and collector as previous, 23 Sep 2016, SW4GH309, ZRC\_HYM\_0001471; same locality, collection date and collector as previous, SW6GH356, ZRC\_HYM\_0001472; same locality and collector as previous, 21-23 Sep 2016, pitfall trap, SW7, ZRC\_HYM\_0001172, 1473-1475; waste woodland beside Temasek Polytechnic, 1.34239, 103.93598, 13-15 Dec 2016, G.W. Yong leg., TT1, ZRC\_HYM\_0001482-1485; same locality, collection date and collector as previous, TT3, ZRC\_HYM\_0001486-1487. Pulau Semakau New Fragment, 1°12'04.5"N, 103°45'46.1"E, 2012, J. Puniamorthy et al. leg., replanted mangroves, malaise trap, SMN2, ZRC\_BDP (multiple).

**Material not physically examined.** Non-types, ANIC32-043666, 043928-043929, Tom Gush Collection 3698/3714 (ANIC); ANIC32-043930, Tom Gush Collection 3682 (ANIC). Non-types, J.K. Wetterer leg. (USNM) – Katong, Amber Road, 28 Jul 2014, vial #340, 349; Marine Parade, 28 Jul 2014, vial #357; City Hall, by church, 29 Jul 2014, vial #378; Dhoby Ghaut, Istana Park, 30 Jul 2014, vials #406 – 418; Punggol Point, 30 Jul 2014, vial #393; Katong, 1 Aug 2014, vials #443, 450; Promenade, by MRT station, 4 Aug 2014, vial #468; Pasir Panjang, by MRT station, 5 Aug 2014, vial #484.

**Literature.** Vieh Meyer (1916), Overbeck (1924); Tan & Corlett (2012); Yong et al. (2017); Wang et al. (2018).

**Localities.** Amber Road (Katong); Bukit Batok East; Bukit Timah Road; City Hall; Dhoby Ghaut; Hougang; Katong; Kranji; Marine Parade; National University of Singapore (NUS); Pasir Panjang; Promenade; Pulau Semakau New Fragment; Pulau Ubin; Punggol Point; Seletar Link; Sunset Way, etc.

**Habitat/Ecology.** This species can be found in a broad range of different habitats with varying levels of disturbance in Singapore, including cultivated vegetation in semi-urban settings such as urban parks or overhead planters, also in both mature and young secondary forests and even mangroves. In parks, individuals have been seen on stone surfaces and foliage, sometimes in or on leaf litter. The species is known to create rather conspicuous nests comprising a ball-like structure of interwoven leaves and silken substrate, typically in bushes or shrubs pavement-side. Occasionally, large nests have been spotted in the crowns of large dipterocarp trees, which are typically mistaken for hornet hives by observers from afar.

**Remarks.** A highly aggressive and behaviourally dominant species that is apparently used for pest control in plantations such as oil palm.

#### ***Overbeckia subclavata* Vieh Meyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – FOCOL2564-2568 (ZMHB) [w.q.m.]; FOCOL0130 (DEIC); CASENT0905180 (MSNG) [male]; CASENT0178502 (MCZ). Non-types – CASENT0101191-92, ANTC3162-63 (NHMB, Basel, Switzerland).

**Literature.** Type – Vieh Meyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Colonies, including that of the type series, were found in withered bamboo, and in hollow branches of mangosteen trees in a garden.

**Remarks.** Type locality in Singapore.

#### ***Parapatrechina malaccana* (Vieh Meyer, 1916) stat. n.**

*Prenolepis* (*Nylanderia*) *butteli* subsp. *malaccana* Vieh Meyer, 1916: 147 (w.)

Combination in *Paratrechina* (*Nylanderia*): Emery 1925: 220.

Combination in *Parapatrechina*: LaPolla et al. 2010: 128.

**Material examined.** MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg., SG14-SKY-39, ZRC\_HYM\_0000439; Island Club forest (sic; in MacRitchie Reservoir), 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000774; Central Catchment Nature Reserve, 10 Sep 2011, E.J.Y. Soh leg., ZRC\_ENT00048008; Upper Thomson Nature Park, Sep-Oct 2016, G.W. Yong et al. leg., ZRC\_ENT00057813-57817; Bukit Batok East Avenue 6, 27-29 Sep 2016, G.W. Yong et al. leg., ZRC\_ENT00049050, 57818; Mandai Road, Nov-Dec 2016, G.W. Yong et al. leg., ZRC\_ENT00057819-57821; Sunset Way, 22 Aug 2016, G.W. Yong leg., ZRC\_ENT00049056-49057.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok; Central Catchment Nature Reserve; MacRitchie Reservoir; Mandai Road; Sunset Way; Upper Thomson Nature Park.

**Habitat/Ecology.** This species was found in both young and old/mature secondary forest, largely on shrubs or foliage. Individuals were sometimes collected by manual beating of vegetation, and in one instance, in a pitfall trap.

**Remarks.** *Parapatrechina malaccana* was originally recognized as a subspecies of *P. butteli* (Forel, 1913). Based on our assessment of local specimens and comparisons with online type images and original descriptions, we believe that the subspecies *malaccana* is distinct from *P. butteli* and should be raised to species.

Workers of both species can be differentiated based on the following (*P. butteli* traits in parentheses): 1) head rounded in full-face view, sides convex, eyes very wide apart from each other, positioned above transverse midline of head (head more elongate-oval, longer than wide, eyes positioned at transverse midline of head), 2) head with bluish-green sheen, rest of body mostly brownish with a faintly-metallic purple or violet sheen (head and body largely uniformly blackish brown or brown and shiny, but shimmer not coloured as in *P. malaccana*), 3) meso- and meta-pleura mostly smooth and shining (same lateral faces finely reticulate and weakly shining), 4) mid-

and hind tibiae and tarsi pale-whitish, distal ends of femora articulating with those tibiae also distinctly pale-whitish, tibiae with faint traces of brown – intensity of brown traces varies among individuals (mid- and hind tibiae brown, distal ends of femora mostly pale-brown and not strongly contrasting with rest of brown femur, tarsi pale-whitish).

We have also observed isometric size polymorphism amongst individuals from the same sample, with the smallest individuals of total length ~ 1mm, and larger individuals about 1.5 – 2 mm.

### *Parapatrechina opaca* (Emery, 1887)

**Material examined.** Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-52, ZRC\_HYM\_0000466; Upper Thomson Nature Park, 1.38311, 103.79839, 9-11 Oct 2016, G.W. Yong leg., UT6, ZRC\_HYM\_0001686-1689; same locality, collection date/s and collector as previous, UT1, ZRC\_HYM\_0001690-1691.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with primary or mature secondary habitat in Singapore, also sometimes in young secondary habitat such as abandoned plantation secondary forests. These ants may be found foraging on tree trunks or in low foliage.

**Remarks.** Based on original descriptions (see Emery 1900) and type images on AntWeb, the subspecies *metallescens* differs from *P. opaca* in terms of having pale leg joints and basal half of antennal scape; in the type of *P. opaca*, leg joints are as brown as the rest of the leg, basal half of antennal scape not so pale. We have, however, observed that the aforementioned characters can occur in intermediate states among nest mates of *P. opaca*, thus these traits may not accurately distinguish between species/subspecies.

Moreover, according to Emery (1900), the subspecies *metallescens* can also be distinguished from *P. opaca* by being smaller (i.e., TL 2.25 mm compared to 2.75 mm),

and mesosoma having a purplish or greenish metallic sheen. The mesosoma of *P. opaca* specimens we examined however, also had a blue-greenish metallic sheen, despite them not having other supposedly diagnostic characters of subspecies *metallescens* mentioned in the previous paragraph.

Considering the above observations, and the isometric size variation shown in other species of this genus, it is possible that the subspecies *metallescens* may be a synonymous variant of *P. opaca*. We lack adequate material from a wider geographic range necessary to make definite taxonomic conclusions concerning the two forms in this study.

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

**Material examined.** Bukit Timah Nature Reserve, 8 Sep 2005, collector unknown, yellow pan trap, ZRC\_HYM\_0000163; Commonwealth Avenue West, 21 Nov 2006, HK Lua leg., LHK 464, ZRC\_HYM\_0000167; Commonwealth Road, 1.31115, 103.78171, 22-24 Nov 2016, G.W. Yong leg., CW3/4, ZRC\_HYM\_0001525-1527; Hougang Avenue 4, 1.34561, 103.88884, 12-14 Dec 2016, G.W. Yong leg., trunk pit-fall trap, HA4TPd952, ZRC\_HYM\_0001528; workers and males, National University of Singapore campus, Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Kent Ridge Park, 11 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000400; Kent Ridge, 6 Jan 1983, D.H. Murphy leg., ZRC\_HYM\_0000621; Nee Soon Swamp Forest, 5 Apr 2005, P. Grootaert leg., malaise trap, PGT 25046-25048, ZRC\_HYM\_0000166; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000401; Sungei Buloh, Feb 2015, R.Z.B. Quek leg., mangrove, ZRC\_ENT00007862; Sunset Way, 1.32609, 103.77187, Aug-Sep 2016, G.W. Yong leg., SW1/4/5, ZRC\_HYM\_0001491-1512.

**Material not physically examined.** Non-types, ANIC32-010873 (in timber imported from Singapore), ANIC32-053856 (ANIC). Non-types, J.K. Wetterer leg. (USNM) – Bishan, 31 Jul 2014, vial #423; Buona Vista, by MRT station, 5 Aug 2014, vial #485; City Hall, by church, Jul-Aug 2014, vials #376, 489; Dhoby

Ghaut, Istana Park, 30 Jul 2014, vial #403; Hougang, 30 Jul 2014, vial #402; Kallang, Riverside Park, 29 Jul 2014, vial #373; Katong, Jul-Aug 2014, vials #328, 334, 349, 444, 447; Kranji, by MRT station, 2 Aug 2014, vial #452; Little India, 27 Jul 2014, vial #330; Marine Parade, Jul-Aug 2014, vials #353, 370, 436; Mountbatten, by MRT station, 4 Aug 2014, vial #464; Pasir Panjang, by MRT station, 5 Aug 2014, vial #481; Promenade, by MRT station, 4 Aug 2014, vial #468; Punggol, by MRT station, 30 Jul 2014, vial #391; Queenstown, 29 Jul 2014, vials #382, 384; Serangoon, 30 Jul 2014, vial #389; Singapore Botanic Gardens, by MRT station, 5 Aug 2014, vial #476; Tai Seng, by MRT station, 31 Jul 2014, vial #422.

**Literature.** Wetterer (2008); Tan & Corlett (2012); Yong et al. (2017); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Commonwealth Avenue West; Commonwealth Road; Dhoby Ghaut; Fort Canning Park; Hougang; Katong; Kent Ridge; Kranji; Little India; Marine Parade; Mountbatten; National University of Singapore campus; Nee Soon Swamp Forest; Pasir Panjang; Promenade; Pulau Ubin; Punggol; Queenstown; Serangoon; Singapore Botanic Gardens; Sungei Buloh; Sunset Way; Tai Seng.

**Habitat/Ecology.** This infamous invasive pest is mostly associated with areas of or close to human disturbance in Singapore, such as parks in semi-urban settings and urban residential areas. The ants are also common in young secondary forest fragments and at forest edges, for example waste woodlands and abandoned plantation secondary forests. The species appears tolerant of a broad range of different environment stressors, and has been collected from inland forest fragments, swamp forest, even mangroves.

**Remarks.** A well-known widespread global tramp species spread by human commerce and often ubiquitous in heavily disturbed environments, the earliest known record of *P. longicornis* in Singapore is a specimen in the BMNH dated back to 1931 (Wetterer 2008).

***Plagiolepis bicolor* Forel, 1901**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Colonies of this species were found under bark or in hollow twigs of mangosteen trees.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Plagiolepis exigua* Forel, 1894**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden – colonies were found in withered shoots of bamboo near ground, between long fibres of withered bamboo, in dry fallen branches, and in hollow twigs of mangosteen trees.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Polyrhachis (Campomyrma) creusa* Emery, 1897**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Polyrhachis (Myrmhopla) hecuba*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A colony was found in withered bamboo in a garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Polyrhachis (Chariomyrma) arcuata* (Le Guillou, 1842)**

**Material examined.** University Campus (Bukit Timah), 9 Oct 1975, D.H. Murphy leg., ZRC\_HYM\_0000895; same locality and collector as previous, 7 Nov 1977, ZRC\_HYM\_0000979.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907); Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road; University Campus (Bukit Timah).

**Habitat/Ecology.** This species was found in gardens or patches of spontaneous vegetation in semi-urban settings.

**Remarks.** *Polyrhachis arcuata* might be more common than is represented by samples available for examination and in literature, especially in parks or other cultivated or spontaneous vegetation patches in the larger urban matrix.

***Polyrhachis (Chariomyrma) modesta* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Holotype queen – CASENT0901853, ANTC21297 (OUMNH).

**Literature.** Type – Smith (1857). Emery (1896).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore. This species was first described based on the holotype alate queen collected from Singapore. Neither worker nor male descriptions have been published.

***Polyrhachis (Cyrtomyrma) laevissima* Smith, 1858**

**Material examined.** Tyersall Istana, 9 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000839-841; Fort Siloso (Sentosa), 16 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001045; Bukit Timah, railway track, 12 Dec 2008, H.K. Lua leg., ZRC\_ENT00048390.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Polyrhachis levissima*].

**Localities.** Bukit Timah; Fort Siloso (Sentosa); Tyersall Istana.

**Habitat/Ecology.** This species appears to be associated with cultivated or spontaneous secondary vegetation in semi-urban settings. Colonies were found in withered bamboo in gardens, also in shrub foliage surrounding an abandoned building.

***Polyrhachis (Cyrtomyrma) lepida* Kohout, 2006**

**Material examined.** Mandai, 1.40144, 103.77702, 7 Apr 2016, collector unknown, ZRC\_ENT00028312; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000397-398; MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** FMN-HINS0002842043, tc1357710853 (FMNH).

**Literature.** None. New record.

**Localities.** MacRitchie Reservoir; Mandai; Upper Peirce Reservoir.

**Habitat/Ecology.** This species is associated with primary or mature secondary habitat in Singapore, including mature/old secondary forest.

***Polyrhachis (Myrma) beccarii* Mayr, 1872**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Mezger & Moreau (2015).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, there is only a single literature record of this species in Singapore (see Mezger & Moreau 2015) – no specific locality or collection data were given in publication. Considering that we are unable to verify and validate the source and identity of the specimen used in Mezger & Moreau's (2015) phylogeny, we cannot rule out the possibility that this may have been a misidentified specimen.

***Polyrhachis (Myrma) carbonaria* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** CASENT0919849, ANTC42479 (CASC).

**Literature.** None. New record.

**Localities.** Bukit Timah (alt. 100 ft.; possibly Bukit Timah Hill)

**Habitat/Ecology.** Unknown in the Singapore context – exact information unavailable from original label of unexamined material. However, it may be inferred that the ant was found in either mature secondary or primary forest,

since it was possibly collected from Bukit Timah Hill, which is an established nature reserve with both forest types.

**Remarks.** At the time of writing, the only record of this species is that of a single worker from Bukit Timah collected in 1962 by E.S. Ross and D.Q. Cavagnaro, species identity determined by the late Rudy Kohout.

***Polyrhachis (Myrma) hosei* Donisthorpe, 1942**

**Material examined.** Kent Ridge Park, 11 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_00000480.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Kent Ridge Park

**Habitat/Ecology.** The ants were found foraging on spontaneous vegetation in a semi-urban park setting.

**Remarks.** This species is currently known from Singapore based on specimens from only one locality, but may be more ubiquitous than implied by apparent sampling occurrence.

***Polyrhachis (Myrma) illaudata* Walker, 1859**

**Material examined.** Bukit Timah, Hindhede Drive, 17 Apr 1988, H.K. Lua leg., ZRC\_ENT00000331; Bukit Timah Nature Reserve, BT01, 1.35764, 103.77491, 1 Feb 2017, W. Wang leg., WW-SG17-039, ZRC\_ENT00007569; Bukit Timah forest, 3 Nov 1973, D.H. Murphy leg., ZRC\_HYM\_0000854, 857-860; Bukit Timah Nature Reserve, BT05, 1.35386, 103.77988, ZRC\_HYM\_0001753; Bukit Timah (University Campus), 7 Nov 1977, D.H. Murphy leg., ZRC\_HYM\_0000861; Commonwealth Road, 1.31115, 103.78171, 22 Nov 2016, G.W. Yong coll., tree trunk, CW2TH668, ZRC\_HYM\_0001589; same locality and collector as previous, 24 Nov 2016, CW3TH708, ZRC\_HYM\_00001592; Kranji Road, 1.42638, 103.75413, 10 Nov 2016, G.W. Yong leg., KR10GH1560, ZRC\_HYM\_0001597; MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000389; Mandai Road, M3D, 1.41119, 103.80513, Nov-Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001593-1594;



Mandai Road, M1D, 1.41258, 103.79839, Nov-Dec 2016, same collector as previous, ZRC\_HYM\_0001599-1600; same locality as previous, 4 Oct 2018, W. Wang leg., ZRC\_ENT00047826; Prince George's Park Residences (NUS), 1.292389, 103.778694, 6 May 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0021, ZRC\_BDP0041454, 41412; Seletar Link, SL3, 1.40518, 103.88555, 18 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001595-1596; Sunset Way, 1.32609, 103.77187, 29-31 Aug 2016, G.W. Yong leg., ZRC\_HYM\_0001553; same locality and collector as previous, 21-23 Sep 2016, ZRC\_HYM\_0001590-1591; Upper Peirce Reservoir headquarters [sic], 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_00000390; Upper Thomson Nature Park, 1.38311, 103.79839, 19 Oct 2016, G.W. Yong leg., UT5GH1640, ZRC\_HYM\_0001598.

**Material not physically examined.** Non-types, FMNHINS0002842133, tc1357712761; FMNHINS0003259695, tc1357712757 (FMNH); Harbourfront, Marang Trail, 4 Aug 2014, J.K. Wetterer leg., vial #473 (JKWC).

**Literature.** Tan & Corlett (2012).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah (University Campus); Commonwealth Road; Kranji Road; Harbourfront; MacRitchie Reservoir; Mandai Road; Prince George's Park Residences (NUS); Seletar Link; Sunset Way; Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated occasionally with primary forests, mostly with mature and/or old secondary habitats, and infrequently with young secondary forest fragments of varying levels of disturbance in Singapore. These include native-dominated secondary forest, abandoned plantation and waste woodland secondary forests. Individuals can be found foraging on leaf litter, dead wood, fallen logs, tree trunks or low foliage.

**Remarks.** This species has a wide range of variation in the development and shape of petiole, spines, and also pilosity. A critical revision is needed to clarify its status as a single species.

### *Polyrhachis (Myrma) inermis* Smith, 1858

**Material examined.** MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000481.

**Material not physically examined.** FMNHINS0002842039, tc1357710822 (FMNH).

**Literature.** None. New record.

**Localities.** Kent Ridge Park; MacRitchie Reservoir.

**Habitat/Ecology.** This species appears to be associated with either young or mature secondary forests in Singapore.

### *Polyrhachis (Myrma) nigropilosa* Mayr, 1872

**Material examined.** MacRitchie, NS 184, 9 Jun 1995, S.L. Goh & B.K.H. Tan leg., ZRC\_ENT00000373; Mandai, 1.4083, 103.77803, 12 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000733; Mandai Road, 1.41155, 103.79015, 23 Nov 2016, G.W. Yong leg., M2D2GH1961, ZRC\_HYM\_0001177; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-47, ZRC\_HYM\_0000462; alate queen, Nee Soon Swamp Forest, NS2, 1°23'04.2"N, 103°48'40.7"E, 28 Nov-5 Dec 2012, J. Puniamorthy et al. leg., malaise trap, Reg. 29611, ZRC\_BDP0009132.

**Material not physically examined.** Unknown.

**Literature.** Menozzi (1926) [as *Polyrhachis nigropilosa conophthalma*]; Mezger & Moreau (2015).

**Localities.** MacRitchie; Mandai; Nee Soon Swamp Forest; Upper Peirce Reservoir.

**Habitat/Ecology.** This arboreal species is associated mostly with primary or mature secondary habitats, such as native-dominated secondary and swamp forests, as well as young secondary forests in Singapore. Nests have been found in decayed branches.

***Polyrhachis (Myrma) obesior* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Polyrhachis mayri obesior*]. Kohout (1998).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Specimens of the type series were collected in a garden.

**Remarks.** Type localities in Singapore and Malaysia (i.e., Gunong Angsi) (Viehmeyer 1916). At the time of writing, the only record of this species in Singapore is that of the type series.

***Polyrhachis (Myrma) orsylla* Smith, 1861**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907).

**Localities.** Unknown.

**Habitat/Ecology.** No information available in the Singapore context.

**Remarks.** Specimens identified as '*P. orsyllus*' in Viehmeyer (1916) and Overbeck (1924) were collected by Overbeck in Gunong Angsi – a locality in Malaysia and not Singapore.

***Polyrhachis (Myrma) orsylla ritesmai* Mayr, 1883**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Polyrhachis orsyllus ritesmai*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** The ants were found nesting in withered bamboo in a garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Polyrhachis (Myrma) proxima* Roger, 1863**

**Material examined.** Bukit Batok East Avenue 6, BB2, 1.34304, 103.76235, Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001557, 1567; Commonwealth Road, 1.31115, 103.78171, 24 Nov 2016, G.W. Yong leg., tree trunk, ZRC\_HYM\_0001554, 1568; Hougang Avenue 4, 1.34561, 103.88884, 12 Dec 2016, G.W. Yong leg., HA5GH90, ZRC\_HYM0001572; Kent

Ridge, scrub, 13 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000927-929; Kranji Road, 1.42638, 103.75413, Nov 2016, G.W. Yong leg., tree trunk, ZRC\_HYM\_0001580-1582; Lorong Banir, 29 Jun 1995, collector unknown, NS 193, ZRC\_ENT00000358; Mandai Road, 1.41119, 103.80513, Nov-Dec 2016, G.W. Yong leg., M3D, ZRC\_HYM\_0001569-1571; National University of Singapore campus grounds, Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Seletar Link, 1.40518, 103.88555, Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001573-1579; Sunset Way, 1.32609, 103.77187, Aug-Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001555-1556, 1560-1566; Tyersall Istana, 9 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000863; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000391; Upper Thomson Nature Park, 1.38311, 103.79839, Sep-Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001558-1559, 1583-1588.

**Material not physically examined.** FMN-HINS0002842042, tc1357710848 (FMNH).

**Literature.** Forel (1893); Viehmeyer (1916); Overbeck (1924); Wang et al. (2018a).

**Localities.** Bukit Batok East Avenue 6; Bukit Timah, Bukit Timah Nature Reserve; Commonwealth Road; Hougang Avenue 4; Kent Ridge; Kranji Road; Lorong Banir; MacRitchie Reservoir; Mandai Road; National University of Singapore campus grounds; Seletar Link; Sunset Way; Tyersall Istana; Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mainly with both mature and young secondary habitats at varying levels of disturbance in Singapore, including native-dominated, waste woodland and abandoned plantation secondary forests, often fragments in a larger semi-urban matrix. Individuals have also been found foraging in urban cultivated areas on grassy patches, or semi-urban forest fringes on foliage in scrubland.

**Remarks.** While species occurrences appear widespread in Singapore, most forest fragments where *P. proxima* populations thrive are highly likely under threat of future urban development.

***Polyrhachis (Myrma) pruinosa* Mayr, 1872**

**Material examined.** Kent Ridge Park, 7 Dec 2017, Sk. Yamane leg., ZRC\_ENT0000883.

**Material not physically examined.** Unknown.

**Literature.** Forel (1913); Viehmeyer (1916); Overbeck (1924).

**Localities.** Ayer Terjun (archaic place name); Bukit Timah; Kent Ridge Park; Jurong Road; Mandai Road.

**Habitat/Ecology.** This species was found mostly in disturbed secondary forests, frequently in *Nepenthes* pitcher cups at Ayer Terjun.

***Polyrhachis (Myrma) striata* Mayr, 1862**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1893).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in Singapore context.

**Remarks.** Specimens identified from Overbeck's collections as *P. striata* in Viehmeyer (1916) were collected from Gunong Angsi in Malaysia, not Singapore. Thus, at the time of writing, there is only a single known literature record of this species in Singapore, identified from Arthur Müller's collections (Forel 1893).

***Polyrhachis (Myrma) striatorugosa* Mayr, 1862**

**Material examined.** ; Mandai Lake Road, 3 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001042; Nee Soon Swamp Forest, 28 Dec 1989, Y.H. Koo & K. Snyder leg., ZRC\_ENT00047921.

**Material not physically examined.** FMN-HINS0002842045, tc1357712546 (FMNH).

**Literature.** None. New record.

**Localities.** Mandai Lake Road; Nee Soon Swamp Forest; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in freshwater swamp forest, also primary or old secondary forest.

**Remarks.** A member of the *P. relucens* species group that includes *P. nigropilosa* (Kohout 2008), *P. striatorugosa* may be differentiated from the latter by its finely striated gaster. This species is also similar to *P. sculpturata* Smith, 1860, but with a distinct (though small) intercalary tooth on dorsal margin of petiole.

***Polyrhachis (Myrma) villipes* Smith, 1857**

**Material examined.** Bukit Timah forest, 3 Nov 1973, D.H. Murphy leg., ZRC\_HYM\_0000966; Island Club forest, 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000967.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah forest; Bukit Timah Road; Island Club forest.

**Habitat/Ecology.** This species appears associated with primary and/or mature secondary forest. A single queen was also collected from a lit lamp in a garden.

***Polyrhachis (Myrma) vindex* Smith, 1857**

**Material examined.** Bukit Timah Nature Reserve, 3 Nov 1973, D.H. Murphy leg., forest, ZRC\_HYM\_0000933; same locality and collector as previous, area K5, 13 May 1967, ZRC\_HYM\_0000934; Sime Road forest, 8 Aug 1978, D.H. Murphy leg., ZRC\_HYM\_0000932; Island Club forest, 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000936; Kent Ridge, 18 Mar 1985, D.H. Murphy leg., ZRC\_HYM\_0000935; same locality and collector as previous, 28 May 1985, ZRC\_HYM\_0000937.

**Material not physically examined.** CASENT0217808, ANTC17997 (CASC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Island Club forest; Kent Ridge; Seletar Reservoir; Sime Road forest.

**Habitat/Ecology.** This species is associated mostly with primary or mature secondary forests in Singapore, including native-dominated secondary forest. The ants have also been found in disturbed young secondary forest fragments in semi-urban settings. Individual workers are sometimes collected from foliage or low vegetation via sweep-netting.

***Polyrhachis (Myrmatopa) charaxa* Smith, 1860**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Emery (1896); Viehmeyer (1912) [both as *Polyrhachis charaxus*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Polyrhachis (Myrmatopa) flavicornis* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Syntypes – CASENT0901857, ANTC21301 (OUMNH); alate queen, CASENT0901877, ANTC21321 (OUMNH).

**Literature.** Type – Smith (1857). Smith (1858); Emery (1896).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore, but specific locality name and habitat unknown.

***Polyrhachis (Myrmatopa) leviuscula* Viehmeyer, 1916**

**Material examined.** Sungei Buloh, 8 Jan 2014, Sk. Yamane leg., SG14-SKY-27, ZRC\_HYM\_0000461.

**Material not physically examined.** Types – CASENT0910788, ANTC33049 (MHNG); FOCOL2554 (ZMHB) [as types of *Polyrhachis (Myrmatopa) schang* var. *leviuscula*]. Non-type – CASENT0906574, ANTC24598 (BMNH).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *P. schang* var. *leviuscula*].

**Localities.** Bukit Timah Road; Sungei Buloh.

**Habitat/Ecology.** Specimens of the type series were collected with a sweep net in a garden, thus we may infer that the ants forage on low foliage. A colony 'of a very similar form' was also found on a palm leaf in the same garden (Overbeck 1924), but these have not been verified to be conspecific to *P. leviuscula*.

More recently (from the time of writing), the ants were found nesting in a rolled leaf in back mangrove forest.

**Remarks.** Type locality in Singapore. Physically unexamined non-type material (i.e., CASENT0906574) was collected by Dr. G.E. Brooke in 1912, preceding publication of the original species description, and was initially identified as *P. schang* var. *laurae* (now a junior synonym of *P. leviuscula*).

The more recent specimens mostly confer with *P. leviuscula* in appearance, though with slightly weaker dorsolateral mesonotal projections/'teeth'. The species resembles *Polyrhachis (Myrmatopa) solmsi* Emery, 1887, but the latter has petiolar spines that are almost supine and more strongly directed posteriorly in profile view.

***Polyrhachis (Myrmatopa) piliventris* Smith, 1858**

**Material examined.** None available.

**Material not physically examined.** Holotype alate queen – CASENT0903307, ANTC23165 (BMNH).

**Literature.** Type – Smith (1858). Emery (1896).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in Singapore context.

**Remarks.** Type locality in Singapore; this species was first described based on the holotype alate queen collected from Singapore. At the time of writing, the holotype queen remains the only known physical record of *P. piliventris* in Singapore.

***Polyrhachis (Myrmatopa) varicolor* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Syntype series deposited at MNHU, Berlin.

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Polyrhachis fruhstorferi* subsp. *varicolor*]. Kohout (2008) [raised to species].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Specimens of the type series were collected from a garden.

**Remarks.** At the time of writing, the type series is the only known record of this species in Singapore. Type locality in Singapore.

***Polyrhachis (Myrmhopla) abdominalis* Smith, 1858**

**Material examined.** Bukit Timah, 1.347957, 103.779142, 29 Oct 2015, M.K.L. Wong leg., ZRC\_ENT00000737; Bukit Timah, Hindhede Drive, 30 May 1988, H.K. Lua leg., ZRC\_HYM\_0000078; Hougang Avenue 4, HA5, 1.34561, 103.88884, 12-14 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001601, 1603-1605; Kent Ridge Park, 11 Jan 2014, Sk. Yamane, ZRC\_HYM\_0000394; Kranji Road, 1.42638, 103.75413, 1-10 Nov 2016, G.W. Yong leg., tree trunk, ZRC\_HYM\_0001609-1612; Lorong Banir, 29 Jun 1995, collector unknown, NS 193, ZRC\_ENT00000359; MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000395; Mandai Road, 1.41258, 103.79839, 5 Dec 2016, G.W. Yong leg., MID19GH2572, ZRC\_HYM\_0001615; Nee Soon Swamp Forest, plot Q9, 1.398925, 103.808608, 24 Sep 2019, W.N. Lam et al. leg., nest in hollows of PVC pipes, WW-SG19-007, ZRC\_ENT00013881; Prince George's Park Residences (NUS), 1.292389, 103.778694, Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Pulau Ubin, 14 Jun 2018, W. Wang leg., mangrove, nest in hollow of metal piping of malaise trap, WW-SG18-Poly1, ZRC\_ENT00007299; Seletar Link, 1.40518, 103.88555, 16-15 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001606-1608; University Hall (NUS), 1.297111, 103.776583, May-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Upper Thomson Nature Park, 1.38311, 103.79839, 9-11 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001613-1614.

**Material not physically examined.** FMNHINS0002842037, tc1357710809; FMNHINS0002842049, tc1357710875 (FMNH).

**Literature.** Mezger & Moreau (2015); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Hougang Avenue 4; Kent Ridge Park; Kranji Road; Lorong Banir; MacRitchie Reservoir; Mandai; Nee Soon Swamp Forest; Prince George's Park Residences (NUS); Pulau Ubin; Seletar Link; University Hall (NUS); Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with both mature and young secondary habitats at varying levels of disturbance in Singapore. These include swamp forest, mangroves, native-dominated, abandoned plantation and waste woodland secondary forests. Individual foragers are typically collected from tree trunks, while both alates and workers have been collected using malaise traps from disturbed secondary forest fragments in semi-urban settings. While considered arboreal, this species has been found nesting in unconventional places, e.g. in hollows of PVC or metal pipes - parts of artificial infrastructures such as malaise or leaf litter traps.

***Polyrhachis (Myrmhopla) armata* (Le Guillou, 1842)**

**Material examined.** Bukit Timah forest, 3 Nov 1973, D.H. Murphy leg., ZRC\_HYM\_0000850, 852; Istana Club forest, 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000848-849; alate queen, University Town (NUS), 26 Apr 2019, N. Chin & J. Tan leg., ZRC\_ENT00013540; Prince George's Park Residences, 1.292389, 103.778694, Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0047321, 47427; Singapore Botanical Gardens, Sep 1965, collector unknown, ZRC\_HYM\_0000853; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000392-393.

**Material not physically examined.** CASENT0281398, PSW10255-3 (PSWC); FMNHINS0002842132, FMNHINS0003249694, ESJY-U-0024 (FMNH).

**Literature.** Viehmeyer (1916); Overbeck (1924); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Timah; Bukit Timah Hill; Istana Club forest; Kent Ridge Park; Prince George's Park Residences (NUS); Singapore Botanical Gardens; University Town (NUS); Upper Peirce Reservoir



**Habitat/Ecology.** This arboreal species is associated mainly with mature and/or young secondary habitats, including disturbed secondary forest fragments or even cultivated park areas in urban or semi-urban settings. Individuals including winged alates have sometimes been found in human infrastructure close to forest fringes or fragments. In rainforest, the species can be found foraging on lower vegetation.

**Remarks.** *Polyrhachis armata* appears similar in general appearance (and colouration) to *P. abdominalis*, but can be distinguished from the latter by its coarser and more matte body sculpture. Singapore is actually the type locality for a subspecies of *P. armata* - *P. armata defensa* [see next paragraph below]. It is possible that subspecies is simply a morphological variant of the species, the most striking variable feature being the condition of the petiolar spines (length and thickness) – which can exhibit broad intranidal variation (W. Wang pers. obs.)

***Polyrhachis (Myrmhopta) armata defensa* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0901845, ANTC21289 (OUMNH) [as *Polyrhachis defensus*].

**Literature.** Type – Smith (1857) [as *P. defensus*]. Emery (1925) [transferred to subspecies of *P. armata*].

**Localities.** Unknown.

**Habitat/Ecology.** No information available in the Singapore context.

**Remarks.** Type locality in Singapore. See Remarks in previous section (i.e., *P. armata*) on distinction between *P. armata* and this subspecies.

***Polyrhachis (Myrmhopta) bicolor* Smith, 1858**

**Material examined.** Kranji Road, 1.4238, 103.75413, 10 Nov 2016, G.W. Yong leg., tree trunk, KR1TH1399, ZRC\_HYM\_0001177.2; Sungei Buloh Wetland Reserve, 8 Jan 2014, Sk. Yamane leg., nest between leaves, SG14-SKY-28, ZRC\_HYM\_0000460; Lim Chu Kang, 20 May 1976, C.S.J. leg.,

ZRC\_HYM\_0000906; Mandai mangrove, 2 Oct 1978, D.H. Murphy leg., ZRC\_HYM\_0000976; same locality, collection date and collector as previous, DHM-SG78-Poly1, ZRC\_ENT00014141; Prince George's Park Residences (NUS), 1.292389, 103.778694, Apr 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0044269, 45587; Western Catchment, 1.408657, 103.701849, 20 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000731.

**Material not physically examined.** CASENT0217750, ANTC1952 (CASC).

**Literature.** Viehmeyer (1916); Overbeck (1924); Mezger & Moreau (2015).

**Localities.** Bukit Timah; Bukit Timah Road; Kranji Road; Lim Chu Kang; Mandai mangrove; Sungei Buloh Wetland Reserve; Western Catchment.

**Habitat/Ecology.** This species was mainly found in mangroves, or young secondary habitats including waste woodlands and disturbed secondary forest fragments within urban or semi-urban settings, in Singapore. In mangroves, nests were found between leaves, or in 'silk-webbed' leaves of *Sonneratia*; individuals were sometimes collected from tree trunks or foliage above ground.

**Remarks.** There is considerable morphological variation between populations of this species. For the purposes of this checklist, we tentatively treat all morphological variants as conspecific, pending more concrete empirical evidence for species differentiation in future.

***Polyrhachis (Myrmhopta) bicolor aurinasis* Forel, 1901**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907).

**Localities.** Unknown.

**Habitat/Ecology.** No information available in the Singapore context.

**Remarks.** The only literature record of this subspecies in Singapore is that of a single queen collected by Biró (Forel 1907).

***Polyrhachis (Myrmhopla) chalybea* Smith, 1857**

**Material examined.** Jalan Kayu wasteland, 1 Feb 1975, D.H. Murphy leg., ZRC\_HYM\_0000838; Lower Peirce Reservoir, Forest B, 10 Aug 1990, collector unknown, ZRC\_ENT00000203; Mandai mangrove, 17 Oct 1978, D.H. Murphy leg., ZRC\_HYM\_0000836-837; Sime Road forest, 27 Jun 1982, D.H. Murphy leg., ZRC\_HYM\_0000834; same locality as previous, 18 Jan 1976, D.H. Murphy leg., ZRC\_HYM\_0000908; University Campus (Bukit Timah), 17 Mar 1974, D.H. Murphy leg., nutmeg tree, ZRC\_HYM\_0000835.

**Material not physically examined.** Unknown.

**Literature.** Type – Smith (1857) [as *Polyrhachis chalybeus*].

**Localities.** Jalan Kayu; Lower Peirce Reservoir, Forest B; Mandai mangrove; Sime Road; University campus (Bukit Timah).

**Habitat/Ecology.** This species is associated mainly with young secondary habitat of varying levels of disturbance, including waste woodland secondary forest fragments in urban or semi-urban settings, in Singapore. It is sometimes also found in mangrove back forest. Individuals were usually collected on trees or tree trunks.

**Remarks.** The holotype specimen depicted on AntWeb was inferred to be from Bacan island, Indonesia (based on specimen label ‘Bac’), however, in the original description of ‘*P. chalybeus*’, only two other type localities were given: Singapore and Malacca. It may be notable that an additional label on the holotype specimen reads ‘Mal-ca’, which might refer to Malacca, one of two type localities indicated in Smith’s (1857) original account.

***Polyrhachis (Myrmhopla) cryptoceroides* Emery, 1887**

**Material examined.** Rifle Range Road, 27 Jul 2016, G.W. Yong leg., ZRC\_HYM\_0001044.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Rifle Range Road

**Habitat/Ecology.** This species was found in old secondary forest.

**Remarks.** *Polyrhachis cryptoceroides* can be distinguished from other members of the *cryptoceroides* group by its medially deeply emarginate anterior clypeal margin.

***Polyrhachis (Myrmhopla) dives* Smith, 1857**

**Material examined.** Kent Ridge, 1981, D.H. Murphy leg., ZRC\_HYM\_0000957; Kranji Road, 10 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001041.

**Material not physically examined.** Holotype – CASENT0903388, ANTC23251 (BMNH).

**Literature.** Type – Smith (1857). Kohout (2010).

**Localities.** Kent Ridge; Kranji Road.

**Habitat/Ecology.** This species is associated mostly with young secondary habitat in Singapore, including wasteland forest and disturbed secondary forest fragments in urban or semi-urban settings. Individuals have been found foraging in shrubs and on grass. Known to be a polygynous, wide-ranging species that build a distinctive carton nests on lower branches of grasses, trees and shrubs - foliage and twigs are combined with larval silk to create the nest structure.

**Remarks.** Type locality in Singapore. The original description by Smith (1857) was based on specimens collected by A.R. Wallace. Southeast Asian specimens of *P. dives* have been observed to be slightly different morphologically from their Australian and New Guinean counterparts - the former have a more deeply emarginate anterior clypeal margin, and eyes almost never protruding from the lateral cephalic outline.

***Polyrhachis (Myrmhopla) hector* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Holotype – CASENT0901811, ANTC21233 (OUMNH).

**Literature.** Type – Smith (1857). Emery (1896); Viehmeyer (1912); Bolton (1974).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in Singapore context.

**Remarks.** Type locality in Singapore, but specific locality name and habitat unknown.

***Polyrhachis (Myrmhopla) hippomanes ceylonensis* Emery, 1893**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Garden.

**Remarks.** The only literature record of this subspecies in Singapore is that of a single queen collected from a lamp in a garden (Viehmeyer 1916; Overbeck 1924).

***Polyrhachis (Myrmhopla) lucidula* Emery, 1893**

**Material examined.** None available.

**Material not physically examined.** Type queen – FOCOL2944 (ZMHB).

**Literature.** Types (queen and male) – Viehmeyer (1916); Overbeck (1924) [as *Polyrhachis hippomanes* subsp. *lucidula*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Colonies of the species were found in withered bamboo in a garden.

**Remarks.** The queen and male of this species were first described by Viehmeyer (1916) based on specimens collected by Overbeck (1924) in Singapore. Viehmeyer (1916) commented that should the species turn out to be a new ‘form’, he would name it ‘*lucidissima*’ – a new variety of the (then) subspecies *lucidula*.

***Polyrhachis (Myrmhopla) muelleri* Forel, 1893**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0910868, ANTC33129 (MHNG).

**Literature.** Type – Forel (1893) [as *Polyrhachis mülleri*]. Forel (1901, 1907); Emery (1925).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in Singapore context.

**Remarks.** Type locality in Singapore. The species was first described as ‘*P. mülleri*’ in the original publication (Forel 1893), but the species name was later (since Emery 1925) adjusted to the Latin alphabet, which comprises only 26 letters not including ‘ü’.

***Polyrhachis (Myrmhopla) saevissima* Smith, 1860**

**Material examined.** Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-46, ZRC\_HYM\_0000423; Pulau Ubin, PU3, 15-22 Dec 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29646, ZRC\_BDP0016507; alate queen, Sungei Buloh Wetland Reserve, SB1, 1°26′46.3″N, 103°43′49.9″E, 12-19 Dec 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29634, ZRC\_BDP0017223.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Ubin; Sungei Buloh Wetland Reserve; Upper Peirce Reservoir.

**Habitat/Ecology.** This species is found in primary or mature secondary habitats in Singapore, including mangroves where most occurrences have been reported. In primary or mature secondary forests, nests were found between leaves.

**Remarks.** At the time of writing, taxonomic validity of *P. saevissima* is uncertain with broad morphological variation observed between populations. While for the purposes of this checklist we tentatively treat these variants as conspecific, it is possible that these might be proven to be different species with more empirical evidence made available in future.

***Polyrhachis (Myrmhopla) thailandica* Kohout, 2006**

**Material examined.** Mandai Road, 13 Jan 2017, G.W. Yong leg., ZRC\_HYM\_0001043.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road

**Habitat/Ecology.** This species was found in disturbed mature secondary forest.

**Remarks.** *Polyrhachis thailandica* can be differentiated from the similar-looking *P. jerdonii* Forel, 1892 by the presence of a strong median carina on the clypeus.

***Polyrhachis (Myrmhopla) tibialis parsis* Emery, 1900**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Road.

**Habitat/Ecology.** These ants were found in a hollow fallen branch on the ground in a garden. The species was also collected from *Nepenthes* pitcher cups, possibly in secondary forest or similar spontaneous vegetation.

**Remarks.** At the time of writing, there are only literature records of this subspecies in Singapore.

***Polyrhachis (Myrmotherinax) frauenfeldi* Mayr, 1862**

**Material examined.** Mandai mangroves, 26 Jun 1979, D.H. Murphy leg., ZRC\_HYM\_0000958.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road; Mandai mangroves.

**Habitat/Ecology.** An alate queen of this species was collected from a lit lamp in a garden. The ants have also been found in mangroves.

***Polyrhachis (Myrmotherinax) saigonensis* Forel, 1886**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Polyrhachis thrinax* subsp. *saigonensis*].

**Localities.** Bukit Timah Road.

**Habitat/Ecology.** Garden.

**Remarks.** The only literature record of this species in Singapore is that of a single queen collected from a lamp in a garden (Viehmeyer 1916; Overbeck 1924).

***Polyrhachis (Myrmotherinax) textor* Smith, 1857**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Ayer Terjun (archaic place name)

**Habitat/Ecology.** Specimens of this species were found in a *Nepenthes* pitcher cup.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Polyrhachis (Myrmotherinax) thrinax inconstans* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0910798, ANTC33059 (MHNG); FOCOL2530-2531 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Ants of this subspecies were found in a pasteboard nest in the fold of a palm leaf in a garden; individual foragers were also collected from around other parts of the garden.

**Remarks.** Type locality in Singapore.

***Polyrhachis (Myrmotherinax) thrinax overbecki* Dorow, 1995**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0910797, ANTC33058 (MHNG); FOCOL2527, FOCOL2529 (ZMHB); type queen, FOCOL2528 (ZMHB) [all as types of *Polyrhachis thrinax* var. *nigripes*].

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [as *P. thrinax* var. *nigripes*]. Dorow (1995).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A pasteboard nest of this subspecies was found in the twisted leaf of a shrub in a garden.

**Remarks.** The present species epithet is a replacement name for *P. thrinax nigripes* Viehmeyer, 1916 (see Dorow 1995). Type locality in Singapore.

***Polyrhachis (Polyrhachis) bellicosa* Smith, 1859**      ***Prenolepis jerdoni* Emery, 1893**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Specimens of this species were collected from a garden.

**Remarks.** At the time of writing, this species is known from Singapore based only on literature records.

***Polyrhachis (Polyrhachis) olybria* Forel, 1912**

**Material examined.** Race Course forest, 22 Jun 1977, D.H. Murphy leg., ZRC\_HYM\_0000971.

**Material not physically examined.** Bukit Timah Nature Reserve, 30 Apr 1967, D.H. Murphy leg. (in Kohout 2014).

**Literature.** Kohout (2014).

**Localities.** Bukit Timah Nature Reserve; Race Course forest.

**Habitat/Ecology.** This species is associated with primary and/or mature secondary forests in Singapore. Individuals have been found along forest trails, or among low vegetation.

**Remarks.** Despite being considered a relatively common species in Southeast Asia, *P. olybria* appears limited to areas of good quality forest in Singapore.

***Polyrhachis (Polyrhachis) ypsilon* Emery, 1887**

**Material examined.** None available.

**Material not physically examined.** Lectotype – CASENT0905548, ANTC26437 (MSNG).

**Literature.** Type – Emery (1887). Hung (1970) [designation of lectotypes, paralectotypes]; Kohout (1998); Kohout (2014).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, the only record of this species in Singapore is that of its type series, collected in 1875 by D'Albertis (Emery 1887).

**Material examined.** Bukit Timah Nature Reserve, BT07, 1.35499, 103.78167, 28 Sep 2016, W. Wang leg., leaf litter, winkler extraction, ZRC\_HYM\_0000569; same locality, collection date and collector as previous, leaf litter, winkler extraction, ZRC\_HYM\_0000570; male, I-Cube building (NUS), 1.29347, 103.77633, 24 Mar-1 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0002, ZRC\_BDP0044670; University Hall (NUS), 1.29711, 103.77658, 13-20 May 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0032, ZRC\_BDP0044799; males, Nee Soon Swamp Forest, NS2, 1°23'04.2"N, 103°48'40.7"E, 28 Mar-4 Apr 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29158, ZRC\_BDP0015151, 15168, 15924; same locality as previous, 1.38245, 103.80206, 46 m, 26 Apr 2018, W. Wang leg., winkler extraction, NS\_W2, ZRC\_ENT00000956.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924); Wang et al. (2018a).

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Nature Reserve; Bukit Timah Road; National University of Singapore campus; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species is associated mostly with old or mature secondary forests, as well as young secondary habitats such as *Adinandra belukar* dominated forest in Singapore. Both alates (males and queens) and workers have been collected, the former in great abundance, using malaise traps in swamp forest. The ants can also be found in disturbed secondary forest fragments in urban or semi-urban settings.

***Prenolepis subopaca* Emery, 1900**

**Material examined.** Bukit Timah Nature Reserve, 28 Mar 1967, D.H. Murphy leg., ZRC\_HYM\_0000760; Mandai Track 15, 4 Jan 2016, G.W. Yong leg., ZRC\_HYM\_0001029-1031; Mandai Track, 4 Jan 2017, G.W. Yong leg., ZRC\_HYM\_0001168; Mandai Lake Road, 4 Jan 2016, G.W. Yong leg., ZRC\_HYM\_0001032; same locality and collector



as previous, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00047967; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg. (SKYC); Upper Thomson Nature Park, 1.38241, 103.81944, 9-11 Oct 2016, G.W. Yong et al. leg., UT4TPc1672, ZRC\_ENT00047920.

**Material not physically examined.** Bukit Timah, 1°21'N, 103°47'E, 50 m, 7 Apr 1989, P.S. Ward leg.; Sembawang, 18 Jun 1967, D.H. Murphy leg. [in Williams & LaPolla 2016].

**Literature.** Williams & LaPolla (2016); Peeters & Yong (2017).

**Localities.** Bukit Timah Nature Reserve; Mandai Lake Road; Mandai Track; Sembawang; Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with mature or old secondary forests of varying levels of disturbance, including abandoned plantation forest. Nests can be found in leaf litter; individuals were usually found foraging arboreally.

**Remarks.** *Prenolepis subopaca* is morphologically similar to its congener *P. jerdoni*. The former can be differentiated from the latter by its finely reticulate and dull (almost matte) cuticular sculpture, and thick pubescence present in patches on pronotal and propodeal dorsums, and also the gaster.

### *Pseudolasius badius* Viehmeier, 1916

**Material examined.** None available.

**Material not physically examined.** Type queen – FOCOL2677 (ZMHB).

**Literature.** Type – Viehmeier (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** The type queen was collected at a lit-lamp in a garden.

**Remarks.** Type locality in Singapore. This species was first described based on a single queen collected in Singapore. At the time of writing, the type queen remains the only known record of the species in Singapore.

### *Pseudolasius circularis* Viehmeier, 1916

**Material examined.** Alate queen, males and workers, Nee Soon Swamp Forest, 16 Mar 1981, D.H. Murphy leg., DHM-SG81-Psel2, ZRC\_ENT00027952.

**Material not physically examined.** Type queen – FOCOL2676 (ZMHB).

**Literature.** Type – Viehmeier (1916); Overbeck (1924).

**Localities.** Bukit Timah Road; Nee Soon Swamp Forest.

**Habitat/Ecology.** The type queen was collected at a lit-lamp in a garden. More recently, a colony was found nesting under a log on a raised path in swamp forest.

**Remarks.** Type locality in Singapore. This species was first described based on a single queen collected in Singapore. The queen can be distinguished from other congeners mainly by its expansive rounded mesosoma (in dorsal view), mesoscutum much wider than long, propodeum very short but wide with no distinction between lateral and posterior margins, both of which form a continuous broadly convex outline in dorsal view. Workers exhibit strong allometric polymorphism, with large majors having massive sub-cordate heads with deeply concave posterior margins, disproportionately small eyes and short antennal scapes; smaller minor workers tend to have smaller and less expanded heads, with antennal scapes exceeding the occipital margin.

### *Pseudolasius ludovici* Forel, 1913

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeier (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A single queen was collected at a lit-lamp in a garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Pseudolasius martini* Forel, 1911**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Males were collected at a lit-lamp in a garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Pseudolasius mayri duplicatus* Viehmeyer, 1916**

**Material examined.** None available

**Material not physically examined.** Types – males, FOCOL2688-2689; queen, FOCOL2690 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Pseudolasius mayri* var. *duplicata*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Type alates were collected at a lit-lamp in a garden.

**Remarks.** Type locality in Singapore. This species was first described based on a queen collected from Singapore.

***Pseudolasius trimorphus* Karavaiev, 1929**

**Material examined.** Nee Soon forest, 26 Apr 2018, W. Wang leg., WW-SG18-Pseu11, ZRC\_ENT00000949.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon forest

**Habitat/Ecology.** This species was found in *Adinandra belukar*-dominated secondary forest; a nest was found under the bark of an underground tree root, with soil substrate.

**LEPTANILLINAE (2 genera, 3 species)**

***Leptanilla havilandi* Forel, 1901**

**Material examined.** None available.

**Material not physically examined.** Types — CASENT0101455, ANTC3654 (MNHN); CASENT0901483, ATC21005 (OUMNH); CASENT0902773, ANTC22248 (BMNH); CASENT0907032, ANTC27210 (MHNG); FOCOL1126 (ZMHB).

**Literature.** Type – Forel (1901). Emery (1910).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context; probably a hypogaecic subterranean species as with most other *Leptanilla* species.

**Remarks.** Type locality in Singapore. Despite not having been recorded from Singapore for more than a century since its initial discovery, *Leptanilla havilandi* has been firmly established as a valid species discernible from its congeners within Indomalaya (see: Baroni Urbani 1977c, Ito et al. 2001, Wong & Guénard 2016). The scarcity of specimens may be partly attributed to the species' subterranean nature and minute size, which render it elusive and difficult to find.

***Leptanilla hypodracos* Wong & Guénard, 2016**

**Material examined.** Holotype – Central Catchment Nature Reserve, ca. 55 m, 1.355, 103.815, 15 Jun 2015, M.K.L. Wong leg., subterranean pitfall trap, ZRC\_ENT00000664.

**Material not physically examined.** Paratypes – same collection data as holotype, MW150615-1.2, -1.3 (HKUC).

**Literature.** Wong & Guénard (2016).

**Localities.** Central Catchment Nature Reserve

**Habitat/Ecology.** The type series was collected from underground using a baited subterranean pitfall trap installed in a well-shaded fragment of old secondary forest.

**Remarks.** Type locality in Singapore. At the time of writing, the only record of this species in Singapore is that of its type series.

***Protanilla rafflesi* Taylor (1990)**

**Material examined.** Queen and workers, Bukit Timah Nature Reserve, D10-4, 28 Jan 1969, D.H. Murphy leg., ZRC\_HYM\_0000023; same locality and collector as previous, 7 Dec 1968, ZRC\_HYM\_0000028; same locality as previous, 1.34796, 103.77914, 29 Oct 2015, M.K.L. Wong leg., ZRC\_ENT00000674; Bukit Timah Hill, slope, D11-7, collection date unknown, D.H. Murphy leg., ZRC\_HYM\_0000027; Lower Peirce Reservoir, Aug 1990, collector unknown, ZRC\_HYM\_0000244; same collection data as previous (SKYC); Nee

Soon forest, 1.38279, 103.80650, 25 Sep 2017, W. Wang leg., NSW1, Winkler extraction, ZRC\_ENT00000910; same locality and collector as previous, 1.38245, 103.80206, 46m, 26 Apr 2018, Winkler extraction, ZRC\_ENT00000953.

**Material not physically examined.** Holotype – CASENT0102375, ANTC4604 (BMNH). Paratype – ANIC32-017901, Shattuck1345248029 (ANIC).

**Literature.** Type – Taylor in Bolton (1990). Xu (2012).

**Localities.** Bukit Timah; Bukit Timah Nature Reserve (a.k.a. Bukit Timah Hill); Lower Peirce Reservoir Road; MacRitchie; Nee Soon forest.

**Habitat/Ecology.** This species is associated mostly with primary or mature secondary habitat in Singapore, including swamp forest and old secondary forest. Specimens have also been collected from young secondary *Adinandra belukar*-dominated forest. Usually found in leaf litter and woody ground debris, often collected via Winkler extraction.

**Remarks.** Type localities (i.e., MacRitchie and Bukit Timah Nature Reserve) in Singapore.

## MYRMICINAE (33 genera, 158 species)

### *Acanthomyrmex ferox* Emery, 1893

**Material examined.** Queens and workers, Nee Soon Swamp Forest, 1.38252, 103.80208, 25 Sep 2017, W. Wang leg., NS\_W1, Winkler extraction, WW-SG17-041, ZRC\_ENT00014121; Seletar Trail, 1.39192, 103.80081, 18 Oct 2015, M.K.L. Wong leg., Berlese extraction, ZRC\_ENT00000683.

**Material not physically examined.** FMNHINS0002821982-2821990, FMHD\_81-282 (FMNH).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Nee Soon Swamp Forest; Seletar Trail.

**Habitat/Ecology.** This species is associated with primary and/or mature secondary forests in Singapore, including swamp forest. Individuals have been found in leaf or (tree) buttress litter, also on the forest floor.

### *Aphaenogaster simulans* Forel, 1915 stat. n.

*Aphaenogaster (Deromyrma) feae* r. *simulans* Forel, 1915: 31 (w.q.m.)

Subspecies of *Aphaenogaster feae*: Emery, 1921: 65; Chapman & Capco, 1951: 133; Bolton, 1995: 73.

**Material examined.** Bukit Timah Nature Reserve, near BT01, 1.35764, 103.77491, 1 Feb 2017, W. Wang leg., ZRC\_ENT00007570; Mandai Road, plot 1, 1.38252, 103.80208, 16 Nov 2016, G.W. Yong et al. leg., MID4GH2159, ZRC\_ENT00047838; Nee Soon Swamp Forest, 1.38252, 103.80208, 25 Sep 2017, W. Wang leg., NS\_W1, leaf litter, Winkler extraction, ZRC\_ENT00047839; same locality as previous, Woodcutter's trail, 4 Sep 2017, W. Wang leg., ZRC\_ENT00000985.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Mandai; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species is associated mostly with primary or mature secondary forests in Singapore, including swamp forest, where workers are usually found foraging on leaf litter or in *Nepenthes* pitcher contents. At the time of writing, a single occurrence of the species had also been recorded at an abandoned park - young secondary forest.

**Remarks.** Originally described as a subspecies of *Aphaenogaster feae* Emery, 1889, *A. simulans* can be distinguished from the former based on the following (*A. feae* characters in parentheses): 1) propodeal spines/denticles very short and blunt, barely protruding from propodeal junction (propodeal spines relatively longer, acute, distinctly protruding from propodeal junction), 2) petiolar node in dorsal view roughly as long as wide, broadly ovate (petiolar node in dorsal view distinctly longer than wide, elongate-ovate), 3) head in full face view, excluding the narrowed neck, ca. 1.5 times longer than wide, area posterior to eyes somewhat conical or like an inverted-cone (head in full face view, excluding the neck, only slightly longer than wide (< 1.5 times), area posterior to eyes semi-circular).

We believe that these observed differences, some of which were also mentioned in original descriptions for both species, justify the raising of *simulans* to species.

### *Calyptomyrmex beccarii* Emery, 1893

**Material examined.** Bukit Timah Nature Reserve, Jungle Fall Valley, 10 Apr 1976, D.H. Murphy leg., ZRC\_HYM\_0000623-624; Kent Ridge Park, YM site 2, 7 Dec 2017, W. Wang leg., ZRC\_ENT00027983; Mandai, 1.40699, 103.77853, 19 Sep 2015, M.K.L. Wong leg., Berlese extraction, ZRC\_ENT00000684; Mandai Lake Road, 3 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0000990; same locality, collection date and collector as previous, ZRC\_HYM\_0001737.

**Material not physically examined.** FO-COL2181-2182 (ZMHB) [types of *Calyptomyrmex beccarii* var. *glabratus*].

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *C. beccarii* var. *glabratus*]; Shattuck (2011).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Kent Ridge Park; Mandai; Mandai Lake Road.

**Habitat/Ecology.** This species can be found mostly in young or old/mature secondary habitats in Singapore, including waste woodlands and disturbed secondary forest fragments in urban or semi-urban settings. A few occurrences were also recorded from cultivated vegetation such as gardens. Individuals have been collected from leaf litter, sometimes soil and root substrate matrices at bases of trees.

### *Calyptomyrmex loweryi* Shattuck, 2011

**Material examined.** Bukit Batok East, 29 Sep 2016, G.W. Yong leg., ZRC\_HYM\_0000991.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok East

**Habitat/Ecology.** A single specimen was found in mature or young secondary forest in Singapore. This species has only been found in one locality to date.

**Remarks.** *Calyptomyrmex loweryi* is very similar to the more widespread *C. beccarii*, but can be distinguished from the latter by its relatively larger size, wider head (HW generally > 1.13 mm, see Shattuck 2011; 1.15 mm in the Singapore specimen) and broader posterior margin of head. However, we noticed

some larger specimens of *C. beccarii* with maximum head width slightly more than 1.10 mm, unlike what was diagnosed in Shattuck (2011). These larger workers were from the same colony as their smaller nestmates, whose measurements better fulfilled the diagnosis for *C. beccarii*. Thus, size should be used with caution when differentiating between *C. loweryi* and *beccarii*.

### *Cardiocondyla kagutsuchi* Terayama, 1999

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Seifert (2003).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, there is only a single literature record of this species in Singapore.

### *Cardiocondyla obscurior* Wheeler, 1929

**Material examined.** Icube, National University of Singapore (NUS), 1.29347, 103.77633, 29 Jul-5 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, NUS00074, ZRC\_BDP0042671; Prince George's Park Residences (NUS), 1.29239, 103.77869, 24 Mar-1 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0001, ZRC\_BDP0044284, ZRC\_BDP0044334; same locality and collectors as previous, 29 Apr-6 May 2015, malaise trap, NUS0021, ZRC\_BDP0044156; University Hall (NUS), 1.297111, 103.77658, 1-8 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0008, ZRC\_BDP0045349; University Town (NUS), 1.30622, 103.77458, 5-12 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0079, ZRC\_BDP0042640.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** National University of Singapore campus (Clementi/Kent Ridge).

**Habitat/Ecology.** This is an accomplished tramp species presumably native to Southeast Asia, mainly associated with disturbed secondary forest fragments in urban or semi-urban settings in Singapore; it can also be found in

urban cultivated grass- or parklands. While the species is known to nest in dead twigs or branch cavities of bushes/trees/shrubs, formal records of local occurrences comprise mostly alates collected via malaise traps. Like its close relative (similarly also a tramp species) *C. wroughtonii*, *C. obscurior* nests in vegetation above the surface rather than in soil. Polygynous colonies with multiple queens are known to be common.

**Remarks.** Given the morphological similarities with the congener *C. wroughtonii*, which has been recorded from Singapore since 1892, it is possible that at least some historical records of *C. wroughtonii* were actually misidentified *C. obscurior*.

#### *Cardiocondyla strigifrons* Viehmeyer, 1922

**Material examined.** None available.

**Material not physically examined.** In Seifert et al. (2017): Singapore, 1.31, 103.83, Nest sample collected pre-1920, H. Overbeck leg.

**Literature.** Seifert et al. (2017).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** The name of the locality where this species was collected was roughly inferred from coordinates provided in Seifert et al. (2017).

#### *Cardiocondyla tjibodana* Karavaiev, 1935

**Material examined.** Bukit Timah Nature Reserve, 13 Dec 1995, H.K. Lua et al. leg., NS 212C, ZRC\_ENT00000347; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in either primary or mature secondary forests in Singapore.

**Remarks.** In other countries, this species is known to nest in shallow soil in more open disturbed habitat with weakly herbaceous or even bare grounds. It is therefore possible that there are more undocumented occurrences of the species in more exposed and disturbed habitats locally.

#### *Cardiocondyla wroughtonii* (Forel, 1890)

**Material examined.** Kranji Road, 1.42638, 103.75413, 8 Nov 2016, G.W. Yong leg., KR1TH1392, ZRC\_HYM\_0001773; same locality and collector as previous, 7 Sep 2016, ZRC\_ENT00048403; Mandai Road, 1.4119, 103.80513, 29 Nov 2016, G.W. Yong leg., M3D4GH850, ZRC\_HYM\_0001772; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** CASENT0908352, ANTC29539 (MHNG) [syntype of *C. wroughtonii quadraticeps*]; FOCOL1612 (ZMHB) [type queen of *C. wroughtonii quadraticeps*].

**Literature.** Forel (1912), Viehmeyer (1916), Overbeck (1924) [all as *C. wroughtonii quadraticeps*]. Seifert (2003).

**Localities.** Bukit Timah Road; Kranji Road; Mandai Road; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in both mature native-dominated, and young waste woodland secondary forests in Singapore, also in gardens. Some specimens were collected on tree trunks.

**Remarks.** *Cardiocondyla wroughtonii* is a recognized global tramp species that can thrive in a range of habitats including degraded vegetation in urban or semi-urban settings. Thus, it is highly possible that actual species distribution in Singapore might be broader, and underrepresented by material available for examination at the time of writing.

#### *Cardiocondyla* sp.4.of.SKY (\*excluded from official named species count)

**Material examined.** Queens and workers, Central Catchment Nature Reserve, 4 Sep 2017, W. Wang leg., WW-SG17-020, ZRC\_HYM\_0001757; queens and workers, Mandai forest, 15 Jan 2020, W. Wang leg., WW-SG20-001, ZRC\_ENT00014129; Kranji Road, 7 Sep 2016, G.W. Yong leg., ZRC\_ENT00048406.

**Localities.** Central Catchment Nature Reserve; Kranji Road; Mandai.



**Habitat/Ecology.** This species appears to be associated mostly with mature and/or old secondary forests. Nests were found in cavities in bark of large fallen trees, or in fallen wood on ground.

**Remarks.** Though currently undescribed, this unique species is given special mention here as it appears quite common not just in Singapore, but in Borneo and throughout South Thailand (Sk. Yamane 2020, pers. comm.). Body generally uniformly dark brown, almost entirely coarsely rugose-reticulate except for the gaster which is smooth and shining. This species appears affiliated to *Cardiocondyla thoracica* (Smith, 1859), or is at least in the same species group, based on similar features such as: 1) anterior margin of pronotal disc slightly elevated and projecting above the otherwise (near) continuous convex outline of the mesosomal dorsum in profile, 2) metanotal groove indistinct or almost absent, and 3) very long propodeal spines with apices directed posteriorly.

### *Carebara affinis* (Jerdon, 1851)

**Material examined.** Lower Peirce Reservoir, Forest A, 7 Aug 1990, Zoology Dept 3<sup>rd</sup> Year project students, ZRC\_ENT00000192; same locality as previous, Forest B, 25 Aug 1990, Zoology Dept 3<sup>rd</sup> Year project students, ZRC\_ENT00000113; Lorong Banir, NS 192, 16 Jun 1995, Yang & Lua leg., ZRC\_ENT00000376; Bukit Timah, Hindhede Drive, 25 Dec 1989, H.K. Lua leg., ZRC\_HYM\_00000130; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_00000434-435, 482-483; University Campus Botany Garden, 11 Feb 1977, D.H. Murphy leg., ZRC\_HYM\_0000913; Mandai Road, 1.41119, 103.80513, 29 Nov-1 Dec 2016, G.W. Yong leg., pitfall trap, M3D3GPc806, ZRC\_HYM\_0001770; Bukit Batok East Avenue 6, 1.34304, 103.76235, 3-5 Oct 2016, G.W. Yong leg., pitfall trap, BB1GPD382, ZRC\_HYM\_0001771; Mandai forest, 7 Jun 2018, W. Wang leg., ZRC\_ENT00047996; male, University Town (NUS), 1.30622, 103.77458, 29 Apr-6 May 2015, M.S. Foo & W. Wang leg., NUS0023, malaise trap, ZRC\_BDP0044771.

**Material not physically examined.** Unknown.

**Literature.** Viehmeier (1916). Overbeck (1924), Yamane (2003) [all as *Pheidologeton affinis*]. Wang et al. (2018a).

**Localities.** Bukit Batok East; Bukit Timah Hindhede Drive; Bukit Timah Road; Lorong Banir; Lower Peirce Reservoir; Mandai; University Town (NUS).

**Habitat/Ecology.** This species was found in both mature and young secondary forests at varying levels of disturbances, including native-dominated and abandoned plantation secondary forests. Individuals have been collected occasionally in disturbed forest fragments in semi-urban settings, or in cultivated gardens. The species has sometimes been collected from leaf litter or decayed wood.

**Remarks.** Considerable morphological variation was observed among different colonies of *C. affinis*, but we lack convincing empirical evidence supporting further species delimitation for this possible species complex at the time of writing. Thus, in this checklist, we tentatively treat all morphological variants as conspecific.

### *Carebara castanea* Smith, 1858

**Material examined.** Alate queen, Pulau Ubin, 1.41149, 103.97475, 22 Oct 2015, S.X. Chui et al. leg., ZRC\_ENT00047836; alate queen, Kent Ridge Road, 1.29518, 103.77615, 2 Nov 2015, Y.G. Tan leg., ZRC\_ENT00047837.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Kent Ridge Road; Pulau Ubin.

**Habitat/Ecology.** Alate queens were found, sometimes *en masse*, in secondary forest patches or fragments in semi-urban settings.

**Remarks.** At the time of writing, the only records of this species in Singapore are of alate queens. The alate queen of *C. castanea* closely resembles that of *Carebara lignata* Westwood, 1840, however, its post-petiole appears broadest (in dorsal view) anteriorly, unlike in *C. lignata*.

***Carebara diversa* (Jerdon, 1851)**

**Material examined.** Bukit Timah Hindhede Drive, 19 Nov 1989, H.K. Lua leg., ZRC\_HYM\_0000158; Bukit Timah Nature Reserve, 13 Dec 1995, H.K. Lua et al. leg., NS 212C, ZRC\_ENT00000348; same locality as previous, 12 Oct 2015, D.J. Court leg., pitfall trap, ZRC\_ENT00048442; Commonwealth Avenue West, 6 Dec 2005, H.K. Lua leg., LHK 457, ZRC\_HYM\_0000039-40; alate queens, Holland Close (in HDB flat), 14 Apr 1990, K. Lim leg., ZRC\_HYM\_0000201; National University of Singapore (Clementi/Kent Ridge campus), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Labrador beach, 29 Apr 1985, D.H. Murphy leg., ZRC\_ENT00027996; Lower Peirce Reservoir, Forest A, 25 Aug 1990, collector unknown, ZRC\_ENT0000137; Mandai, Northern Node, 4 Sep 2019, J. Tan & N. Chin leg., large fallen rotting branch, MIS\_NN\_AC, ZRC\_ENT00027942; Mandai Lake Road, Rainforest Park North, Buffer area, 1.40842, 103.78319, 54 m, 4 Sep 2019, J. Tan & N. Chin leg., leaf litter, ZRC\_ENT00013862; Nee Soon Swamp Forest, 16 Apr 1992, D.H. Murphy et al. leg., Y790, ZRC\_HYM\_00000037; same locality as previous, 5 Apr 2005, P. Grootaert leg., malaise trap, PGT 25046-25048, ZRC\_HYM\_0000038; Neo Tiew Lane, 16 Jul 2009, H.K. Lua leg., LHK 513, ZRC\_HYM\_0000035; Pulau Ubin (Outward Bound School grounds), 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001051-1054; Seletar Link, 1.40518, 103.88555, 16-18 Oct 2016, G.W. Yong leg., pitfall trap, SL3GPd1195, ZRC\_HYM\_0001769; Seletar Reservoir Park, 12 May 1994, collector unknown, NS 132C, ZRC\_HYM\_0000108.

**Material not physically examined.** Non-types, CASENT0195766, PSW09562 (PSWC). Non-types, J.K. Wetterer leg. (JKWC) - Amber Road (Katong), 28 Jul 2014, vial #348; Dhoby Ghaut, Istana Park, 30 Jul 2014, vial #403; Harbourfront, 29 Jul 2014, vial #385; Katong Park, 1 Aug 2014, vial #448; Outram Park, 29 Jul 2014, vial #381; Punggol Point, 30 Jul 2014, vial #395; Singapore Botanic Gardens, 5 Aug 2014, vial #475.

**Literature.** Viehmeyer (1916), Overbeck (1924), Moffett (1987, 1988), Yamane (2003), Tan & Corlett (2012) [all as *Pheidologeton diversus*]. Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Commonwealth Avenue West; Dhoby Ghaut; Harbourfront; Holland Close; Katong Park; Labrador beach; Lower Peirce Reservoir; Mandai; Mandai Lake Road; National University of Singapore campus; Nee Soon Swamp Forest; Neo Tiew Lane; Outram Park; Pulau Ubin; Punggol Point; Seletar Link; Seletar Reservoir Park; Singapore Botanic Gardens.

**Habitat/Ecology.** This species was mainly found at edges of mature/old secondary forest, in disturbed waste woodland secondary forest fragments, or swathes of cultivated vegetation such as gardens, in urban or semi-urban settings. Colonies often form rather pervasive trunk trails on the ground (including across human-made pavements), tree trunks, and over foliage. These trunk trails are part of the species' unique group hunting/foraging or swarm raiding strategies. These ants are known to be extreme trophic generalists, consuming a wide range of material including animal carcasses, fruits, nuts, bark etc. Alates of *C. diversa* frequently occur in abundance at urban residential areas following a period of prolonged heavy rain and humid weather.

***Carebara overbecki* (Viehmeyer, 1916)**

**Material examined.** Pulau Ubin, 22 Oct 2016, W. Wang leg., leaf litter, Winkler extraction, ZRC\_ENT00000988.

**Material not physically examined.** Types – CASENT0908912, ANTC31343 (MHNG); FOCOL0278-279 (DEIC, Munchenberg); 3 males, 2 workers, FOCOL1918-1922 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [as *Oligomyrmex overbecki*]. Moffett (1986) [as *Oligomyrmex overbecki*].

**Localities.** Bukit Timah Road; Pulau Ubin.

**Habitat/Ecology.** This minute species is associated mostly with mature secondary forests in Singapore. The ants can be found in leaf litter or under bark. Nests have been found in large aged fallen tree trunks, also in root cavities in a soil mound, just next to a termite nest.

**Remarks.** Type locality in Singapore.

***Carebara silenus* (Smith, 1858)**

**Material examined.** Male, University Hall (NUS), 1.29711, 103.77658, 6-13 May 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0028, ZRC\_BDP0041385.

**Material not physically examined.** Syntypes – CASENT0900737-900738, ANTC19789 (BMNH)[types of *Pheidologeton silenus*].

**Literature.** Type – Smith (1858) [as *Pheidole silenus*]. Moffett (1988a), Yamane (2003) [both as *Pheidologeton silenus*].

**Localities.** University Hall (NUS)

**Habitat/Ecology.** Similar foraging and/or hunting tactics as with *Carebara diversa*, but lacking the stable trunk trails unique to the latter (Moffett 1988a). There is no available information on the habitat in which the type series was obtained. This species may likely be found in mature or old secondary forest fragments, in urban or semi-urban settings, where it sometimes appears to thrive in sympatry with *C. diversa*.

**Remarks.** Type locality in Singapore.

***Cataulacus granulatus* (Latreille, 1802)**

**Material examined.** Bukit Batok, 28 Jan 2015, W. Wang leg., ZRC\_ENT00027963; Bukit Batok East Avenue 6, 1.34304, 103.76235, BB-6GH076, ZRC\_HYM\_0001202.2; same locality and collector as previous, 30 Aug 2016, G.W. Yong leg., ZRC\_HYM\_0001208.2-1209.2; Bukit Timah forest, 14 Aug 1968, D.H. Murphy leg., A124-4, ZRC\_HYM\_0000691; Kent Ridge, 14 Apr 1985, D.H. Murphy leg., ZRC\_HYM\_0000689; Kent Ridge scrub, 18 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000692; Lower Peirce Reservoir, 21 Jul 1990, H.K. Lua leg., ZRC\_HYM\_0000232; Sungei Buloh, 8 Jan 2013, Sk. Yamane leg., ZRC\_HYM\_0000413; Pulau Sentosa, 2 Dec 1989, collector unknown (SKYC).

**Material not physically examined.** CASENT0901453, ANTC20975 (OUMNH) [holotype of *Cataulacus hispidus* Smith, 1876, junior synonym of *C. granulatus*]; CASENT0922493, PSW09575-5 (PSWC).

**Literature.** Smith (1876) [as type of *C. hispidus*]. Forel (1912) [as *C. hispidus*]. Forel (1911), Viehmeyer (1916), Overbeck (1924) [all as *C. granulatus* subsp. *hispidus*]. Bolton (1974).

**Localities.** Bukit Batok; Bukit Timah; Bukit Timah Road; Kent Ridge; Lower Peirce Reservoir; Pulau Sentosa (now simply known as ‘Sentosa’); Sungei Buloh; Thompson Road.

**Habitat/Ecology.** This species can be found in a broad range of habitat types, including urban or semi-urban scrub, waste woodland forest (abandoned park), mangrove back forest, and abandoned plantation (young) secondary forest. These ants are considered arboreal; specimens are often collected from low vegetation or foliage, sometimes on tree trunks or low branches.

**Remarks.** The first local record of this species was as the holotype of *C. hispidus*.

***Cataulacus horridus* (Smith, 1857)**

**Material examined.** Bukit Timah forest, collection date unknown, D.H. Murphy leg., ZRC\_HYM\_0000688.

**Material not physically examined.** CASENT0217825, ANTC18013 (CASC); CASENT0922498, PSW09575-4 (PSWC).

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah forest

**Habitat/Ecology.** This arboreal species can be found in primary or mature/old forests in Singapore. Individuals were collected from low vegetation, or on bark of trees.

**Remarks.** Examined ZRC material was originally identified as *Cataulacus insularis* Smith, 1857 – now a junior synonym of *C. horridus*.

***Cataulacus latissimus* (Emery, 1893)**

**Material examined.** Central Catchment Nature Reserve, Bukit Kalang service road, 3 Dec 2004, T.M. Leong leg., ZRC\_ENT00048384; Seletar Trail, 1.39532, 103.80228, 5 Mar 2016, M.K.L. Wong leg., ZRC\_ENT00000685.

**Material not physically examined.** Unknown.

**Literature.** Bolton (1974).

**Localities.** Central Catchment Nature Reserve; Seletar Trail.

**Habitat/Ecology.** This species was collected from the edges of primary or secondary forest, in foliage along trails or roads.

***Cataulacus praetextus* (Smith, 1867)**

**Material examined.** Mandai Road, plot 1, 1.41312, 103.80185, 6-8 Dec 2016, G.W. Yong et al. leg., MID18GPb2421, ZRC\_ENT00048642; Nee Soon Swamp Forest, NS1, 1°23'00.3"N, 103°48'46.5"E, 28 Mar-4 Apr 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29157, ZRC\_BDP0014626.

**Material not physically examined.** Alate queen, FOCOL2122 (ZMHB) [type queen of *Cataulacus praetextus* var. *sumatrensis* – now junior synonym of *C. praetextus*].

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *C. praetextus* var. *sumatrensis*].

**Localities.** Jurong Road; Mandai Road; Nee Soon Swamp Forest.

**Habitat/Ecology.** Workers of this species were found together with *Tetramorium obtusidens* Viehmeyer, 1916 and *Technomyrmex albipes* (Smith, 1861) in the same withered branch of a roadside tree; workers have also been collected from *Nepenthes* pitcher cups. The species appears mostly associated with old/mature secondary forests in Singapore, including swamp forest.

***Crematogaster anthracina* Smith, 1857**

**Material examined.** Mandai mangroves, 4 Oct 1979, D.H. Murphy leg., ZRC\_HYM\_0000699.

**Material not physically examined.** Syntype – CASENT0901434, ANTC20957 (OUMNH). Non-type – CASENT0914071, ANTC27752 (BMNH).

**Literature.** Type – Smith (1857) [as *Crematogaster anthracinus*].

**Localities.** Mandai mangroves

**Habitat/Ecology.** No habitat information is available for the type series. Non-type material of this species was collected from mangroves, where the ants were found nesting in a twig of *Sonneratia* sp.

**Remarks.** Type locality in Singapore.

***Crematogaster aurita* Karavaiev, 1935**

**Material examined.** Jalan Ulu Sembawang, 1.417, 103.769, Jul 2015, J.K.N. Tan leg., C190, JKT-SG15-001, ZRC\_ENT00013939.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Jalan Ulu Sembawang

**Habitat/Ecology.** Uncertain in the Singapore context, but this species was possibly found in young secondary forest, as inferred from the reported locality.

***Crematogaster borneensis* André, 1896**

**Material examined.** None available.

**Material not physically examined.** CASENT0193115, BBB111 (BBBC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Crematogaster* (*Decacrema*) *borneensis macarangae*].

**Localities.** Bukit Timah Hill; Central Catchment, Sime Road.

**Habitat/Ecology.** This species is obligately associated with *Macaranga* plants, specifically host species belonging to the sections Pachystemon and Pruinosa, which are commonly found in secondary forests in general. The ant-plant associations are not strictly species-specific, and *C. borneensis* is known to inhabit/colonize two to seven different *Macaranga* host species over its entire distributional range. In Singapore, the ants were found in the hollow internodes of shafts of *Macaranga hypoleuca* (Rchb.f. & Zoll.) Müll.Arg., and also with scale insects in *Macaranga bancana* (Miq.) Müll.Arg.

***Crematogaster brunnea ruginota* Santschi, 1928**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Crematogaster subnuda politula* var. *ruginota*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Individuals were found in the stump of a branch on a living tree, in a garden.

**Remarks.** At the time of writing, there are only literature records of this subspecies in Singapore.



***Crematogaster coriaria* Mayr, 1872**

**Material examined.** Bukit Timah Nature Reserve, near BT01, 7 Jun 2017, W. Wang leg., WW-SG17-029, ZRC\_ENT00000983; same locality as previous, near BT02, 1.35599, 103.77397, 12 Jul 2017, W. Wang leg., WW-SG17-016, ZRC\_HYM\_0001736; Bukit Peirce, 10 May 2005, Sk. Yamane leg., nest in dead twig on ground (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Peirce; Bukit Timah Nature Reserve.

**Habitat/Ecology.** This species is associated with primary and old secondary forests in Singapore, and appears arboreal. Nests have been found in trunks of living trees (e.g. *Lithocarpus* sp.), and also in cavities of fallen branches or twigs in old secondary forest.

***Crematogaster decamera* Forel, 1910**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A single queen was collected from a lit-lamp in a garden.

**Remarks.** At the time of writing, there are only literature records of this species in Singapore.

***Crematogaster difformis* Smith, 1857**

**Material examined.** Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000365-366.

**Material not physically examined.** Lectotype and paralectotypes (OUMNH).

**Literature.** Type – Smith (1857). Viehmeyer (1916), Overbeck (1924) [both misspelt as ‘*C. deformis*’]; Hosoiishi & Ogata (2009).

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Hill; Choa Chu Kang Road; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in primary or mature secondary forests in Singapore.

**Remarks.** Type locality in Singapore. Very similar to the more common *C. sewardi*, distinguished mainly by the configuration or direction of appressed hairs/setae on the first gastral tergite – in *C. sewardi*, the gastral hairs are all posteriorly-directed, whereas in *C. difformis*, hairs in the posterior section (of the tergite) are directed medially inwards towards the centre of the tergite.

***Crematogaster dohrni artifex* Mayr, 1878 [erroneously printed as 1879 in AntCat and AntWeb]**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0919683, ANTC41462 (NHMW) [type of *C. artifex*].

**Literature.** Type – Mayr (1878) [as *C. artifex*]. Viehmeyer (1916), Overbeck (1924) [both as *C. artifex*].

**Localities.** Changi (type locality); Jurong Road.

**Habitat/Ecology.** The ants were found in *Nepenthes* pitcher cups, presumably in mature or old secondary forest. Colonies were also found housed in fairly large pasteboard nests around branches of trees and shrubs, with smaller satellite nests of similar substrate on neighbouring leaves sheltering scale insects (Coccidae).

**Remarks.** Type locality in Singapore. *Crematogaster dohrni artifex* was first described as *C. artifex* Mayr, 1878; status as subspecies of *C. dohrni* was first suggested by Forel (1902), but only formally established by Emery (1922).

***Crematogaster egidyi szaboi* Forel, 1913**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0908577, ANTC30926 (MHNG)

**Literature.** Type – Forel (1913).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, this subspecies is known only from Singapore. While we lack more recent physical material for objective comparisons, based on images on AntWeb, we observed the following differences between the types of *C. egidyi szaboi* and *C. egidyi* (in parentheses):



1) head in full face view wider than long (head in full face view either as long as wide or slightly longer than wide), 2) antennal scape mostly with dense appressed or decumbent short hairs (scape with numerous erect or suberect short hairs). Considering that these apparent differences may be symptomatic of variable imaging perspectives or conditions, we refrain from making any definite taxonomic conclusions in this paper based on our limited observations, i.e., maintain the subspecies *szaboi*.

### *Crematogaster ferrarii* Emery, 1888

**Material examined.** Temasek Polytechnic - adjacent waste woodland, 1.34239, 103.93598, 13 Dec 2016, G.W. Yong leg., TT2GH587, ZRC\_HYM\_0001767; Pulau Semakau Old Fragment, SMO2, 1°12'20.2"N, 103°45'35.8"E, 4-11 Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29512, ZRC\_BDP0016526; same locality and collectors as previous, 27 Sep-4 Oct 2012, mangroves, malaise trap, Reg. 29499, ZRC\_BDP0016412, -16414.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Chua [sic] Chu Kang Road; Pulau Semakau Old Fragment; (beside) Temasek Polytechnic.

**Habitat/Ecology.** This species was found in waste woodland secondary forest, and also in old-growth mangroves; in the latter, specimens were collected in malaise traps. Colonies have been found in withered bamboo.

### *Crematogaster inflata* Smith, 1857

**Material examined.** Bukit Timah Forest, 20 Dec 1969, D.H. Murphy leg., ZRC\_HYM\_0000595.

**Material not physically examined.** Lectotype and paralectotype workers (OUMNH) – examined by Hosoiishi & Ogata (2009).

**Literature.** Type – Smith (1857) [as *Crematogaster inflatus*]. Viehmeyer (1916), Overbeck (1924) [both as *C. inflatus*]; Hosoiishi & Ogata (2009).

**Localities.** Bukit Timah Forest; Chua [sic] Chu Kang Road.

**Habitat/Ecology.** This species is associated with primary and mature or old secondary forests in Singapore. Nests were observed to be made of 'earth' or 'pasteboard', typically on branches high up on (fallen) trees or in the high canopy. The ants were typically collected from fallen trees or large branches. Sometimes nests appeared to be associated with scale insects (Coccidae) in fissures of tree bark, and underneath loose bark.

**Remarks.** Type locality in Singapore.

### *Crematogaster linsenmairi* Feldhaar, Maschwitz & Fiala, 2016

**Material examined.** None available.

**Material not physically examined.** Types – FO-COL1645-1647 (ZMHB) [original syntypes of *Crematogaster borneensis hosei tubuli* (see Viehmeyer 1916)]

**Literature.** Type – Feldhaar et al. (2016). Viehmeyer (1916), Overbeck (1924) [both as *C. borneensis hosei* var. *tubuli*].

**Localities.** Mandai Road

**Habitat/Ecology.** A member of the *Macaranga*-associated *Crematogaster captiosa*-subgroup (which also includes *C. borneensis*), this species colonizes mainly *Macaranga* hosts of the section Pruinosae, more rarely colonizing the section Pachystemon when the preferred host species are absent (Feldhaar et al. 2016). Nests have been reported to be found in hollow shafts at the end (tips) of branches of large *Macaranga* shrubs in Singapore.

**Remarks.** Type locality in Singapore. At the time of writing, this species is known to only occur in a single locality in Singapore.

### *Crematogaster modiglianii* Emery, 1900

**Material examined.** Island Club forest, 20 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000709; Central Catchment Reservoir (sic), 10 May 2006, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Central Catchment Nature Reserve (CCNR); Island Club forest [part of CCNR].

**Habitat/Ecology.** A colony of this species was found in a carton nest with *Polyrhachis* sp., in primary or mature secondary forest. The ants were also found nesting in hanging dead twigs in similar forest.

**Remarks.** Previously reported literature records of the species in Singapore (i.e., Viehmeyer 1916, Overbeck 1924) actually refer to specimens from ‘St Barbe Island’, part of the Riau Island Archipelago in Indonesia, and not in Singapore. Thus, at the time of writing, this is the only known physical record of the species in Singapore.

#### *Crematogaster overbecki* Viehmeyer, 1916

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0912734, ANTC36291 (NHMB, Basel); queen, male and worker, FOCOL0272-274 (DEIC, Muncheberg); queen, male and workers, FOCOL1634-1637 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A colony of this species was found in a dead branch of a tree in a garden, “honeycombed” by termites and beetle larvae.

**Remarks.** Type locality in Singapore. The only records of this species in Singapore are that of the type series.

#### *Crematogaster rogenhoferi* Mayr, 1879

**Material examined.** Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 13 Dec 2016, G.W. Yong leg., TT2GH586, ZRC\_HYM\_0001722.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road; (beside) Temasek Polytechnic.

**Habitat/Ecology.** This species was found in a waste woodland secondary forest fragment in urban settings, also in a garden, where individuals were collected either in *Nepenthes* pitcher cups, or on trees where they were observed “visiting” scale insects (Coccidae).

#### *Crematogaster sewardi* Forel, 1901

**Material examined.** Admiralty, 4 Feb 2015, W. Wang leg., ZRC\_ENT00048400; Bukit Timah Nature Reserve, NS 202, 4 Dec 1995, H.K. Lua et al. leg., ZRC\_ENT00000357; same locality as previous, 5 Feb 1983, D.H. Murphy leg., ZRC\_HYM\_0000705-707; Commonwealth Road, 1.31115, 103.78171, 24 Nov 2016, G.W. Yong leg., CW1TH633, ZRC\_HYM\_0001762; Kent Ridge, 28 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000701; Lower Peirce Reservoir, 21 Jul 1990, H.K. Lua leg., ZRC\_HYM\_0000139; Mandai forest, 15 Jan 2020, W. Wang leg., foraging trail on tree trunk, WW-SG20-007, ZRC\_ENT00047968; National University of Singapore campus (Clementi/Kent Ridge), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Nee Soon forest, 16 Aug 2017, W. Wang leg., WW-SG17-065, ZRC\_ENT00047969; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000361-363; same locality as previous, PU3, 1-8 Sep 2012, J. Puniamorthy et al. leg., mangroves, malaise trap, Reg. 29451, ZRC\_BDP0016447-16448; Sungei Buloh, Feb 2015, R.Z.B. Quek leg., mangroves, ZRC\_ENT00007861; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000360.

**Material not physically examined.** Locality unknown, 4 Dec 1995, Sk. Yamane leg. (SKYC); locality unknown, 23 Jul 1996, Sk. Yamane leg. (SKYC) [examined in Hosoishi & Ogata 2008, 2009].

**Literature.** Hosoishi & Ogata (2008, 2009); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Commonwealth Road; Kent Ridge; Lower Peirce Reservoir; Mandai; National University of Singapore campus (Clementi/Kent Ridge); Pulau Ubin; Sungei Buloh; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was often found in disturbed secondary forest fragments including waste woodland and abandoned park forests, and also cultivated park areas within semi-urban settings or near urban dwellings. Sometimes these ants were found in mangroves, typically on tree branches or tree trunks. Nests have been found in tree holes.

**Remarks.** As *C. seawardi* is morphologically very similar to *C. difformis*, it is possible that the latter species as identified in Viehmeyer (1916) and Overbeck (1924), may have been misidentified *C. seawardi*.

***Crematogaster subnuda discinodis* Emery, 1893**

**Material examined.** Kranji Road, 1.42638, 103.75413, 7 Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001766; Labrador Hill, 9 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000704; Pulau Semakau, Apr-Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); Pulau Ubin, Apr-Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); Sungei Buloh Wetland Reserve, Apr-Oct 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple); University Hall (NUS), 1.29711, 103.77658, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** Syntype – CASENT0904488, ANTC24399 (MSNG).

**Literature.** Type – Emery (1893) [as *Crematogaster discinodis*]. Wang et al. (2018a).

**Localities.** Kranji Road; Labrador Hill; Pulau Semakau; Pulau Ubin; Sungei Buloh; University Hall (NUS).

**Habitat/Ecology.** This species was often found in both mature and young secondary forests in Singapore, including waste woodland secondary forest, frequently fragments in semi-urban or urban settings; nests have been found in fallen twigs. Individuals have also been collected in fairly large numbers from mangroves using malaise traps.

**Remarks.** Type locality in Singapore. *Crematogaster subnuda discinodis* appears similar to *C. subnuda* Mayr, 1879, but can be distinguished by its largely smooth and shiny integument, and overall lighter body colours, relative to the more rugulose and darker body of the *C. subnuda* type.

However, Emery (1900) observed that samples of *C. subnuda* collected from parts of Indonesia could vary widely in terms of head and mesosomal sculpture, and also

body colour. It is not stated if this variation occurred between or within different colony samples. If extreme variation does occur between intranidal workers, it would support the synonymy of subspecies *discinodis* under *C. subnuda*. At the time of writing, we do not have adequate material (i.e., colony series of *C. subnuda* from a broader geographic range) necessary for evaluation. Thus, at this point we refrain from making any unjustified taxonomic changes to the current subspecies.

***Crematogaster treubi* Emery, 1896**

**Material examined.** Bukit Timah Nature Reserve, 1.35499, 103.78167, 19 Jul 2017, W. Wang leg., ZRC\_ENT00047931; I-cube building (NUS), 1.293472, 103.77633, 1-8 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0045999; Lower Peirce Reservoir, Aug 1990, collector unknown, ZRC\_ENT00000144; Pulau Semakau New Fragment, Apr-Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); Pulau Ubin, Apr-Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); same locality as previous, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000368-370; Sungei Buloh Wetland Reserve, Apr-Oct 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple); same locality as previous, 1.44632, 103.73057, 5 Dec 2018, W. Wang leg., ZRC\_ENT00007638; Sunset Way, 1.32609, 103.77187, 23 Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001765; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000371-374.

**Material not physically examined.** Queens, FO-COL1632-1633 (ZMHB) [types of *Crematogaster millardi*].

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *C. millardi*]. Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; I-cube building (NUS); Lower and Upper Peirce Reservoir; Pulau Semakau New Fragment; Pulau Ubin; Sungei Buloh Wetland Reserve; Sunset Way.

**Habitat/Ecology.** This species is associated mostly with young or mature secondary forests in Singapore, including abandoned plantation forest and other disturbed fragments in urban or semi-urban settings. These ants have also been found in mangroves, nesting in mangrove tree trunks or foraging on *Thalassina* (mud lobster) mounds.

**Remarks.** This species was first recorded from Singapore as types of '*C. millardi*' (Viehmeyer 1916); the latter species was synonymized as a junior synonym of *C. treubi* by Hosoishi & Ogata (2012).

### *Crematogaster yappi* Forel, 1901

**Material examined.** Pulau Semakau, 2012-2013, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Semakau (Old and New Fragments).

**Habitat/Ecology.** This species was collected from mangroves and/or mangrove backforests in Singapore, specifically on an offshore island landfill. A larger proportion of specimens were from newly replanted mangroves. Abundant workers were collected using malaise traps, implying that the species dwells or forages on elevated vegetation above ground.

**Remarks.** At the time of writing, this species was previously only known from its type locality in Kedah, Malaysia. The species' restricted occurrence in mangroves here seems anomalous relative to the original habitat in its type locality, i.e., Gunung Inas, Kedah, which is an inland area of relatively high elevation (>1000 m a.s.l.). It might be possible that local populations of *C. yappi* were introduced through human commerce, or via imported plants used for mangrove reforestation.

### *Crematogaster (Orthocrema) bandarensis* Forel, 1913

**Material examined.** Bukit Batok East Avenue 6, BB2, 1.34304, 103.76235, Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001716-1717; Kent Ridge Park, 7 Dec 2017, W. Wang leg., WW-SG17-028, ZRC\_ENT00000982; Kranji Road, 1.42638, 103.75413, 8-10 Nov 2016, ZRC\_HYM\_0001718-1720; Upper Seletar Reservoir, 4 Oct 2020, G.W. Yong leg., GY-SG20-003, ZRC\_ENT00028568.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok East; Kent Ridge Park; Kranji Road; Upper Seletar Reservoir.

**Habitat/Ecology.** This species was found mainly in young and/or mature secondary forests in Singapore, including abandoned plantation and waste woodland forests. Specimens were often collected in ground pitfall traps. In one occurrence, the ants were found nesting at the base of a tree, amidst leaf litter and tree roots.

### *Crematogaster (Orthocrema) longipilosa* Forel, 1907

**Material examined.** Bukit Timah Nature Reserve, 4 Dec 1995, H.K. Lua et al. leg., NS 201B, ZRC\_ENT00000367; Lower Peirce Reservoir, 28 Jul 1990, H.K. Lua leg., LHK 108, ZRC\_HYM\_0000142; Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048422; Mandai Road, 1.41155, 103.79015, 21-23 Nov 2016, G.W. Yong leg., M2D1GPc1931, ZRC\_HYM\_0001764.

**Material not physically examined.** Unknown.

**Literature.** Forel (1912); Viehmeyer (1916); Overbeck (1924).

**Localities.** Ayer Terjun (archaic place name); Bukit Timah Nature Reserve; Bukit Timah Road; Lower Peirce Reservoir; Mandai.

**Habitat/Ecology.** This species was mostly found in primary and/or mature secondary forests in Singapore, including native-dominated secondary forest. The ants have sometimes been found in *Nepenthes* pitcher cups, and also frequently collected with ground pitfall traps.



***Crematogaster (Orthocrema) myops* Forel, 1911**

**Material examined.** Queens, males, and workers, Bukit Timah Nature Reserve, 8 Aug 2017, W. Wang leg., ZRC\_HYM\_0001745; queens and workers, same locality as previous, 4 Jan 2017, W. Wang leg., WW-SG17-003, ZRC\_HYM\_0000566; queens and workers, same locality as previous, 1.35386, 103.77988, 23 Aug 2017, W. Wang leg., WW-SG17-063, ZRC\_ENT00047959; same locality as previous, 1.35764, 103.77491, 7 Jun 2017, W. Wang leg., WW-SG17-064, ZRC\_ENT00047960.

**Material not physically examined.** CASENT0914541, PSW09576-9 (PSWC).

**Literature.** Hosoishi et al. (2010).

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This small-eyed subterranean species was found in primary and old/mature secondary forests in Singapore. Nests were often found in, or in soil under rotting wood, also in soil substrate and debris at bases of trees, usually large dipterocarps.

**Remarks.** At the time of writing, this species is only known from one locality in Singapore.

***Crematogaster (Orthocrema) quadriruga* Forel, 1911**

**Material examined.** National University of Singapore campus (Clementi/Kent Ridge), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Pulau Semakau Old Fragment, SMO2, 1°12'20.2"N, 103°45'35.8"E, 5-12 Jul 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29343, ZRC\_BDP0015230; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000387-388; Sungei Buloh Wetland Reserve, 14 Mar 2018, W. Wang leg., WW-SG18-Crem1, ZRC\_ENT00000905; Ulu Sembawang Road, 17 May 1994, collector unknown, NS 135, ZRC\_ENT00000269; Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 15 Dec 2016, G.W. Yong leg., TT1TH548, ZRC\_HYM\_0001763.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** National University of Singapore campus (Clementi/Kent Ridge); Pulau Semakau Old Fragment; Pulau Ubin; Sungei Buloh Wetland Reserve; Ulu Sembawang Road; (beside) Temasek Polytechnic.

**Habitat/Ecology.** This species was often found in disturbed mature or young secondary forest fragments in urban or semi-urban settings, including waste woodlands, where the ants were found foraging on tree trunks. *Crematogaster quadriruga* has also been found in mangroves, where individuals have been collected from trails on elevated branches of living trees.

**Remarks.** This small, yellowish species is similar in appearance to *C. bandarensis*, but can be distinguished from the latter by its small propodeal spiracle that is located relatively apart from the metapleural gland bulla - in *C. bandarensis* the propodeal spiracle is large and touching the metapleural gland bulla.

***Dilobocondyla fulva* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0908982, ANTC31413 (MHNG); workers, queen and male, FOCOL1971-1974 (ZMHB) [as types of *D. cataulacoidea* var. *fulva*].

**Literature.** Type – Viehmeyer (1916), Overbeck (1924) [both as *D. cataulacoidea* var. *fulva*]. Wheeler (1924); Taylor (1991) [raised to species].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** A presumably arboreal species, the type colony series was found in a hollowed-out pith channel of a twig of a mangosteen tree in a garden.

**Remarks.** Type locality in Singapore. This species was originally described as a subspecies of *Dilobocondyla cataulacoidea* (see Viehmeyer 1916), before being raised to species status by Taylor (1991). A few congeneric worker specimens from the same locality (i.e., Bukit Timah Nature Reserve, not equivalent to the type locality) were determined to confer more with *D. sebesiana* Wheeler, 1924 *sensu lato* (uncertain since only the queen has been described for the latter species).



***Erromyrmica latinodis* (Mayr, 1872)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Monomorium latinoda* (sic) – misspelling of *M. latinode*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** This species was reportedly found in a garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on literature records.

***Eurhopalothrix heliscata* Wilson & Brown, 1985**

**Material examined.** Alate queen, Bukit Timah Nature Reserve, BT4, 1.35342, 103.77820, 1 Mar 2017, M.S. Foo leg., malaise trap, Reg. B8274, ZRC\_BDP0072108; Rifle Range Road, 6 Dec 2017, F. Ito leg., WW-SG17-024, ZRC\_ENT00000775; males, National University of Singapore (NUS) campus, 6 Dec 2017, F. Ito leg., emerged in lab – May – Jun 2019, F117-143 (SKYC).

**Material not physically examined.** Paratype – CASENT0900938, ANTC20060 (BMNH).

**Literature.** Type – Wilson & Brown (1984).

**Localities.** Bukit Timah Nature Reserve; NUS campus (Kent Ridge/Clementi); Rifle Range Road.

**Habitat/Ecology.** This species is associated with primary and old/mature secondary forests in Singapore. Nests were typically found in soil under rotting wood or fallen logs.

**Remarks.** Type locality in Singapore. The actual publication year of the article in which this species was first described is 1984, however 1985 appears to be the accepted publication year of the species in literature.

***Eurhopalothrix omnivaga* Taylor, 1990**

**Material examined.** Bukit Timah Nature Reserve, 25 Sep 2019, D.J. Court leg., ZRC\_ENT00013947; Nee Soon Swamp (Forest), 1.39932, 103.80954, 13 Sep 2015, M.K.L. Wong leg., ZRC\_ENT00000689.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species was found in primary and/or mature secondary forests in Singapore, including swamp forest. Specimens were collected from soil and leaf litter.

***Eurhopalothrix procera* (Emery, 1897)**

**Material examined.** Bukit Batok East, 29 Sep 2016, G.W. Yong leg., ZRC\_ENT00014124; alate queen, Bukit Timah Nature Reserve, 7 Sep 2016, M.S. Foo leg., ZRC\_HYM\_0001735; same locality as previous, 1.34796, 103.77914, 29 Oct 2015, M.K.L. Wong leg., ZRC\_ENT00000686; Loyang, 25 Dec 1991, D.H. Murphy leg., DHM-SG91-Eur1, ZRC\_ENT00027934; queens, male and workers, Mandai Track, 4 Jan 2017, G.W. Yong leg., GY-SG17-001, ZRC\_ENT00027987; Nee Soon, NS141A, 1994, collector unknown, ZRC\_ENT00027943; Upper Thomson Nature Park, 1.38311, 103.79839, 19 Oct 2016, G.W. Yong leg., UT2GH1613, ZRC\_HYM\_0001641.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok East; Bukit Timah Nature Reserve; Loyang; Mandai Track; Nee Soon; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with primary and secondary forests in Singapore, including young abandoned park and plantation secondary forests. Individuals were often collected from rotting logs and leaf litter. Nests were found under loose bark of fallen trees or logs.

**Remarks.** Often mistaken for and assumed to be *E. heliscata* (especially since *E. heliscata* was first described from Singapore), *E. procera* is morphologically distinct, e.g. body sculpture overall less coarse, body hairs sparse, generally finer and not explicitly clavate. Specimens in Singapore confer more with the form of *E. procera malua* (Mann, 1919) than the primary types of *E. procera*, although the subspecies is now considered a junior synonym of the latter (thus invalid). We observed distinct differences in structure between original *E. procera* and the currently invalid subspecies

*malua* that may warrant future raising of the latter to a separate species. For this checklist, however, in the absence of more compelling empirical evidence, we tentatively accept the conspecificity of *E. procera* and the subspecies *malua*.

***Gauromyrmex acanthinus* (Karavaiev, 1935)**

**Material examined.** Bukit Timah Nature Reserve, near BT05, 1.35386, 103.77988, 23 Aug 2017, W. Wang leg., WW-SG17-018, ZRC\_HYM\_0001747; same locality and collector as previous, 1 Nov 2017, ZRC\_EnT00047952.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary or old secondary forest in a single locality. In one instance, the ants were found nesting under the bark of a very large living tree. They were also observed in large dead logs or fallen rotting branches.

***Liomyrmex gestroi* (Emery, 1887)**

**Material examined.** Bukit Timah Nature Reserve, ca. 50 m uphill of Main Path, 1.3489, 103.77736, 15 Mar 2017, W. Wang leg., trunk cavity of very large fallen tree, ZRC\_HYM\_0001169; Nassim Road, 25 Sep 1969, D.H. Murphy leg., ZRC\_HYM\_0000018; Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001072; Rifle Range Road, 27 Jul 2016, G.W. Yong leg., ZRC\_HYM\_00000994; Racecourse forest, 11 Jan 1981, D.H. Murphy leg., DHM-SG81-Lio1, ZRC\_ENT00027928.

**Material not physically examined.** Non-type workers, specific locality unknown, Sk. Yamane leg. (SKYC) – in Rigato & Bolton (2011).

**Literature.** Rigato & Bolton (2011); Yong et al. (2017).

**Localities.** Bukit Timah Nature Reserve; Nassim Road; Pulau Ubin; Rifle Range Road; Racecourse Forest.

**Habitat/Ecology.** This species is associated with primary or secondary forests in Singapore, including young secondary forests. The ants have been found mostly in or under bark of large dead trees in old secondary forest. In one instance, nestmates were found in the trunk cavity of a very large, relatively fresh-fallen tree. Though often reported elsewhere to be associated with termites, no such associations were observed or recorded for local occurrences of this species. The ants have also been found boring in rotten timber under bark of standing dead trees ca. 50 feet above ground, in deep bark scrapings of trees, and under frais-filled bark.

***Lophomyrmex bedoti* Emery, 1893**

**Material examined.** Locality and collection date unknown (only ‘Singapore’ indicated on label), D.H. Murphy leg., ZRC\_HYM\_0000634; locality unknown [but deduced as Nee Soon based on ‘swamp forest’ on original label], 14 Apr 1993, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road; Nee Soon.

**Habitat/Ecology.** This species was found in the rotten trunk of a fallen tree on the ground, in a garden. More recently these ants were also collected from swamp forest.

***Lordomyrma* cf.sp.7.of.SKY (\*excluded from official named species count)**

**Material examined.** Queens, males and workers, Mandai, Northern Node, 1.40842, 103.78319, 54 m a.s.l., 25 Jul 2019, J. Tan & S. Tang leg., JTNC-MIC-005, ZRC\_ENT00013559; Mandai Bike Trail, 1.40469, 103.77653, 10 Mar 2016, M.K.L. Wong leg., ZRC\_ENT00000690; Mandai Track, 4 Jan 2017, G.W. Yong leg., ZRC\_ENT00027990; Pulau Ubin, 12 Jan 2015, W. Wang leg., ZRC\_ENT00000980; Upper Thomson Road, 11 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0000997.

**Material not physically examined.** Unknown.

**Literature.** None. New genus record.

**Localities.** Mandai; Pulau Ubin; Upper Thomson Road.

**Habitat/Ecology.** This species was collected from old or mature secondary forests, including abandoned plantation forest. The ants were sometimes found nesting in fallen rotting wood, logs or tree branches.

**Remarks.** This is the first record of the genus *Lordomyrma* in Singapore; unfortunately, we were unable to identify local specimens to known species at the time of writing. This species should be closely related to *L. reticulata* or *L. azumai* based on general habitus and strong rugulose-reticulate sculpture. It is most similar morphologically to *L. idianale* that was described from the Philippines, but with small nodules on the pronotal humeri amongst other more subtle differences.

***Mayriella transfuga* Baroni Urbani, 1977**

**Material examined.** Bukit Timah Nature Reserve, BT07, 1.35499, 103.78167, 22 Dec 2016, W. Wang leg., soil, WW-SG16-005, ZRC\_HYM\_0000353; same locality as previous, 1.34796, 103.77914, 29 Oct 2015, M.K.L. Wong leg., Berlese extraction, ZRC\_ENT00000691-692; Nee Soon, 1.38245, 103.80206, 46 m, 26 Apr 2018, W. Wang leg., Winkler extraction, NS\_W2, ZRC\_ENT00000954; Pulau Ubin, 22 Oct 2016, W. Wang leg., Winkler extraction, ZRC\_ENT00000987; same locality as previous, Jalan Sam Heng, 1.41260, 103.99317, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., Winkler extraction, ZRC\_HYM\_0001136.

**Material not physically examined.** ANIC32-014977, Shattuck1345185593; ANIC32-015009, Shattuck1345233190 (ANIC).

**Literature.** Taylor (1991); Shattuck & Barnett (2007).

**Localities.** Bukit Timah Nature Reserve; Nee Soon; Pulau Ubin.

**Habitat/Ecology.** This species was found mostly in primary and/or mature secondary forests, as well as young secondary forests in Singapore, including *Adinandra belukar* and swamp forest. These minute ants were usually collected from leaf litter or leaf mound berlesate.

***Meranoplus bicolor* (Guérin-Ménéville, 1844)**

**Material examined.** Botany Dept. Garden (NUS), 1 Nov 1990, H.K. Lua leg., ZRC\_ENT00000260; Changi sand dunes, 21 Nov 1982, D.H. Murphy leg., ZRC\_HYM\_0000696; Commonwealth Avenue West, 6 Apr 2006, H.K. Lua leg., LHK 461, ZRC\_HYM\_0000187; I-cube building (NUS), 1.29347, 103.77633, 24 Jun-1 Jul 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0054, ZRC\_BDP0044222; University Town (NUS), 1.30622, 103.77458, Apr-May 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP multiple; Kranji Road, 1.42638, 103.75413, 1-10 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001274-1278; Pulau Ubin, 1.40308, 103.96924, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001073; Queen's Crescent, 14 Mar 2006, H.K. Lua leg., LHK 460, ZRC\_HYM\_0000185; Sime Road, 14 Jul 2009, H.K. Lua leg., LHK 508, ZRC\_HYM\_0000188; Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 13-15 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001272-1273; Tuas West Drive, 31 Mar 2007, H.K. Lua leg., LHK 466, ZRC\_HYM\_0000184; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000406-407; Western Catchment, 1.40866, 103.70185, 20 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000693.

**Material not physically examined.** Non-types, J.K. Wetterer leg. (JKWC) - Kallang, Riverside Park, 29 Jul 2014, vial #372; Punggol, by MRT station, 30 Jul 2014, vial #390; Bishan, 31 Jul 2014, vial #424; Tai Seng, by MRT station, 31 Jul 2014, vial #422; East Coast Park (Katong), 1 Aug 2014, vial #442; Pasir Panjang, by MRT station, 5 Aug 2014, vial #482; Singapore Botanic Gardens, 5 Aug 2014, vial #477.

**Literature.** Viehmeyer (1916); Overbeck (1924); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Timah Road; Changi; Commonwealth Avenue West; East Coast Park (Katong part); Kranji Road; National University of Singapore campus (multiple sites); Pasir Panjang; Pulau Ubin; Punggol; Queen's Crescent; Riverside Park (Kallang); Sime Road; Sin-

gapore Botanic Gardens; Tai Seng; Temasek Polytechnic; Tuas West Drive; Upper Peirce Reservoir; Western Catchment.

**Habitat/Ecology.** This species was commonly found in young secondary forests in Singapore, also in recreational parks and other cultivated areas in urban or semi-urban settings, and grasslands. Individuals have also been collected from disturbed and waste woodland secondary forests; one occurrence reported in marshland. This species is known to nest in soil and forage mostly on the ground, though individuals have been collected via malaise traps and sweep netting of vegetation. One ground nest was described as forming ‘narrow passages in loamy soil which go deep below the surface.’

***Meranoplus malaysianus* Schödl, 1998**

**Material examined.** Holland Woods, 1.32982, 103.78236, 16 Oct 2017, W.N. Lam leg., HW02\_05, ZRC\_ENT00047926; Kent Ridge, 1.28707, 103.7862, 9 Jan 2018, R.J.Y. Lim et al. leg., ZRC\_ENT00047841; same locality and collectors as previous, 1.28791, 103.7855, 19 May 2017, ZRC\_ENT00047842.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Holland Woods; Kent Ridge.

**Habitat/Ecology.** This minute species was found in mature secondary forests, frequently in lower pitcher contents of *Nepenthes ampullaria* or *N. rafflesiana*.

***Meranoplus mucronatus* Smith, 1857**

**Material examined.** Mandai, 10 Sep 1980, Tay Soon Cheng leg., sugar [sic] plantation, ZRC\_ENT00047925; locality and collectors unknown, Oct–Nov 1988, ZRC\_ENT00028677.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai

**Habitat/Ecology.** This species was once found in a sugarcane plantation in Singapore.

**Remarks.** This species is the largest of the genus *Meranoplus* in the Oriental region, and can be easily distinguished from its congeners in the same region by its strikingly armed pronotal shield. The record of *M. mucronatus* in Viehmeyer (1916) was of specimens from Gunung Angsi in Malaysia, not Singapore as is often mistaken.

***Metapone murphyi* Wang, Yamada & Eguchi, 2019**

**Material examined.** Holotype, Pulau Sakra, 7 Mar 1981, D.H. Murphy leg., DHM-SG81-Meta1, ZRC\_ENT00000878; paratypes, worker, queens and males, same locality and collecting data as holotype, ZRC\_HYM\_0000016.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2019).

**Localities.** Pulau Sakra

**Habitat/Ecology.** The type series of this species was found in a decayed coconut stump, on an offshore island that has long since been heavily developed for industrial purposes.

**Remarks.** Type locality in Singapore. At the time of writing, the only known record of this species is that of the type series from Singapore. Considering the elusive termitophilous nature of the genus *Metapone*, *M. murphyi* might be thriving elsewhere undiscovered on the main island or other offshore islands in association with termite nests.

***Monomorium atomum procax* Forel, 1911**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0908766, ANTC31116 (MHNG).

**Literature.** Type – Forel (1911) [as *Monomorium (Martia) atomus* var. *procax*]. Viehmeyer (1916), Overbeck (1924) [both as *M. (Martia) atomus* var. *procax*].

**Localities.** Bukit Timah Hill; Bukit Timah Road.

**Habitat/Ecology.** This species was found in primary or mature/old secondary forest, also in a garden, where colonies were collected from dead, hollowed-out (tree) branches.

**Remarks.** Type locality in Singapore. We do not have more recent physical material for reliable systematic assessment. Differences between *M. atomum* and its subspecies *procax* are also subtle and difficult to discern from type images on AntWeb. Nevertheless, we observed one striking difference: the propodeum in *M. atomum* is distinctly much longer than wide in dorsal view, whereas in *M. atomum procax* the propodeum is only slightly longer than wide. We maintain the subspecies *procax* for want of more compelling empirical evidence and material to support a raise in status to species.

***Monomorium butteli demochrum* Viehmeier, 1916**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0908694, ANTC31044 (MHNG); dealate queen and workers, FOCOL1693-1696 (ZMHB).

**Literature.** Type – Viehmeier (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** The type series was found in a garden under a portico, specifically under a flower-pot on a table.

**Remarks.** Type locality in Singapore. At the time of writing, the only record of this species is that of the type series from Singapore.

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

**Material examined.** Bukit Batok East, 1.34304, 103.76235, Sep-Oct 2016, G.W. Yong leg., trunk pitfall, ZRC\_HYM\_0001282-1283; Commonwealth Road, 1.31115, 103.78171, 22-24 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001286-1287; Kranji Road, 1.42638, 103.75413, 1-3 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001288-1289; queens, males and workers, National University of Singapore campus (Clementi/Kent Ridge, multiple sites), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000380-381; queens, males and workers, Sungei Buloh Wetland Reserve, 28 Mar 2018, W. Wang leg., WW-

SG18-Mono1, ZRC\_ENT00000959; queens and workers, same locality as previous, 8 Jan 2014, Sk. Yamane leg., SG14-SKY-34, ZRC\_HYM\_0000440; Sunset Way, 1.32609, 103.77187, 21-23 Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001280-1281; Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 13-15 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001284-1285; Upper Thomson Nature Park, 1.38311, 103.79839, Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001290-1292.

**Material not physically examined.** Non-types, J.K. Wetterer leg. (USNM) – Amber Road (Katong), 28 Jul 2014, vials #331, 345, 351; Riverside Park (Kallang), 29 Jul 2014, vial #372; City Hall, by church, 29 Jul 2014, vial #374; Outram Park, by MRT station, 29 Jul 2014, vial #379; Queenstown, 29 Jul 2014, vial #383; Promenade, by MRT station, 4 Aug 2014, vial #468.

**Literature.** Viehmeier (1916); Overbeck (1924); Wang et al. (2018a).

**Localities.** Bukit Batok East; Commonwealth Road; Kranji Road; National University of Singapore campus (Clementi/Kent Ridge); Pulau Ubin; Sungei Buloh Wetland Reserve; Sunset Way; beside Temasek Polytechnic; Upper Thomson Nature Park.

**Habitat/Ecology.** This species appears very common in Singapore and was often found in a broad variety of different habitats across the disturbance spectrum, including: abandoned plantation and waste woodland secondary forests, disturbed secondary forest fragments in urban or semi-urban settings, gardens, mangroves, sometimes even in urban infrastructure including buildings. In mangroves, nests were found in bark of dead tree trunks, and also in dead twigs on trees, usually with multiple queens per colony. Colonies have also been found in hollow twigs of mangosteen trees and in withered bamboo.

**Remarks.** This species is a recognized common tramp ant widespread throughout the whole world, mostly in warm tropical regions.



***Monomorium hospitum* Viehmeyer, 1916**

**Material examined.** None available.

**Material not physically examined.** Syntypes – 4 queens, 4 males (MNHU). Types – queen, male, workers, FOCOL1727-1730 (ZMHB).

**Literature.** Type – Viehmeyer (1916), Overbeck (1924) [both as *Monomorium* (*Corynomyrmex*) *hospitum*]. Bolton (1987).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** The type series of this species was found with *M. floricola* workers in a garden, specifically inside the narrow passages of a branch stump.

**Remarks.** Type locality in Singapore. Based on images on AntWeb, the worker of *M. hospitum* resembles the more widespread *M. floricola*, but with subtle differences (*M. floricola* traits in parentheses): 1) posterior margin of head broadly convex, transitions to lateral margin in a smooth curve without apparent angle (posterior margin almost flat with weak median depression, posterior corners roundly angulate), 2) propodeal junction distinctly angulate (propodeal junction indistinct and obtusely rounded).

*Monomorium hospitum* was originally described based only on queens and males. Viehmeyer (1916) surmised that *M. hospitum* appeared ‘parasitic’ on *M. floricola*, as alates of the former species were collected from the latter’s nest. The author also felt that the alates of *M. hospitum* were distinct enough to warrant the establishment of a new subgenus — the now-defunct ‘*Corynomyrmex*’. The queen of *M. hospitum* is easily distinguished from that of *M. floricola* by its relatively convex mesosomal dorsum, such that mesosoma appears ovate in profile (in *M. floricola* queens, mesosomal dorsum is almost entirely flat and straight, mesosoma more cylindrical in profile).

***Monomorium monorium* Bolton, 1987**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Tan & Corlett (2012).

**Localities.** National University of Singapore campus (Kent Ridge); West Coast Park.

**Habitat/Ecology.** Specimens identified as this species were collected from young secondary forests, recreational parks (mown grassland with trees and shrubs), and open grasslands.

**Remarks.** At the time of writing, this presumably non-native species is only known from Singapore based on one relatively recent literature record that could not be verified for taxonomic accuracy. Some specimens available in the ZRC were morphologically similar to *M. monorium sensu lato* but could not be identified as the latter with confidence – these were at best designated as undescribed species of the *M. monorium* group.

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

**Material examined.** National University of Singapore (NUS) building, 10 Jul 2007, D. Lohman leg. (SKYC).

**Material not physically examined.** ANIC32-062894-062896 (ANIC); CASENT0102330, ANTC4573 (BMNH) [former lectotype of ‘*Myrmica fragilis*’ – now invalid name]; CASENT0008625, ANTC2204 (OUMNH) [former lectotype of ‘*Monomorium/Myrmica vastator*’ – now invalid name]. Non-types, J.K. Wetterer leg. (JKWC) – Harbourfront, 29 Jul 2014, vial #385; Katong, Amber Road, 31 Jul 2014, vial #434; Mountbatten, by MRT station, 4 Aug 2014, vial #465; Queenstown, 29 Jul 2014, vial #383.

**Literature.** Smith (1857) [as *Myrmica vastator*]; Smith (1858) [as *Myrmica fragilis*]; Viehmeyer (1916); Overbeck (1924); Heterick (2006); Tan & Corlett (2012).

**Localities.** Bukit Timah Road; Bukit Timah Nature Reserve (BTNR); Central Catchment Nature Reserve (CCNR); NUS campus.

**Habitat/Ecology.** These ants were commonly found both foraging and nesting indoors in artificial human-constructed infrastructure, such as in households and offices, also in back gardens of residential housing. This species was also reportedly collected at baited traps set up in primary and/or old secondary forests.

**Remarks.** As with many other congeners, *Monomorium pharaonis* is considered a globally widespread tramp ant, invasive to many areas, and is also infamous as a common household/indoor pest where it occurs. Records of the species from primary or old secondary forests in the CCNR and BTNR were only in literature and could not be taxonomically verified at the time of writing. It is possible that these records were cases of misidentification.

#### *Myrmecina bandarensis* Forel, 1913

**Material examined.** Alate queen, Nee Soon Swamp Forest, NS1, 1°23'00.3"N, 103°48'46.5"E, 28 Mar-4 Apr 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29157, ZRC\_BDP0014622.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** A single alate queen of this species was found in freshwater swamp forest, collected in a malaise trap sample.

#### *Myrmecina magnificens* Wong & Guénard, 2016

**Material examined.** Holotype, Central Catchment Nature Reserve, Seletar Trail, 1.39514, 103.80260, 47 m, 2 Sep 2015, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000665; Bukit Timah Nature Reserve, 1.34883, 103.77869, 9 May 2017, W. Wang leg., ZRC\_HYM\_0000982; same locality as previous, 30 May 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048382; Mandai Road, 1.41258, 103.79839, 5-7 Dec 2016, G.W. Yong leg., MID7GPb2495, ZRC\_HYM\_0001293.

**Material not physically examined.** Four paratype workers (HKUC).

**Literature.** Type - Wong & Guénard (2016).

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Road.

**Habitat/Ecology.** This species is associated with primary and/or mature secondary forests in Singapore, typically in soil and leaf litter.

**Remarks.** Type locality in Singapore.

#### *Myrmecina maryatae* Okido, Ogata & Hosoi, 2020

**Material examined.** Bukit Timah Nature Reserve, 1.35599, 103.77397, 2 Aug 2017, W. Wang leg., ZRC\_HYM0001743; Chestnut Nature Park, 1.37451, 103.78137, 27 Feb 2022, T.K.C. Leung leg., ZRC\_ENT00054741.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Chestnut Nature Park.

**Habitat/Ecology.** Individuals of this species were found in primary and *Dillenia suffruticosa*-dominated young secondary forest, on fallen logs.

***Myrmecaria adpressipilosa* Santschi, 1928 stat. n.** *Myrmecaria (Heptacondylus) arachnoidea* [sic] var. *adpressipilosa* Santschi, 1928: 130 (w.)  
Subspecies of *Myrmecaria arachnoides*: Bolton, 1995: 285; Pfeiffer et al., 2011: 16.

**Material examined.** Queen and workers, Nee Soon forest, 11 Feb 1974, D.H. Murphy leg., ZRC\_ENT00006313.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon forest

**Habitat/Ecology.** This species was found in swamp forest and/or its adjacent drier native-dominated secondary forest, also in old or mature secondary forest further inland. The ants build carton nests on leaves and foliage, usually on undersides of large tree leaves.

**Remarks.** *Myrmecaria adpressipilosa* was originally described as a subspecies of *Myrmecaria arachnoides* (Smith, 1857). Emery (1900) stated that *M. adpressipilosa* resembled *Myrmecaria arachnoides lutea* Emery, 1900 in terms of body colour and general habitus, but could be differentiated from the latter, by the mostly adpressed or decumbent hairs on its body. Based on colonies of both taxa from other parts of Southeast Asia, it was later determined that the adpressed hairs are really

an artifact and not diagnostic of the species (Bakhtiar & Yamane 2022, unpublished). Further examination of those colonies revealed more compelling differences between workers of both species (Bakhtiar & Yamane 2022, unpublished). *Myrmicaria adpressipilosa* can be distinguished from *M. arachnoides* based on the following (*M. arachnoides* traits in parentheses): 1) propodeal spiracle large, its maximum diameter slightly shorter or longer than distance between spiracle and dorsal margin of propodeum (propodeal spiracle small, its maximum diameter much shorter than distance between spiracle and dorsal margin of propodeum), 2) pronotal and propodeal sides irregularly striate (pronotal and propodeal sides extensively smooth and shining), 3) propodeal declivity with lateral longitudinal carinae (propodeal declivity lacking lateral carinae) [Bakhtiar & Yamane 2022, unpublished].

#### ***Myrmicaria arachnoides* (Smith, 1857)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Alate queens and males were found at a lit-lamp in a garden; in the same garden, a dealate queen was also found in a small pasteboard cell on the underside of a leaf.

**Remarks.** At the time of writing, this species is only known from Singapore based on past literature records. A number of the alates collected at the same time by Overbeck were later on identified as the subspecies *lutea* and *luteiventris* respectively (see Viehmeyer 1922).

#### ***Myrmicaria arachnoides lutea* Emery, 1900**

**Material examined.** None available.

**Material not physically examined.** Types – queens and males, FOCOL1602-1605 (ZMHB).

**Literature.** Viehmeyer (1922) [type queen and male].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Alates were collected from a lit-lamp in a garden.

**Remarks.** The queen and male of this subspecies were first described by Viehmeyer (1922) based on specimens collected from Singapore, that were in turn initially identified as *M. arachnoides* in Viehmeyer's earlier publication (see Viehmeyer 1916).

#### ***Myrmicaria luteiventris* Emery, 1900**

**Material examined.** Queens, males and workers, Pulau Ubin, 1.42022, 103.94598, 31 Aug 2016, M.S. Foo, W. Wang & M. Tuan leg., WW-SG16-001, ZRC\_HYM\_0000247; same locality as previous, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001079.

**Material not physically examined.** Type queen – FOCOL1597 (ZMHB).

**Literature.** Viehmeyer (1922) [type queen].

**Localities.** Bukit Timah Road; Pulau Ubin.

**Habitat/Ecology.** This subspecies was found in relatively disturbed old or mature secondary forest on an offshore island, where colonies were found in carton nests on the undersides of large leaves. Alates were collected from a lit-lamp in a garden.

**Remarks.** *Myrmicaria luteiventris* was originally described as a subspecies of *M. arachnoides*. It was later raised to species status in Pfeiffer et al. (2011), but the authors did not give any justification for this – it might have been likely a typographical error.

The queen of this species was first described by Viehmeyer (1922) based on specimens collected from Singapore, which were initially identified as *M. arachnoides* in Viehmeyer's earlier publication (see Viehmeyer 1916).

The workers of *M. luteiventris* resemble that of *M. arachnoides*, except for their gaster, which is (for at least its posterior half) much paler in colour than the head and mesosoma. In *M. arachnoides*, the body is not distinctly bicolorous.

Further examination of colonies from other parts of Southeast Asia revealed other more compelling differences between workers of both species (Bakhtiar & Yamane 2022, unpublished). *Myrmicaria luteiventris* can be distinguished from *M. arachnoides* based on the same characters described under Remarks for *M. adpressipilosa*. As with *M. arachnoides*, *M. luteiventris* can also be differentiated from *M. adpressipilosa* by the latter's generally uniform body colour.

### *Myrmicaria melanogaster* Emery, 1900

**Material examined.** Peirce Catchment, 28 Dec 1973, D.H. Murphy leg., A340-6, ZRC\_ENT00006312; same locality and collection data as previous, ZRC\_HYM\_0000771.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Peirce Catchment

**Habitat/Ecology.** This species appears associated with either primary or old/mature secondary forest in Singapore, as inferred from its collection locality. Some specimens were also collected from the forest edge.

### *Paratopula demeta* Bolton, 1988

**Material examined.** MacRitchie, 1.34291, 103.82689, 15 Jun 2016, M.K.L. Wong leg., MKLW000049, ZRC\_ENT00027953.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** MacRitchie

**Habitat/Ecology.** A single worker was found on a vine in primary or old/mature secondary forest. This genus is known to be largely arboreal.

### *Paratopula oculata* (Smith, 1857)

**Material examined.** Dealate queen, Sungei Buloh Wetland Reserve, SB2, 1°26'47.7"N, 103°43'49.9"E, 24-31 Oct 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29544, ZRC\_BDP0016446.

**Material not physically examined.** One female specimen (queen) in BMNH – identified by Bolton (1988).

**Literature.** Bolton (1988).

**Localities.** Sungei Buloh Wetland Reserve

**Habitat/Ecology.** A single queen was found in a malaise trap sample from mangroves.

**Remarks.** Queens and males of this species can be distinguished from other congeners by the presence of long, acutely-pointed, curved fine hairs projecting from the tibiae, also similar long and fine curved standing hairs on entire body dorsum, including the head (Bolton 1988).

### *Pheidole aglae* Forel, 1913

**Material examined.** Sunset Way, 1.32609, 103.77187, 21-23 Sep 2016, G.W. Yong leg., pitfall trap, SW5GPc324, ZRC\_HYM\_0001779.

**Material not physically examined.** FOCOL1356 (ZMHB) [type of *P. exasperata* var. *polita* – now invalid name].

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pheidole exasperata* var. *polita*]; Eguchi (2001); Tan & Corlett (2012).

**Localities.** Bukit Timah Hill; MacRitchie Reservoir; Sunset Way.

**Habitat/Ecology.** This species was found mostly in primary or mature secondary forests in Singapore, sometimes young secondary habitats such as abandoned plantation secondary forests. Colonies have been found in rotten branches and rotting wood on the forest floor.

### *Pheidole aristotelis* Forel, 1911

**Material examined.** Bukit Timah Nature Reserve, 1.35499, 103.78167, 19 Jul 2017, W. Wang leg., ZRC\_ENT00047932; same locality as previous, 5 Jun 1968, D.H. Murphy leg., D6-10, ZRC\_HYM\_0000733; Mandai Road, 1.41155, 103.79015, 21 Nov 2016, G.W. Yong leg., M2D1GH1938, ZRC\_HYM\_0001782.

**Material not physically examined.** Unknown.

**Literature.** Eguchi (2001); Tan & Corlett (2012).

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Road.

**Habitat/Ecology.** This species was found in primary or old/mature secondary forests in Singapore, including native-dominated secondary forest.

***Pheidole binghamii* Forel, 1902**

**Material examined.** Seletar Link, 1.40518, 103.88555, 25 Oct 2016, G.W. Yong leg., SL6GH1060, ZRC\_HYM\_0001780.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Seletar Link

**Habitat/Ecology.** Individual workers were collected from waste woodland secondary forest.

**Remarks.** At the time of writing, this species is only known from a one locality in Singapore.

***Pheidole cariniceps* Eguchi, 2001**

**Material examined.** Bukit Timah Nature Reserve, 24 Aug 2015, J. Koh leg., ZRC\_ENT00013867; queen and workers, same locality as previous, 1.35386, 103.77988, 4 Jan 2017, W. Wang leg., WW-SG17-004, ZRC\_HYM\_0000568; same locality as previous, plot III-2, 12 Oct 2015, D.J. Court leg., pit-fall trap, ZRC\_ENT00048443; Mandai Road, 1.41258, 103.79839, 16 Nov 2016, G.W. Yong leg., M1D4GH2163, ZRC\_HYM\_0001777.

**Material not physically examined.** Unknown.

**Literature.** Tan & Corlett (2012).

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Road.

**Habitat/Ecology.** This species was found in primary and old/mature secondary forests in Singapore, including native-dominated secondary forest. The ants were found in rotting wood; individuals were usually collected from leaf litter.

***Pheidole clypeocornis* Eguchi, 2001**

**Material examined.** Bukit Timah Nature Reserve, BT05, 1.35386, 103.77988, 4 Jan 2017, W. Wang leg., WW-SG17-001, ZRC\_HYM\_0000564; same locality and collector as previous, BT02, 15 Mar 2017, WW-SG17-040, ZRC\_ENT00007803; queen and workers, Mandai Lake Road, Night Safari, N01°24'22.0", E103°47'04.7", 48 m, 8 Sep 2020, J.S. Tan & M. Bte. Hussin leg., JTM-MIS-017, ZRC\_ENT00047775; males,

queens and workers, National University of Singapore campus (Clementi/Kent Ridge, multiple sites), Apr-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** Unknown.

**Literature.** Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Lake Road; National University of Singapore campus (Clementi/Kent Ridge).

**Habitat/Ecology.** This species was found in both primary and old/mature secondary forests in Singapore, including disturbed secondary forest fragments in urban or semi-urban settings. In primary forest, colonies were found in fallen twigs or in soil near bases of aged rotting wood. In old secondary forest, the ants were found nesting under bark of fallen rotting branches or logs, also on leaf litter. Numerous alates were collected from cultivated grassy patches and disturbed secondary forest fragments in urban and semi-urban settings, using malaise traps.

**Remarks.** The minor workers of *P. clypeocornis* are almost indistinguishable from those of *P. hortensis*. Species occurrence was therefore only confirmed where major workers were available, or when DNA barcodes (from alates and minors) matching the verified species were obtained (see Wang et al. 2018a).

***Pheidole elisae* Emery, 1900**

**Material examined.** Bukit Timah Nature Reserve, plot III-2, 19 Apr 2016, D.J. Court leg., pit-fall trap, ZRC\_ENT00048453; Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048424.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Mandai Lake Road.

**Habitat/Ecology.** This species was found in old or mature secondary forests in Singapore.



### *Pheidole fervens* Smith, 1858

**Material examined.** Labrador beach, 29 Apr 1985, D.H. Murphy leg., ZRC\_HYM\_0000728.

**Material not physically examined.** Syntypes – CASENT0901519-0901520, ANTC21037 (BMNH).

**Literature.** Type – Smith (1858). Viehmeyer (1916), Overbeck (1924) [both as *Pheidole javana*]. Eguchi (2001, 2004); Sarnat et al. (2015).

**Localities.** Bukit Timah Road; Labrador beach.

**Habitat/Ecology.** This species is associated with a wide variety of habitats in Singapore, especially in heavily disturbed areas in urban and/or semi-urban settings such as public beaches, roadsides, and forest edges. Nests were typically found in soil or under stones, also in rotten wood, and in dead tree stumps filled with ‘humus’ or other debris. In one instance, a colony was observed underneath a decaying fallen tree, ‘partly in the tree’ and ‘partly in (sic) the ground.’

**Remarks.** Type locality in Singapore. Substantial numbers of specimens of this species were observed amongst existing unsorted and uncatalogued museum material. Thus it could be inferred that the species is much more common than was represented by official catalogued records of the ZRC, at the time of writing. It is known as a globally widespread and potentially invasive species, and could be native to a large part of the Indomalayan bioregion or the Oceanic region (Sarnat et al. 2015).

### *Pheidole hortensis* Forel, 1913

**Material examined.** Bukit Timah Nature Reserve, BT08, 1.35435, 103.78225, 14 Dec 2016, W. Wang leg., WW-SG16-004, ZRC\_HYM\_0000294.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** A colony was found in soil near tree roots in mature secondary forest.

**Remarks.** The minor workers of *P. hortensis* are almost indistinguishable from those of *P. clypeicornis*. Species identity was therefore only confirmed for material where major workers were available.

### *Pheidole magretti* Emery, 1887

**Material examined.** Sungei Buloh Wetland Reserve, 1.44614, 103.73048, 14 Mar 2018, M.S. Foo leg., WW-SG18-Phei1, ZRC\_ENT00000901.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Sungei Buloh Wetland Reserve

**Habitat/Ecology.** This species was found nesting in fallen rotting wood in mangrove back forest.

**Remarks.** A few hours after collection, majors and minors of this species were observed to each possess a pair of conspicuous opaque bright yellow spots/patches at base of gaster (first gastral tergite), spots dissipated 2 days after collection — possibly midgut or crop contents, fatty mass. The major worker confers most with *P. magretti* *sensu lato*, with lateral face of occipital lobe and gena mostly smooth and shiny.

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

**Material examined.** Bukit Batok East Avenue 6, 1.34304, 103.76235, 30 Aug 2016, G.W. Yong leg., BB4GH101, ZRC\_HYM\_0001776; Bukit Timah forest, Oct 1968, D.H. Murphy leg., ZRC\_HYM\_0000739; University campus (Bukit Timah), 23 Jun 1968, D.H. Murphy leg., ZRC\_HYM\_0000738.

**Material not physically examined.** In Wetterer (2012) – site unknown, 1879, F. Smith (BMNH). Non-types, ANIC32-022899 (ANIC). Non-types, J.K. Wetterer leg. (USNM) – Bishan, by MRT station, 31 Jul 2014, vial #424; Harbourfront, 4 Aug 2014, vial #469; Little India, 27 Jul 2014, vial #330; Mountbatten, by MRT station, 4 Aug 2014, vial #465; Promenade, by MRT station, 4 Aug 2014, vial #466.

**Literature.** Forel (1901); Wetterer (2007, 2012); Tan & Corlett (2012).

**Localities.** Bishan; Bukit Batok East; Bukit Timah forest; Harbourfront; Little India; Mountbatten; University campus (Bukit Timah); National University of Singapore campus (Clementi/Kent Ridge); Promenade.

**Habitat/Ecology.** This species was found mostly in disturbed young secondary forest fragments in urban or semi-urban settings in Singapore, including waste woodlands and abandoned plantation forests, also along exposed forest fringes. Sometimes, ant trails were also found within urban man-made infrastructure such as concrete buildings, typically close to adjoining patches of disturbed spontaneous vegetation.

**Remarks.** Commonly known as the ‘African big-headed ant’, *P. megacephala* is a recognized globally widespread and particularly aggressive invasive species. It has been reported to often have severe negative impacts on native invertebrate fauna where it occurs (Wetterer 2012a). The native range of *P. megacephala* is presumably the Afrotropical region (Wetterer 2015),

#### *Pheidole nodgii* Forel, 1905

**Material examined.** None available.

**Material not physically examined.** Type males – FOCOL1362-1364 (ZMHB).

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Colonies of this species were found in a garden, under a flower-pot and on a felled tree on the ground respectively.

**Remarks.** The male of *P. nodgii* was first described based on specimens collected from Singapore (see Viehmeyer 1916).

#### *Pheidole nodgii verlatenensis* Wheeler, 1937

**Material examined.** Bukit Timah Nature Reserve, 1.35284, 103.77995, 11 Jan 2017, W. Wang leg., WW-SG17-008, ZRC\_HYM\_0000579; Mandai Road, 1.41258, 103.79839, 21 Dec 2016, G.W. Yong leg., M1D20GH2080, ZRC\_HYM\_0001531.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Mandai Road.

**Habitat/Ecology.** This subspecies was found in old or mature native-dominated secondary forest in Singapore. A colony was found in soil near rotting wood.

**Remarks.** Specimens available at the time of writing could not be definitely and confidently identified to species based on morphology, in the absence of type images or material for comparison. For the purposes of this checklist, we tentatively treat these specimens as *Pheidole nodgii verlatenensis sensu lato*, with the caveat that this record may change in future if more information or material becomes available for a more accurate species diagnosis.

#### *Pheidole parva* Mayr, 1865

**Material examined.** Bukit Timah Nature Reserve, along path, 22 Sep 2016, W. Wang leg., ZRC\_ENT00000894; Kranji Road, 1.42638, 103.75413, 8-10 Nov 2016, G.W. Yong leg., KR9GPa1492, ZRC\_HYM\_0001774; males and workers, Prince George’s Park Residences (NUS), 1.292389, 103.774583, Apr-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); males and workers, University Town (NUS), 1.30622, 103.77458, Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); male, Pulau Semakau New Fragment, SMN1, 1°12’03.1”N, 103°45’45.4”E, 25 Oct-1 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29547, ZRC\_BDP0016131; alate queen, Pulau Semakau Old Fragment, SMO3, 1°12’23.9”N, 103°45’37.6”E, 13-20 Aug 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29435 ZRC\_BDP0016540.

**Material not physically examined.** Unknown.

**Literature.** Man & Lee (2012); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Kranji Road; National University of Singapore campus (Clementi/Kent Ridge, multiple sites); Pulau Semakau.

**Habitat/Ecology.** This tiny and inconspicuous species was found in a wide variety of habitats, mostly highly disturbed areas including young waste woodland secondary forest fragments and cultivated parks/gardens in urban or semi-urban settings. These ants have also been reported in mangroves, open grasslands, trailside along forest edges, and even on impervious surfaces in residential areas and other man-made infrastructure (see Tan &

Corlett 2012). Individuals were often found in soil and leaf litter, in rotting wood, under stones or root mats.

**Remarks.** *Pheidole parva* is a relatively widespread species presumed native to the Indomalayan bioregion and introduced outside thereof (Sarnat et al. 2015). It appears well-adapted to human-dominated environments, and is considered invasive in parts of the Old World (Fischer & Fisher 2013). The species has been suggested to have potential to becoming indoor nuisance pests where they occur in large numbers (Man & Lee 2012; Sarnat et al. 2015)

### *Pheidole plagiararia* Smith, 1860

**Material examined.** Bukit Batok East Avenue 6, 1.34304, 103.76235, 5 Oct 2016, G.W. Yong leg., BB6GH412, ZRC\_HYM\_0001778; Bukit Timah, Hindhede Drive, 25 Nov 1989, H.K. Lua leg., ZRC\_ENT00000247; Bukit Timah Nature Reserve, 1.35284, 103.77995, 11 Jan 2017, W. Wang leg., WW-SG17-006, ZRC\_HYM\_0000574; Lorong Banir, 16 Jun 1995, Yang & Lua leg., ZRC\_ENT00000377; Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048426; Mandai Road, 1.41258, 103.79839, 21 Dec 2016, G.W. Yong leg., MID3GH2059, ZRC\_HYM\_0001781; I-cube building (NUS), 29 Jul-5 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0042659; Pulau Ubin, PU1, 1°24'36.3"N, 103°59'25.5"E, 17-24 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29592, ZRC\_BDP0015318; same locality and collectors as previous, 12-19 Oct 2013, malaise trap, Reg. 30212, ZRC\_BDP0016192.

**Material not physically examined.** Unknown.

**Literature.** Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Bukit Batok; Bukit Timah Nature Reserve; Lorong Banir; Mandai Lake Road; Mandai Road; National University of Singapore campus (Clementi/Kent Ridge); Pulau Ubin.

**Habitat/Ecology.** This species was found in a broad range of habitats spanning across different levels of the disturbance spectrum, including primary and mature secondary forests, young secondary forest fragments in semi-urban settings, mangrove back forests, scrub and open grasslands. Sometimes, the ants were even observed foraging on impervious surfaces in man-made infrastructure. Nests were found in rotting wood, also in soil at bases of large trees.

### *Pheidole plinii* Forel, 1911

**Material examined.** Mandai Road, 1.41155, 103.79015, 21-23 Nov 2016, G.W. Yong leg., pitfall trap, M2D2GPD1956, ZRC\_HYM\_0001789.

**Material not physically examined.** Syntype – CASENT0904258, ANTC24164 (MSNG). Lectotype and paralectotype – CASENT0907938-0907939, ANTC29069-29070 (MHNG).

**Literature.** Type – Forel (1911). Eguchi (2001) [designation of lectotype, paralectotypes].

**Localities.** Mandai Road

**Habitat/Ecology.** While no detailed habitat information was available for the type series, more recently-collected material were mainly from old or mature native-dominated secondary forests.

**Remarks.** Type locality in Singapore.

### *Pheidole rinae* Emery, 1900

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Individuals of this species were found in a garden, some on fallen Jambu (*Syzygium samarangense*) fruits on the ground.

**Remarks.** At the time of writing, this species is only known from Singapore based on past literature records.

***Pheidole rufigera* Eguchi, 2001**

**Material examined.** Bukit Batok East Avenue 6, 1.34304, 103.76235, 27–29 Sep 2016, G.W. Yong leg., pitfall trap, BB9GPc472, ZRC\_HYM\_0001788.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok

**Habitat/Ecology.** Individuals of this species were collected from an abandoned plantation secondary forest fragment in semi-urban settings.

***Pheidole sexspinosa* Mayr, 1870**

**Material examined.** Kranji mangroves, 9 May 1985, D.H. Murphy leg., DHM-SG85-Phei-ss1, ZRC\_ENT00000768; Lim Chu Kang mangrove, 10 Mar 1987, D.H. Murphy leg., DHM-SG87-Phei-ss1, ZRC\_ENT00000769; same locality as previous, 27 Feb 2002, BL1101 Helpers leg., ZRC\_ENT00007572; queen and workers, Mandai mangroves, 27 Oct 1977, D.H. Murphy leg., DHM-SG77-Phei-ss2, ZRC\_ENT00000770; same locality and collector as previous, 18 Oct 1977, DHM-SG77-Phei-ss3, ZRC\_ENT00000772; same locality and collector as previous, 2 Oct 1978, ZRC\_ENT00027931; queen and workers, same locality as previous, 8 May 2018, W. Wang leg., WW-SG18-Phei4, ZRC\_ENT00007290; Sungei Buloh Wetland Reserve, 1.4462, 103.73058, 14 Mar 2018, W. Wang leg., WW-SG18-Phei3, ZRC\_ENT00000908-909; same locality as previous, 1.4472, 103.72537, 20 Dec 2018, W. Wang & M.S. Foo leg., WW-SG18-Phei5, ZRC\_ENT00007644.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018b).

**Localities.** Kranji mangroves; Lim Chu Kang mangrove; Mandai mangroves; Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** This species is associated exclusively with mangrove habitats in Singapore. Nests can be found in abandoned *Thalassina* (a.k.a mud lobsters) mounds — sometimes shared with other invertebrates including the mangrove trap-jaw ant *Odontomachus litoralis*, cable roots of mangrove trees such as *Excoecaria agallocha* L., or in decayed or living stems of *Rhizophora* above tide inundation levels.

***Pheidole singaporensis* Özdikmen, 2010**

**Material examined.** Bukit Timah Nature Reserve, 15 Aug 2011, J. Koh leg., Winkler extraction, ZRC\_ENT00000893; same locality as previous, 2011, M.S. Foo leg., ZRC\_ENT00007794-7796; same locality as previous, 1.35386, 103.77988, 4 Jan 2017, W. Wang leg., WW-SG17-002, ZRC\_HYM\_0000565; same locality as previous, 28 Mar, collection year unknown, D.H. Murphy leg., ZRC\_HYM\_0000740; Lower Peirce Reservoir, Aug 1990, collectors unknown, ZRC\_ENT (multiple); same locality as previous, 7 May 2017, G.W. Yong leg., ZRC\_ENT00048417; Mandai Road, 1.41258, 103.79839, ZRC\_HYM\_0001538-1543; Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048425; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-48, ZRC\_HYM\_0000367.

**Material not physically examined.** Types – CASENT0901398, ANTC20921 (OUMNH); CASENT0901505, ANTC21025 (BMNH) [as syntypes of *Myrmica longipes*].

**Literature.** Type – Smith (1857) [as *Myrmica longipes*]. Eguchi (1999, 2001, 2003), Tan & Corlett (2012) [all as *Pheidole longipes*].

**Localities.** Bukit Timah Nature Reserve; Lower and Upper Peirce Reservoir; Mandai Lake Road; Mandai Road.

**Habitat/Ecology.** This species is associated mostly with primary and old/mature secondary forests in Singapore, including native-dominated secondary forests. Nests were frequently found under fallen logs, or in soil at bases of living trees or dead tree stumps. Individual workers were often found foraging in leaf litter. The ants are often found at high densities or abundances in and around nesting sites.

**Remarks.** Type locality in Singapore. Previously known as '*Pheidole longipes* (Smith, 1857)', before being rendered the current replacement name by Özdikmen (2010) as the original name was a junior secondary homonym of '*Pheidole longipes* (Latreille, 1802)'.

***Pheidole singaporensis conicollis* (Emery, 1900)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pheidole (Ischnomyrmex) longipes* var. *conicollis* (sic)].

**Localities.** Bukit Timah Hill

**Habitat/Ecology.** This subspecies was found in either primary or old secondary forest, in a rotten, half-decayed tree branch on the ground.

**Remarks.** The subspecies *conicollis* may be distinguished from *P. singaporensis* by a slightly wider head, and relatively shorter/less elongate occipital collar or 'neck'; other more subtle differences include relatively shorter propodeal spines and a weakly pointed petiolar apex (as opposed to an almost flat apico-dorsal petiolar face in *P. singaporensis*) At the time of writing, this subspecies is known from Singapore only based on literature records.

***Pheidole singaporensis continentis* (Forel, 1911)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pheidole (Ischnomyrmex) longipes* var. *continentis*].

**Localities.** Bukit Timah Hill

**Habitat/Ecology.** This subspecies was found in either primary or old secondary forest, in a rotten tree branch on the ground.

**Remarks.** Said to be of intermediate form between *P. singaporensis* and its other subspecies *conicollis* in Forel's (1911) original description, the subspecies *continentis* is in general smaller and lighter-coloured than *P. singaporensis*. At the time of writing, this subspecies is known from Singapore only based on literature records.

***Pheidole tandjongensis* Forel, 1913**

**Material examined.** Mandai Road, 1.41155, 103.79015, 21-23 Nov 2016, G.W. Yong leg., pitfall trap, M2D2GPd1957, ZRC\_HYM\_0001785.2; same locality and collector as previous, 19 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001033; Upper Thomson

Nature Park, 1.38311, 103.79839, 17-19 Oct 2016, G.W. Yong leg., pitfall trap, UT5G-Pd1634, ZRC\_HYM\_0001785.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road; Upper Thomson Nature Park.

**Habitat/Ecology.** This species was found in both old/mature and young secondary forests in Singapore. Specimens have been collected using pitfall traps from native-dominated and abandoned plantation secondary forests.

***Pheidole tjibodana* Forel, 1905**

**Material examined.** Mandai Road, 1.41119, 103.80513, 29 Nov-1 Dec 2016, G.W. Yong leg., pitfall trap, M3D6GPa890, ZRC\_HYM\_0001784; same locality and collector as previous, 1.41258, 103.79839, 6-8 Dec 2016, G.W. Yong leg., pitfall trap, M1D6G-Pa2312, ZRC\_HYM\_0001784.2.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road

**Habitat/Ecology.** This species was found in old/mature native-dominated secondary forest in Singapore. Individuals were observed in or under leaf litter.

***Pheidole umbonata* Mayr, 1870**

**Material examined.** Pulau Semakau Old Fragment, SMO2, 1°12'20.2"N, 103°45'35.8"E, 16-23 Aug 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29421, ZRC\_BDP0016529; same locality and collectors as previous, SMO3, 1°12'23.9"N, 103°45'37.6"E, 11-18 Oct 2012, malaise trap, Reg. 29526, ZRC\_BDP0014518; Pulau Ubin, PU3, 1-8 Sep 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29451, ZRC\_BDP0016449; Sungei Buloh Wetland Reserve, SB1, 1°26'46.3"N, 103°43'49.9"E, 17-24 Oct 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29530, ZRC\_BDP0017348; same locality and collectors as previous, 8-15 Aug 2012, malaise trap, Reg. 29400, ZRC\_BDP0017287; same locality and collectors as previous, 24-31 Oct 2012, malaise trap, Reg. 29543, ZRC\_BDP0017276.



**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Semakau; Pulau Ubin; Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** Male alates were collected from mangroves in Singapore.

**Remarks.** Specimens available for examination were all winged males collected using malaise traps, thus were not taxonomically verifiable by morphology, which requires other castes especially major workers. The males from the ZRC were identified to *P. umbonata* solely based on COI barcodes (313 bp), which were matched against sequences of known species on GenBank using BLAST. We cannot completely rule out the possibility of misidentification of source organisms to gene sequences on GenBank. This record will need to be revised should more material be made available in future to disprove this tentative COI-based species diagnosis.

#### *Pristomyrmex bicolor* Emery, 1900

**Material examined.** Nee Soon Swamp Forest, 17 Dec 1987, D.H. Murphy leg., ZRC\_ENT00000913; same locality and collector as previous, near Nageia track, 26 Oct 1995, ZRC\_ENT00007573.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** Found in swamp forest, in one instance on a fallen tree trunk.

#### *Pristomyrmex brevispinosus* Emery, 1887

**Material examined.** Bukit Timah Nature Reserve, 1.35127, 103.78161, 28 Jun 2017, W. Wang leg., ZRC\_HYM\_0001733; Kent Ridge Park, YM site 2, 7 Dec 2017, W. Wang leg., ZRC\_ENT00027982; workers, alate queen and male, same locality and collection date as previous, F. Ito leg. (SKYC); Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048421; Mandai Road, 1.41258, 103.79839, 21-23 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001706-1707; same locality

as previous, 1.41343, 103.79386, 21-23 Nov 2016, G.W. Yong et al. leg., MID16TPc1996, ZRC\_ENT00047917; Pulau Ubin, 4 Dec 2016, G.W. Yong leg., ZRC\_ENT00027981; Upper Thomson Nature Park, 1.38311, 103.79839, 19 Oct 2016, G.W. Yong leg., UT2GH1620, ZRC\_HYM\_0001705.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Kent Ridge Park; Mandai Lake Road; Mandai Road; Pulau Ubin; Upper Thomson Nature Park.

**Habitat/Ecology.** This species was mainly found in disturbed secondary forests across a range of ages (young – old), including abandoned plantation and native-dominated secondary forests. Individuals were typically collected from soil and root substrate matrices at bases of trees, rotting fallen tree trunks, and sometimes on tree trunks.

#### *Pristomyrmex costatus* Wang, 2003

**Material examined.** Mandai, 1.40144, 103.77702, 7 Apr 2016, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000696; Prince George's Park Residences (NUS), 1.29239, 103.7787, 3 May 2017, W. Wang leg., ZRC\_HYM\_0001171; same locality as previous, 6 Dec 2017, Sk. Yamane leg. (SKYC); Seletar Reservoir, 16 May 1994, collector unknown, NS 134B, ZRC\_ENT00000266; Upper Thomson Road, 2 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001046; Western Catchment, 1.40866, 103.70185, 20 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000695.

**Material not physically examined.** In Wang (2003) but specimen repositories not specified – Nee Soon Swamp forest, R.W. Taylor leg., collection date unavailable; Bukit Timah Nature Reserve, D.H. Murphy leg., collection date unavailable.

**Literature.** Wang (2003).

**Localities.** Bukit Timah Nature Reserve; Mandai; Nee Soon Swamp Forest; Prince George's Park Residences (NUS); Seletar Reservoir; Upper Thomson Road; Western Catchment.

**Habitat/Ecology.** This species is associated mostly with old/mature secondary forests in Singapore, including native-dominated forest and swamp forest. It was sometimes also found in young abandoned plantation secondary forest fragments. Levels of disturbance vary widely between forest sites. Individuals of this species were usually found in leaf litter, sometimes on tree branches. Nests were collected from rotten logs.

***Pristomyrmex picteti* Emery, 1893**

**Material examined.** None available.

**Material not physically examined.** In Wang (2003) but specimen repositories not specified – locality and collection date unavailable, Baker coll.

**Literature.** Wang (2003).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

***Pristomyrmex punctatus* (Smith, 1860)**

**Material examined.** Bukit Batok East Avenue 6, 1.34304, 103.76235, 1 Sep 2016, G.W. Yong leg., ZRC\_HM\_0001704; Bukit Batok East, 1.34218, 103.76316, Aug-Sep 2016, G.W. Yong et al. leg., ZRC\_ENT00047915-47916; Upper Thomson Road, 2 Oct 2016, G.W. Yong leg., ZRC\_ENT00000981.

**Material not physically examined.** In Wang (2003) but specimen repositories not specified – locality and collection date unavailable, H. Overbeck coll.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as '*Pristomyrmex* (sic) *pungens*']. Wang (2003).

**Localities.** Bukit Batok East; Bukit Timah Road; Upper Thomson Road.

**Habitat/Ecology.** This species is associated mostly with young secondary forests in Singapore, including abandoned plantation secondary forest, and has also been found in gardens. These ants are known to frequently occur in open and disturbed habitats, and were usually found nesting in soil, leaf litter, or rotting wood.

***Proatta butteli* Forel, 1912**

**Material examined.** Bukit Timah Nature Reserve, 8 Dec 1995, H.K. Lua et al. leg., NS 208A, ZRC\_ENT00000362; same locality as previous, 6 Jul 2015, J. Koh leg., ZRC\_ENT00000890; Lower Peirce Reservoir Road, 28 Jul 1990, H.K. Lua leg., LHK 108, ZRC\_ENT00000403; MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000425-426; Mandai Road, 1.41258, 103.79839, 16-18 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001629-1632; Nee Soon forest, 16 Aug 2017, W. Wang leg., ZRC\_ENT00047966; male, Prince George's Park Residences (NUS), 1.29239, 103.77869, 29 Apr-6 May 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0021, ZRC\_BDP0041414; Pulau Ubin, 1.40822, 103.97051, 15 Oct 2016, G.W. Yong et al. leg., ZRC\_HYM\_0001074; same locality as previous, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001075; Seletar Reservoir Park, 17 Mar 1998, C.M. Yang leg., ZRC\_HYM\_0000267; Upper Thomson Nature Park, 1.38311, 103.79839, Sep-Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001626-1628.

**Material not physically examined.** Non-types, CASENT0178527, ANTC8736 (MCZ); Harbourfront, Marang Trail, 4 Aug 2014, vial #472 (JKWC).

**Literature.** Viehmeyer (1916); Overbeck (1924); Weber (1958); Moffett (1986); Wheeler & Wheeler (1986); Tan & Corlett (2012).

**Localities.** Singapore Botanic Gardens; Bukit Timah Nature Reserve; Bukit Timah Road; Harbourfront; Lower Peirce Reservoir Road; MacRitchie Reservoir; Mandai Road; Nee Soon; Prince George's Park Residence (NUS); Pulau Ubin; Seletar Reservoir Park; Upper Thomson Nature Park.

**Habitat/Ecology.** This species was found mainly in old/mature or young secondary forests in Singapore, including abandoned plantation and native-dominated secondary forests, and sometimes in semi-urban parklands or gardens. These ants were collected from bamboo shoots, soil, leaf litter, even decaying logs.

***Rhopalomastix glabricephal* Wang, Yong & Jaitrong, 2018**

**Material examined.** Holotype – Mandai Road, 1.41379, 103.7982, 16 Nov 2016, G.W. Yong & K.H. Pwa leg., GY-SG16-RhoE, ZRC\_ENT00000873; paratypes – same collection data as holotype, ZRC\_HYM\_0000508.

**Material not physically examined.** Unknown.

**Literature.** Type – Wang et al. (2018c).

**Localities.** Mandai Road [type]

**Habitat/Ecology.** The type series was found in mature native-dominated secondary forest, where the ants were nesting in bark of a *Tembusu* tree. As with other congeners, this species lives in apparent mutualistic association with scale insects (Diaspididae). The ants consume the waxy protein-rich cuticular secretions of the diaspidids, in exchange the latter gets protection from external elements or enemies.

**Remarks.** Type locality in Singapore. At the time of writing, this species is known from Singapore only by the type series collected from a single locality.

***Rhopalomastix javana* Wheeler, 1929**

**Material examined.** Bukit Timah Nature Reserve, 1.35449, 103.78211, 21 Jun 2017, C. Peeters leg., WW-SG17-015, ZRC\_HYM\_0001732; Mandai forest, 1.40931, 103.78334, 13 Nov 2018, W. Wang leg., WW-SG18-Rho3, ZRC\_ENT00007584; Mandai Track, 4 Jan 2017, G.W. Yong leg., GY-SG17-RhoN, ZRC\_HYM\_0000576.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018c); Wang et al. (2021).

**Localities.** Bukit Timah Nature Reserve; Mandai forest; Mandai Track.

**Habitat/Ecology.** Found mostly in old or mature secondary forests in Singapore, including native-dominated secondary forest. The ants were found nesting in bark of large dipterocarp trees, such as *Camponosperma auriculatum* (locally-known as ‘*Terentang*’).

***Rhopalomastix johorensis* Wheeler, 1929**

**Material examined.** Syntypes of ‘*R. rothneyi* subsp. *johorensis*’ – no specific locality given, MCZ-ENT00023066 (MCZ). Non-types – Bukit Timah Nature Reserve, 1.35127, 103.78161, 1 Nov 2017, W. Wang leg., WW-SG17-022, ZRC\_HYM\_0001794; Hougang Avenue 3, 1.34769, 103.88838, 12 Dec 2016, G.W. Yong & S.X. Chui leg., GY-SG16-RhoL, ZRC\_HYM\_0000511; male, I-cube building (NUS), 1.293472, 103.77633, 24 Mar-1 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0002, ZRC\_BDP0044708; Lee Kong Chian Natural History Museum (NUS), side yard, 24 Aug 2018, G.W. Yong leg., WW-SG18-Rho1, ZRC\_ENT00007463; queens and workers, Mandai Road, 1.41445, 103.79831, 4 Oct 2018, G.W. Yong & W. Wang leg., WW-SG18-RhoMA, ZRC\_ENT00007519; males and workers, Mandai Road, 1.41333, 103.79839, 18 Nov 2016, G.W. Yong & S.X. Chui leg., GY-SG16-RhoF, ZRC\_HYM\_0000289; queen and workers, Mandai Road, 1.41318, 103.79405, 21 Nov 2016, G.W. Yong and S.X. Chui leg., GY-SG16-RhoH, ZRC\_HYM\_0000291; same locality as previous, 13 Jan 2017, G.W. Yong leg., GY-SG17-RhoO, ZRC\_HYM\_0000577; queens and workers, Mandai forest, near Zoo, 15 Jan 2020, W. Wang leg., WW-SG20-005 – 006, ZRC\_ENT00027891-27892; Nee Soon Swamp Forest, 24 Sep 2019, W. Wang leg., WW-SG19-005, ZRC\_ENT00013876; queen and workers, Pulau Tekukor, 1.23081, 103.83774, 15 Jan 2017, G.W. Yong leg., GY-SG17-RhoP, ZRC\_HYM\_0000578; male, Pulau Ubin, PU1, 1°24′36.3″N, 103°59′25.5″E, 1-8 Sep 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29449, ZRC\_BDP0014267; male, Pulau Semakau Old Fragment, SMO3, 1°12′23.9″N, 103°45′37.6″E, 17-25 Oct 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29539, ZRC\_BDP0014651; queens and workers, Upper Seletar Reservoir Park, 14 Feb 2018, G.W. Yong leg., GY-SG18-Rho1, ZRC\_ENT00000897.

**Material not physically examined.** CASENT0911229, ANTC33476 (MHNG) [headless worker].

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Rhopalomastix rothneyi* Forel, 1900 – verified as *R. rothneyi johorensis* by Wheeler (1929)]. Wheeler (1929) [as *R. rothneyi johorensis*]. Wang et al. (2018c); Wang et al. (2021).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Hougang; National University of Singapore campus (Clementi/Kent Ridge, multiple sites); Mandai Road; Mandai forest near Singapore Zoo; Nee Soon Swamp Forest; Pulau Tekukor; Pulau Semakau; Pulau Ubin; Upper Seletar Reservoir Park.

**Habitat/Ecology.** *Rhopalomastix johorensis* appears ubiquitous locally and could be found in a broad range of different habitat types, including urban or semi-urban habitats (such as roadside vegetation), parks and gardens, old/mature and native-dominated secondary forests, and swamp forests. The ants nest in bark of various trees, both native species such as: *Aquilaria malaccensis*, *Artocarpus integer (cempedak)*, *Camposperma auriculatum*, *Macaranga gigantea*, *Horsfieldia sparsa*, and also introduced tree species such as *Mangifera indica* (mango). Nests have also been found in dead ends of twigs of cultivated mangosteen trees, and in bark of durian trees. Multiple nests (one nest per tree) can occur at relatively high densities per site where the species occurs — these are probably independent colonies and not satellites of a larger super-colony. The species appears tolerant to high levels of habitat disturbance. Males were collected from malaise traps set up in mangroves.

**Remarks.** Type locality in Singapore. As with many congeners, this species is known to exhibit very broad intranidal, generally isometric size variation.

***Rhopalomastix murphyi* Wang, Yong & Jaitrong, 2018**

**Material examined.** Holotype – Upper Thomson Nature Park, 1.38653, 103.81938, 24 Oct 2016, G.W. Yong & S.X. Chui leg., durian tree, GY-SG16-RhoA, ZRC\_ENT00000874; paratype males, queens and workers, same collection data as holotype, ZRC\_HYM\_0000287. Non-types – queens and workers, Bukit Timah Nature Reserve, 2 Jan 1981, D.H. Murphy leg., DHM-SG81-Rho1, ZRC\_HYM\_0000009; Mandai Lake Road, 1.40915, 103.78234, 3 Nov 2016, G.W. Yong & C. Peeters leg., GY-SG16-RhoD, ZRC\_HYM\_0000507; males and workers, Mandai Road, 1.4144, 103.79845, 4 Oct 2018, G.W. Yong & W. Wang leg., WW-SG18-Rho2, ZRC\_ENT00007518; Upper Thomson Road, 29 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001008-1014.

**Material not physically examined.** Unknown.

**Literature.** Type – Wang et al. (2018c). Yong et al. (2019).

**Localities.** Bukit Timah Nature Reserve; Mandai Lake Road; Mandai Road; Upper Thomson Nature Park [type]; Upper Thomson Road.

**Habitat/Ecology.** This minute, yellowish-brown species was found mostly in old/mature or young secondary forests, including abandoned plantation forest. Colonies could be found nesting in bark of live durian trees or other large dipterocarps, e.g. Myristicaceae, where nests were often observed to be rather extensive, sprawled across an indeterminate expanse of the host tree trunk. Colonies were observed to be polygynous, i.e., each colony houses multiple queens. The ants also live with diaspidid scale insects in their nests, with which they share a seeming obligate relationship. The diaspidids allow the ants to consume their waxy outer scale secretions in exchange for apparent protection from predators. Silk spinning behaviour has been documented in this species (Yong et al. 2019), where the ants produce silk from head glands in order to secure nest tunnels.

**Remarks.** Type locality in Singapore.

***Rhopalomastix striata* Wang, Yong & Jaitrong, 2018**

**Material examined.** Holotype – Mandai Road, 1.4144, 103.79845, 18 Nov 2016, G.W. Yong & S.X. Chui leg., GY-SG16-RhoG, ZRC\_ENT00000876; paratype males and workers, same collection data as holotype, ZRC\_HYM\_0000290. Non-types – queens and workers, Bukit Timah Nature Reserve, BT05, 1.35386, 103.77988, 30 Aug 2017, W. Wang leg., WW-SG17-Rho1, ZRC\_HYM\_0001752; queen and workers, same locality as previous, BT03, 1.34904, 103.77892, 27 Sep 2017, W. Wang leg., WW-SG17-021, ZRC\_HYM\_0001793; same locality as previous, BT02, 1.35599, 103.77397, 12 Jul 2017, W. Wang leg., WW-SG17-RhoR, ZRC\_ENT00027915; queens and workers, Mandai forest, near Singapore Zoo, 15 Jan 2020, W. Wang leg., WW-SG20-004, ZRC\_ENT00027890; Mandai Road, 1.40824, 103.802, 21 Dec 2016, G.W. Yong leg., GY-SG16-RhoM, ZRC\_HYM\_0000512; queen and workers, Rifle Range Road, 6 Dec 2017, W. Wang leg., WW-SG17-046, ZRC\_ENT00027893.

**Material not physically examined.** Unknown.

**Literature.** Type – Wang et al. (2018c).

**Localities.** Bukit Timah Nature Reserve; Mandai forest; Mandai Road [type]; Rifle Range Road.

**Habitat/Ecology.** This species is associated mostly with primary and old/mature secondary forests in Singapore. Nests were found in bark of various large native dipterocarp trees, e.g. *Endospermum diadenum*, *Prunus* sp., and *Shorea curtisii*. In one instance, the ants were found nesting in bark of large buttress root near tree base.

**Remarks.** Type locality in Singapore.

***Rhopalomastix tenebra* Wang, Yong & Jaitrong, 2018**

**Material examined.** Holotype – Upper Thomson Nature Park, 1.38653, 103.81938, 24 Oct 2016, G.W. Yong & S.X. Chui leg., durian tree, GY-SG16-RhoB, ZRC\_ENT00000877; paratype male, queens and workers,

same collection data as holotype, ZRC\_HYM\_0000288. Non-types – Bukit Timah Nature Reserve, 9 Mar 1983, D.H. Murphy leg., ZRC\_HYM\_0000686; Mandai forest, 1.40843, 103.78326, 13 Nov 2018, W. Wang leg., WW-SG18-Rho4, ZRC\_ENT00007585; Namly Avenue, 28 Apr 1985, D.H. Murphy leg., DHM-85-Rho1, ZRC\_ENT00000885; Upper Thomson Road, 11 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001015-1022.

**Material not physically examined.** Unknown.

**Literature.** Type – Wang et al. (2018c).

**Localities.** Bukit Timah Nature Reserve; Mandai forest; Namly Avenue; Upper Thomson Nature Park [type]; Upper Thomson Road.

**Habitat/Ecology.** This species was found mainly in old/mature and young secondary forests in Singapore, including abandoned plantation forest. Nests were found in bark of large dipterocarp trees such as durian.

**Remarks.** Type locality in Singapore.

***Rostrormex pasohensis* Rosciszewski, 1994**

**Material examined.** None available.

**Material not physically examined.** CASENT0106221 – 106221-D01, PSW09576-15 (UCDC).

**Literature.** None. New record.

**Localities.** Bukit Timah

**Habitat/Ecology.** Individuals were usually found in sifted forest litter (comprising leaf mold and rotten wood) from primary or old/mature secondary forests.

***Rotastruma recava* Bolton, 1991**

**Material examined.** None available.

**Material not physically examined.** Paratypes – 3 workers, CASENT0178523, ANTC8732 (MCZ); 4 queens and 17 workers [BMNH, MHNG – according to Bolton (1991)]. Non-types – CASENT0010807 – 10808, PSW10254 (UCDC); 2 queens and 1 male, CASENT0010926 – 10928, PSW10254 (UCDC); CASENT0102499, ANTC4706 (MHNG); CASENT0106250 – 106250-D01/D11, PSW09601 (UCDC).

**Literature.** Paratype – Bolton (1991).

**Localities.** Bukit Timah [type]; Peirce Reservoir.



**Habitat/Ecology.** This species is associated with primary and old/mature secondary rainforest. Apparently arboreal, these ants were found in dead twigs, vines, or dead twigs of vines. Sometimes, individuals were collected from surfaces of tree trunks and/or branches.

**Remarks.** The secondary type locality for this species is in Singapore, where paratypes were collected. The holotype specimen was collected in Mulu National Park in Sarawak (Malaysia), the primary type locality.

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

**Material examined.** Kranji mangroves, 24 Sep 1964, D.H. Murphy leg., ZRC\_ENT00047993; Lim Chu Kang, Oct 1969, D.H. Murphy leg., DHM-SG69-So11, ZRC\_ENT00047992; University campus, 17 Dec 1980, D.H. Murphy leg., DHM-SG80-So11, ZRC\_ENT00047994; Phillip Street, 24 Jun 2011, ex. sugar container, R. Lohman leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** Mayr (1897).

**Localities.** Kranji; Lim Chu Kang; Phillip Street; University campus (Bukit Timah).

**Habitat/Ecology.** This species was found in a range of habitat types, including disturbed secondary forest fragments in semi-urban settings, mangrove back forests, and even in cultivated farmland – where the ants were foraging on *Solanum melongena* L. (eggplant). Ant trails were also observed in close proximity to *Termes rostratus* mounds in disturbed forest patches.

**Remarks.** Commonly known as the ‘tropical fire ant’, *S. geminata* is a cosmopolitan pest species believed to have originated from the Neotropics and spread to much of the Old World, mainly tropical Asia and Oceania, via human commerce (Wetterer 2011, 2015). Its notoriety as a worldwide invasive has in recent times been somewhat downplayed in contrast to the growing infamy of the closely-related congener *S. invicta* – the ‘imported fire ant’. The latter species continues to be the dominant focus of most pest invasions research and press reports till present.

#### *Solenopsis overbecki* Viehmeyer, 1916

**Material examined.** Mandai forest, 7 Jun 2018, W. Wang leg., WW-SG18-001, ZRC\_ENT00027959; same locality and collector as previous, 7 Jun 2018, W. Wang leg., WW-SG18-003, ZRC\_ENT00047997; Nee Soon forest, 26 Apr 2018, W. Wang leg., WW-SG18-007, ZRC\_ENT00047962; Pulau Ubin, 1.41320, 103.97720, 17 Nov 2021, W.N. Lam leg., ZRC\_ENT00057811; Upper Peirce Reservoir Park, 1.35229, 103.82450, 21 Oct 2021, same collector as previous, ZRC\_ENT00057812.

**Material not physically examined.** Types – CASENT0908878, ANTC31310 (MHNG); 3 queens and 3 workers, FOCOL1870 – 1875 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road [type]; Mandai; Nee Soon forest; Pulau Ubin; Upper Peirce Reservoir.

**Habitat/Ecology.** The type series was collected from a garden, where the colony was found in the narrow passages within a broken branch piece on the ground. The type colony is described to be polygynous with multiple dealate queens. In more recent times, the species was also found in old or mature secondary forests, either in leaf litter, or nesting inside root cavities embedded in soil mounds next to termite nests. In one instance, the ants were also found nesting in bark of *Rhodamnia cinera*.

**Remarks.** Type locality in Singapore.

#### *Strumigenys chapmani* Brown, 1954

**Material examined.** Bukit Timah Nature Reserve, 8 Mar 2017, W. Wang leg., WW-SG17-032, ZRC\_ENT00001000; queens and workers, same locality and collector as previous, 22 Feb 2017, WW-SG17-033, ZRC\_ENT00007240; males and workers, same locality and collector as previous, 22 Feb 2017, WW-SG17-034, ZRC\_ENT00007241; same locality and collector as previous, 1.35435, 103.78225, 14 Dec 2016, WW-SG16-002, ZRC\_HYM\_0000281.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with old/mature secondary forests in Singapore. Nests were observed to occur at rather high density (separated only by a few metres from each other) within a limited area of forest, though these could possibly be merely satellite colonies. The ants were usually found nesting in soil-roots-substrate matrices on bark/trunk surfaces near bases of trees.

### *Strumigenys eggersi* Emery, 1890

**Material examined.** Queens and workers, Prince George's Park Residences (NUS), 1.292389, 103.77869, 5 Apr 2017, W. Wang leg., ZRC\_HYM\_0000608; alate queens, same locality as previous, May-Jun 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); queens and workers, Pulau Ubin, 22 Oct 2016, W. Wang leg., leaf litter, Winkler extraction, ZRC\_ENT00007274; Sunset Way, 1.32608, 103.77187, 21-23 Sep 2016, G.W. Yong leg., pitfall trap, SW1GPb238, ZRC\_HYM\_0001636.

**Material not physically examined.** Non-types, J.K. Wetterer leg. (USNM) – East Coast Park (Katong part), 1 Aug 2014, vial #442; Marine Parade, 1 Aug 2014, vial #435.

**Literature.** Wang & Yamane (2017).

**Localities.** Prince George's Park Residences (NUS); Pulau Ubin; Sunset Way.

**Habitat/Ecology.** This species was found in disturbed mature or young secondary forest fragments in semi-urban settings, including abandoned plantation secondary forest. Workers and queens were collected mainly from leaf litter or ground debris; multiple alate queens were also collected via malaise traps.

**Remarks.** An introduced species native to the Neotropical region, *S. eggersi* has been reported to be an unusually resilient species tolerant of relatively dry environments, and adaptable to a broad range of habitats including highly disturbed forests (Deyrup 1997; Wang & Yamane 2017).

### *Strumigenys emmae* (Emery, 1890)

**Material examined.** Queens and males, I-cube building (NUS), 1.293472, 103.77633, Jun-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); alate queen, Kranji Road, 1.42638, 103.75413, 8-10 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001637; Labrador beach, collection date unknown, D.H. Murphy leg., ZRC\_HYM\_0000780; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_ENT00000970; male, University Town (NUS), 1.30622, 103.77458, 29 Jul – 5 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0042899.

**Material not physically examined.** Non-types, J.K. Wetterer leg. (USNM) – East Coast Park (Katong part), 1 Aug 2014, vial #442; Hougang, 30 Jul 2014, vial #402; Kranji, by MRT station, 2 Aug 2014, vial #452; Pasir Panjang, by MRT station, 5 Aug 2014, vial #483; Serangoon, 30 Jul 2014, vial #389.

**Literature.** Szabó (1909), Donisthorpe (1916), Bolton (2000) [all as *Epitritus clypeatus*].

**Localities.** I-cube building (NUS); Kranji Road; Labrador beach; Pulau Ubin; University Town (NUS).

**Habitat/Ecology.** This species was found in a sandy beach, also disturbed secondary forest fragments or open grassy patches in semi-urban settings, including waste woodland forest. On one occasion, individuals were found on decayed wood. Multiple alates were collected from secondary and/or open habitats via malaise traps.

**Remarks.** A recognized and apparently successful pantropical tramp species, *S. emmae* is deemed to have originated from Australia (Bolton 2000) or Australasia (Wetterer 2015), and spread nearly worldwide by human commerce and natural dispersal. The species is known to frequently thrive in highly disturbed and anthropogenically-modified habitats such as beaches and gardens (Wetterer 2012b).

***Strumigenys epyna* Bolton, 2000**

**Material examined.** Queens and workers, Mandai Road, 21 Dec 2016, G.W. Yong leg., GY-SG16-Strum2, ZRC\_ENT00007266.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road

**Habitat/Ecology.** A nest series was found in either mature or young secondary forest in Singapore.

***Strumigenys extemena* (Taylor, 1968)**

**Material examined.** Bukit Timah Nature Reserve, 23 Aug 2017, W. Wang leg., ZRC\_ENT00007252; same locality and collector as previous, 13 Sep 2017, W. Wang leg., ZRC\_ENT00007253.

**Material not physically examined.** Holotype – ANIC32-001163, berl.no.B45 (Berlesate) (ANIC).

**Literature.** Type – Taylor (1968) [as *Dysedrognathus extemenus*]. Bolton (2000) [as *Pyramica extemena*].

**Localities.** Bukit Timah Nature Reserve [type]

**Habitat/Ecology.** This species is associated with primary and old/mature secondary forests in Singapore. The ants were usually found in soil at bases of trees.

**Remarks.** Type locality in Singapore. “Degraded coastal hill forest on granite” printed on the original type label is probably an inaccurate description of the actual forest types in Bukit Timah Nature Reserve (BTNR), based on known land use histories of BTNR and its surroundings.

***Strumigenys godeffroyi* Mayr, 1866**

**Material examined.** Kent Ridge, 13 Feb 1985, D.H. Murphy leg., ZRC\_HYM\_0000790; Mandai forest, at border with Central Catchment Nature Reserve, 1.40933, 103.78339, 13 Nov 2018, W. Wang leg., ZRC\_ENT00007587.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924); Bolton (2000).

**Localities.** Bukit Timah Road; Kent Ridge; Mandai forest.

**Habitat/Ecology.** This species was found in a garden inland, nesting in fibrous tissue about the base of leaves of a coconut palm (‘tree’). Individuals were also found under brick in a semi-urban setting, vegetation-type unknown. The ants were also collected from old/mature secondary forest.

**Remarks.** *Strumigenys godeffroyi* is known to be a tramp species widely distributed across islands in the Pacific and Indian Ocean. At the time of writing, substantial material in the ZRC were at best identified to the eponymous *godeffroyi* species complex, but could not be reliably verified as *S. godeffroyi* mostly due to poor specimen condition such as abraded hairs. Pilosity is an important state used to differentiate between members of the *godeffroyi* complex.

***Strumigenys juliae* Forel, 1905**

**Material examined.** Bukit Timah Nature Reserve, near BT02, 17 Nov 2016, W. Wang leg., ZRC\_ENT00007283; same locality and collector as previous, near BT07, 28 Sep 2016, W. Wang leg., ZRC\_ENT00007286; queens and workers, same locality and collector as previous, Aug-Dec 2016, leaf litter, Winkler extraction, ZRC\_ENT00007287-7288; same locality and collector as previous, near BT05, 14 Sep 2016, leaf litter, Winkler extraction, ZRC\_ENT00007289; queens and workers, Mandai, Northern Node, 1.40842, 103.78319, 54m a.s.l., 25 Jul 2019, J.Tan & S. Tang leg., JTST-MIS-010, ZRC\_ENT00013873.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Bukit Timah Nature Reserve; Mandai.

**Habitat/Ecology.** This species was found mostly in primary and old/mature secondary forests, sometimes in young secondary forest in Singapore. These ants were collected mainly from leaf litter; nests were found in fallen rotting wood.

***Strumigenys koningsbergeri* Forel, 1905**

**Material examined.** Bukit Timah Nature Reserve, near BT09, 5 Oct 2016, W. Wang leg., leaf litter, Winkler extraction, ZRC\_ENT00007246; same locality and collector as previous, near BT03, 11 Aug 2016, ZRC\_ENT00007259; same locality and collector as previous, near BT07, 28 Sep 2016, leaf litter, Winkler extraction, ZRC\_ENT00007260; Lower Peirce Reservoir, Forest B, 25 Aug 1990, collector unknown, ZRC\_ENT00000104; Nee Soon forest, 2 Oct 2017, W. Wang leg., WT\_FL1/NS2, ZRC\_ENT00007258.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Lower Peirce Reservoir; Nee Soon forest.

**Habitat/Ecology.** This species was found mostly in old/mature secondary forests in Singapore. Nests were found in fallen rotting wood; individual specimens were often collected from leaf litter and ground debris via Winkler extraction.

***Strumigenys kraepelini* Forel, 1905**

**Material examined.** Queen and workers, Bukit Timah Nature Reserve, near BT09, 5 Oct 2016, W. Wang leg., ZRC\_ENT00007245; queen and workers, same locality and collector as previous, near BT01, 1 Feb 2017, ZRC\_ENT00007272; same locality, site, and collector as previous, 8 Dec 2016, leaf litter, Winkler extraction, ZRC\_ENT00007275; same locality and collector as previous, near BT07, 28 Sep 2016, leaf litter, Winkler extraction, ZRC\_ENT00007276; same locality as previous, 6 Jun 1968, D.H. Murphy leg., D7-4, ZRC\_ENT00000795; Nee Soon, 18 Jun 1969, D.H. Murphy leg., D10-7, ZRC\_ENT00000785.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Bukit Timah Nature Reserve; Nee Soon.

**Habitat/Ecology.** This species was found in both old and mature secondary forests in Singapore. Individuals were usually collected from leaf litter, occasionally in rotten wood.

**Remarks.** At the time of writing, this species is known from only one locality in Singapore.

***Strumigenys membranifera* Emery, 1869**

**Material examined.** None available.

**Material not physically examined.** City Hall, by church, 5 Aug 2014, J.K. Wetterer leg., vial #488 (USNM).

**Literature.** None. New record.

**Localities.** City Hall

**Habitat/Ecology.** This species was found in soil or debris at bases of trees near urban infrastructure, i.e., a church in the central business district.

**Remarks.** This is a pantropical tramp species (Bolton 2000) with a broad cosmopolitan distribution (Wetterer 2011b); its presumed native range is the Afrotropical region (Wetterer 2015).

***Strumigenys mitis* (Brown, 2000)**

**Material examined.** Queen and workers, Bukit Timah Nature Reserve, near BT07, 28 Sep 2016, W. Wang leg., ZRC\_ENT00007242; same locality and collector as previous, near BT01, 8 Dec 2016, ZRC\_ENT00007243; same locality and collector as previous, near BT09, 5 Oct 2016, ZRC\_ENT00007244; queen and workers, Nee Soon forest, 1.38245, 103.80206, 46 m, NS\_W2, 26 Apr 2018, W. Wang leg., ZRC\_ENT00047851.

**Material not physically examined.** In Bolton (2000) – 1 non-type queen, locality unspecified (MCZ).

**Literature.** Bolton (2000) [as *Pyramica mitis*].

**Localities.** Bukit Timah Nature Reserve; Nee Soon forest.

**Habitat/Ecology.** This species was found mainly in old or mature secondary forest in Singapore, including *Adinandra belukar*-dominant forest, where individuals were usually collected from leaf litter.

**Remarks.** Elsewhere in the world, this species is known to be able to thrive in a wide range of habitats including heavily disturbed and degraded grasslands and plantations (see Tang et al. 2019).

***Strumigenys mutica* Brown, 1949**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this rare species is only known from Singapore based on a literature record, with no specific locality given.

***Strumigenys nanzanensis* Lin & Wu, 1996**

**Material examined.** Queen and workers, Bukit Timah Nature Reserve, near BT02, 2 Aug 2017, W. Wang leg., ZRC\_ENT00007271; Mandai Lake Road, Mandai Bird Park Buffer, N01°24'19.3", E103°46'56.2", 73 m a.s.l., 26 Mar 2020, W. Zhang leg., WZ-MIS-018, ZRC\_ENT00047777; Mandai Road, 21 Dec 2016, G.W. Yong leg., GY-SG16-Strum1, ZRC\_ENT00007267; queen, same locality as previous, 27 Jun 2019, J. Tan & N. Chin leg., ZRC\_ENT00013535; Mandai Track, 4 Jan 2017, G.W. Yong leg., ZRC\_ENT00007270; queen and workers, Upper Seletar Reservoir Park, 14 Feb 2018, G.W. Yong leg., GY-SG18-Strum1, ZRC\_ENT00007268; Upper Thomson Road, 2 Oct 2016, G.W. Yong leg., ZRC\_ENT00007269.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Mandai Lake Road (Bird Park Buffer); Mandai Road; Mandai Track; Upper Seletar Reservoir Park; Upper Thomson Road.

**Habitat/Ecology.** This species was found mostly in primary or mature secondary forests of varying levels of disturbance in Singapore, as well as young secondary forest such as abandoned plantation and parkland forest fragments in semi-urban settings. Individuals were found in leaf litter, also rotting wood and soil at bases of trees. On one occasion, some individuals were found in an *Anoplolepis gracilipes* nest in a fallen rotting tree branch.

***Strumigenys nepalensis* Baroni Urbani & De Andrade, 1994**

**Material examined.** Alate queen, Prince George's Park Residences (NUS), 1.292389, 103.77869, 17-24 Jun 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0044435.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000) [as *Pyramica nepalensis*].

**Localities.** Prince George's Park Residences (NUS)

**Habitat/Ecology.** An alate queen was collected from a malaise trap set up at a disturbed secondary forest fragment in semi-urban settings. At the time of writing, mounting evidence supports the apparent tramp nature of this species – it is currently known to be widely distributed in Asia and beyond (Tang et al. 2019).

***Strumigenys rofocala* Bolton, 2000**

**Material examined.** Queens and workers, Bukit Timah Nature Reserve, near BT01, 8 Dec 2016, W. Wang leg., leaf litter, Winkler extraction, ZRC\_ENT00007280; same locality and collector as previous, near BT02, 17 Nov 2016, leaf litter, Winkler extraction, ZRC\_ENT00007282; same locality and collector as previous, near BT07, 28 Sep 2016, ZRC\_ENT00007284; queens and workers, same locality and collector as previous, near BT06, 23 Aug 2016, leaf litter, Winkler extraction, ZRC\_ENT00007285; same locality and collector as previous, near BT09, 5 Jan 2016, leaf litter, Winkler extraction, ZRC\_ENT00048729; same locality as previous, plot III-2, 12 Oct 2015, D.J. Court leg., pitfall trap, ZRC\_ENT00048445; Pulau Ubin, 22 Oct 2016, W. Wang leg., ZRC\_ENT00007277.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Bukit Timah Nature Reserve; Pulau Ubin.

**Habitat/Ecology.** This species was found mainly in old/mature secondary forests in Singapore. Individuals were usually collected from leaf litter.



***Strumigenys roganus* Bolton, 2000**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this species is only known from Singapore based on a single literature record.

***Strumigenys rogeri* Emery, 1890**

**Material examined.** Queen and workers, Pulau Ubin, 22 Oct 2016, W. Wang leg., leaf litter, Winkler extraction, ZRC\_ENT00007273; queen and workers, Mandai Road, near Ulu Sembawang Road, 14 Apr 1993, collector unknown, NS40, ZRC\_HYM\_0000278.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Ubin

**Habitat/Ecology.** This species appears to be associated mainly with disturbed young or mature secondary forest, where the ants were found in leaf litter.

**Remarks.** Deemed to be African in origin (Bolton 2000), *S. rogeri* was probably introduced to Singapore via human commerce – which has been attributed to for the species' spread to other parts of the world (Wetterer 2012c).

***Strumigenys signeae* Forel, 1905**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this species is only known from Singapore based on a single literature record.

***Strumigenys sublaminate* Brown, 1959**

**Material examined.** Bukit Timah Nature Reserve, near BT05, 13 Sep 2017, W. Wang leg., WW-SG17-035, ZRC\_ENT00007254; same locality and collector as previous, 1.35386, 103.77988, 1 Nov 2017, W. Wang leg., ZRC\_ENT00047953; queen and workers, same locality and collector as previous, near BT02, 19 Apr 2017, W. Wang leg., WW-SG17-036, ZRC\_ENT00007255; queens and workers, same locality, collection date and collector as previous, near BT02, WW-SG17-037, ZRC\_ENT00007256; males and workers, same locality and collector as previous, near BT09, 28 Jun 2017, WW-SG17-038, ZRC\_ENT00007257.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated mostly with primary forest, and less frequently with old/mature secondary forest in Singapore. In primary forest, nests were found in tree bark, under concavities in tree bark filled with soil, and under bark of dead fallen logs. In mature secondary forest, nests were found under bark of fallen trees or large rotting logs.

**Remarks.** At the time of writing, *S. sublaminate* is only known from one locality in Singapore. This species is quite similar to *S. gamegyn*, but in the former species, hairs on dorsolateral margin of head posterior to apicoscrobial hair are not projecting laterally (2-3 hairs obviously projected laterally in full face view for *S. gamegyn*), pleurae and sides of propodeum also mostly smooth and shiny (in *S. gamegyn*, only the katapisternum is smooth and shining, rest of lateral mesosomal surface reticulate-punctate).

***Strumigenys sydorata* Bolton, 2000**

**Material examined.** Nee Soon forest, 2 Oct 2017, W. Wang leg., leaf litter, Winkler extraction, WT\_FL1/NSW2, ZRC\_ENT00000999.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon forest

**Habitat/Ecology.** A single worker of this species was found in leaf litter from old or mature secondary forest, at a site close to swamp forest.

**Remarks.** This species is a member of the *lyroessa* complex. At the time of writing, the single specimen identified as *S. sydorata* was somewhat abraded, with many hairs missing or damaged, including standing pronotal humeral hairs that are considered diagnostic of this species.

***Strumigenys szalayi* Emery, 1897**

**Material examined.** Punggol Road mangroves, 5 Aug 1979, D.H. Murphy leg., ZRC\_HYM\_0000777.

**Material not physically examined.** Unknown.

**Literature.** Bolton (2000).

**Localities.** Punggol Road mangroves

**Habitat/Ecology.** This species was found in mangroves in Singapore, possibly mangrove back forest.

***Sylophopsis australica* (Forel, 1907)**

**Material examined.** Queen and workers, Bukit Timah Nature Reserve, near BT02, 2 Aug 2017, W. Wang leg., WW-SG17-030, ZRC\_ENT00000986; MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000383-384; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000385.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; MacRitchie Reservoir; Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in primary forest, and close to walking trails in old/mature secondary forest. A nest was found in soil at the base of a large tree in primary forest. Individuals were often collected from leaf litter.

**Remarks.** Most specimens examined for this checklist were originally identified as '*Monomorium talpa*' – now a junior synonym of *S. australica*.

***Sylophopsis sechellensis* (Emery, 1894)**

**Material examined.** None available.

**Material not physically examined.** Amber Road, Katong, 28 Jul 2014, J.K. Wetterer leg., vial #337 (MSC).

**Literature.** Wetterer & Sharaf (2017).

**Localities.** Amber Road (Katong)

**Habitat/Ecology.** Specimens were collected from a wooded area in an urban residential district.

**Remarks.** Workers of this species can be distinguished from most other congeners by a matte and reticulate punctate mesopleuron, and short propodeal spines. These ants are apparently native to the Old World tropics (Wetterer & Sharaf 2017), but have spread to other regions, including the New World, mainly by human commerce.

***Sylophopsis subcoeca* (Emery, 1894)**

**Material examined.** None available.

**Material not physically examined.** Amber Road, Katong, 28 Jul 2014, J.K. Wetterer leg., vials #337, #345 (MSC, USNM); Marine Parade, 28 Jul 2014, J.K. Wetterer leg., vial #368 (MSC, USNM); East Coast Park, 1 Aug 2014, J.K. Wetterer leg., vial #442 (MSC, USNM); Punggol Point, 30 Jul 2014, J.K. Wetterer leg., vial #397 (MSC); Harbourfront, Marang Trail, 4 Aug 2014, J.K. Wetterer leg., vial #472 (MSC).

**Literature.** Wetterer & Sharaf (2021).

**Localities.** Amber Road (Katong); East Coast Park; Harbour Front; Punggol Point.

**Habitat/Ecology.** This species appears common in highly-disturbed woodland and secondary forest fragments in close proximity to man-made infrastructure such as residential buildings and highways. Specimens were also found at bases of trees in parks.

***Tetramorium aptum* Bolton, 1977**

**Material examined.** Bukit Timah forest, collection date unknown, D.H. Murphy leg., F36, ZRC\_HYM\_0000753; Pulau Ubin, 1.41529, 103.94155, 15 Nov 2021, W.N. Lam leg., ZRC\_ENT00057805.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah forest; Pulau Ubin.

**Habitat/Ecology.** Individuals of this species were collected from either primary or old/mature secondary forest in Singapore.

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

**Material examined.** I-cube building (NUS), 1.293472, 103.776333, 24 Jun-1 Jul 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0044220; Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 13-15 Dec 2016, G.W. Yong leg., TT2GPa578, ZRC\_HYM\_0001760; Lee Kong Chian Natural History Museum (LKCNHM), NUS, 13 Dec 2017, Sk. Yamane leg., SG17-SKY-42 (SKYC).

**Material not physically examined.** Non-types, J.K. Wetterer leg. (USNM) – Hougang, 30 Jul 2014, vial #401; Kallang, Riverside Park, 29 Jul 2014, vial #372; Katong, Amber Road, 28 Jul 2014, vials #333, 349; Kranji, by MRT station, 2 Aug 2014, vial #452; Marine Parade, Jul-Aug 2014, vials #352, 435; Tai Seng, by MRT station, 31 Jul 2014, vial #422.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both misclassified as '*Tetramorium guineense*']. Wang et al. (2018a).

**Localities.** Amber Road (Katong); Hougang; I-cube building (NUS); LKCNHM (NUS); Katong; Kranji; Marine Parade; Riverside Park (Kallang); Tai Seng; (beside) Temasek Polytechnic.

**Habitat/Ecology.** This species is associated mainly with disturbed young secondary habitats in semi-urban settings in Singapore including waste woodland forest, and sometimes also

scrubland. Colonies have been found in rotting wood and bamboo in a garden. A nest was also found in an electrical circuit box beside a bus stop outside a university campus building.

**Remarks.** *Tetramorium bicarinatum* is considered a highly successful and globally widespread tramp species, occurring in almost all tropical and subtropical habitats worldwide. It has been strongly postulated to be native to the Southeast Asian region, and introduced to the rest of the world (Bolton 1977). Morphologically similar to another pantropical tramp species – *T. insolens* (also listed here), *T. bicarinatum* can be distinguished from the latter by its sculptured mandibles, rectangular nodiform petiole with antero- and posterodorsal angles at identical heights, and finally its bicolored body.

***Tetramorium curtulum* Emery, 1895**

**Material examined.** Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000457 (also in SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Ubin

**Remarks.** This species has only been recorded from an offshore island at the time of writing. A member of the *scabrosum* group, *T. curtulum* can be distinguished by its relatively smaller eyes (Bolton 1977).

***Tetramorium eleates* Forel, 1913**

**Material examined.** Mandai Track, 4 Jan 2017, G.W. Yong leg., ZRC\_ENT00027989.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Track

**Habitat/Ecology.** This species was found in native-dominated old/mature secondary forest in Singapore.

***Tetramorium insolens* (Smith, 1861)**

**Material examined.** Kranji Road, 1 Nov 2016, G.W. Yong leg., ZRC\_ENT00048415; alates and workers, National University of Singapore campus (Clementi/Kent Ridge, multiple sites), Apr-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); queen and workers, Sungei Buloh Wetland Reserve, 14 Mar 2018, W. Wang & M.S. Foo leg., WW-SG18-Tetram1, ZRC\_ENT00000907.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a) [as *Tetramorium* cf. *insolens* – ZRC material determined as *T. insolens* post publication].

**Localities.** Kranji Road; National University of Singapore campus (Clementi/Kent Ridge); Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** *Tetramorium insolens* is associated with a wide variety of different habitats in Singapore, from mangrove back forest to urban cultivated patches, also disturbed secondary forest fragments in urban or semi-urban settings. In back mangroves, the ants have been found in a thin carton nest on the underside of a thick branch of a living tree.

**Remarks.** This species is considered a relatively widespread ‘pan-global’ tramp species originating from Indonesia and probably introduced elsewhere (Bolton 1977). It is morphologically similar to and often misidentified as *T. bicarinatum*, but may be differentiated by characters detailed in ‘Remarks’ under the latter species section above.

***Tetramorium kheperra* (Bolton, 1976)**

**Material examined.** Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000415-417.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Upper Peirce Reservoir

**Habitat/Ecology.** This species was found in either primary or old/mature secondary forest, near a walking trail.

**Remarks.** *Tetramorium kheperra* is known to be a widespread tramp species, where individuals are mostly collected from disturbed habitats. In view of this, its actual prevalence in Singapore may be underrepresented in sorted ZRC material examined for this checklist.

***Tetramorium lanuginosum* Mayr, 1870**

**Material examined.** Kent Ridge Park, 11 Jan 2014, Sk. Yamane leg., ex. leaf litter, SG14-SKY-56 (SKYC); Kranji Road, 1 Nov 2016, G.W. Yong leg., ZRC\_ENT00048416; queen and worker, Pulau Tekukor, 24 Jun 2017, G.W. Yong leg., ZRC\_ENT00048413; Sisters’ Island, 9 Dec 2016, G.W. Yong leg., ZRC\_ENT00027977; Yishun wasteland, 1.42078, 103.84934, 21 Feb 2016, M.K.L. Wong leg., ZRC\_ENT00000698.

**Material not physically examined.** Type alate queen, FOCOL2063 (ZMHB) [as *Triglyphothrix lanuginosa*]. Non-types, J.K. Wetterer leg. (USNM) – Buona Vista, by MRT station, 5 Aug 2014, vial #486; City Hall, by church, 29 Jul 2014, vial #374; Dhoby Ghaut, Istana Park, 30 Jul 2014, vial #403; Harbourfront, 29 Jul 2014, vial #385; Hougang, 30 Jul 2014, vial #401; Kallang, Riverside Park, 29 Jul 2014, vial #372; Katong, Jul-Aug 2014, vials #348, 442; Kent Ridge, 31 Jul 2014, vials #426, 431; Marine Parade, 28 Jul 2014, vials #358, 368; Outram Park, by MRT station, 29 Jul 2014, vial #379; Pasir Panjang, by MRT station, 5 Aug 2014, vial #482; Promenade, by MRT station, 4 Aug 2014, vial #468; Punggol Point, 30 Jul 2014, vial #397; Queenstown, 29 Jul 2014, vial #383; Serangoon, 30 Jul 2014, vial #389.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Triglyphothrix lanuginosa* and *T. striatidens*]. Wheeler (1929) [as type of *Triglyphothrix striatidens flavescens*]; Bolton (1976) [as *Triglyphothrix lanuginosa*].

**Localities.** Bukit Timah Road; Buona Vista; City Hall; Dhoby Ghaut; Harbourfront; Hougang; Katong; Kent Ridge; Kranji Road; Marine Parade; Outram Park; Pasir Panjang; Promenade; Pulau Tekukor; Punggol Point; Queenstown; Riverside Park (Kallang); Serangoon; Sisters’ Island; Yishun wasteland.

**Habitat/Ecology.** This species was collected mainly from young secondary habitats, including waste woodland forest fragments in urban or semi-urban settings, and scrubland on offshore islands. The ants were also found nesting in a hollow spot under the bottom of a flower stand in a garden. Foragers were often also found in plantings, bases of trees, or gardens close to man-made infrastructure.

**Remarks.** *Tetramorium lanuginosum* is a recognized globally widespread tramp species commonly known as the woolly ant, suspected to have been mainly dispersed through human commerce (Wetterer 2010). Its native range remains a point of contention, though some believe it is native to tropical Asia, or more specifically tropical and subtropical East Asia. The type queen of the species was originally described from Singapore as '*Triglyphothrix lanuginosa*' (see Viehmeyer 1916).

#### ***Tetramorium meshena* (Bolton, 1976)**

**Material examined.** Lower Peirce Reservoir, Forest A, 7 Aug 1990, collector unknown, ZRC\_ENT00000176; same locality, site and collection date as previous, collector unknown, ZRC\_ENT00000194; same locality as previous, Forest B, 25 Aug 1990, collector unknown, ZRC\_ENT00000115; same locality and site as previous, 10 Aug 1990, collector unknown, ZRC\_ENT00000227; Upper Thomson Nature Park, 1.38311, 103.79839, 17-19 Oct 2016, pitfall trap, UT5GPc1629, ZRC\_HYM\_0001761; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Lower Peirce Reservoir; Pulau Ubin; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests in Singapore. Some specimens were collected from young abandoned plantation secondary forests. Individuals were usually found in leaf litter.

#### ***Tetramorium obtusidens* Viehmeyer, 1916**

**Material examined.** Bukit Timah forest, collection date unknown, D.H. Murphy leg., A124-2, ZRC\_HYM\_0000749; University Hall (NUS), 1.29711, 103.77658, 1-8 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0008, ZRC\_BDP0045351; same locality and collectors as previous, 10-17 Jun 2015, NUS0048, ZRC\_BDP0044430.

**Material not physically examined.** Type queens – FOCOL2072-2073 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924). Bolton (1977); Wang et al. (2018a).

**Localities.** Bukit Timah forest; Jurong Road [type]; University Hall (NUS).

**Habitat/Ecology.** This species appears associated with primary and/or mature secondary forests in Singapore, including disturbed forest fragments in semi-urban settings. Queens have been found alongside other ant species such as *Cataulacus praetextus* and *Technomyrmex albipes* in rotten branches.

**Remarks.** Type locality in Singapore. The species was first described based on syntype queens (see Viehmeyer 1916), while the worker was described much later (see Bolton 1977) based on specimens from a locality different from that of the queen types, and also specimens from other countries.

#### ***Tetramorium pacificum* Mayr, 1870**

**Material examined.** Commonwealth Road, 1.31115, 103.78171, 22-24 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001758-1759; I-cube building (NUS), 1.29347, 103.77633, Jul-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Kent Ridge, 20 Apr 1985, D.H. Murphy leg., ZRC\_HYM\_0000757; Mandai, 1.4083, 103.77803, 19 Jun 2016, M.K.L. Wong leg., ZRC\_ENT00000700; Namly forest, 10 May 1985, D.H. Murphy leg., ZRC\_HYM\_0000746; Prince George's Park Residences (NUS), 1.29239, 103.77869, May-Sep 2015, M.S. Foo & W. Wang leg., ZRC\_BDP (multiple); Yishun wasteland, 1.42078,



103.84934, 21 Feb 2016, M.K.L. Wong leg., ZRC\_ENT00000699; Bukit Timah, 14 Apr 1993, Sk. Yamane leg. (SKYC); worker and founding queen, Upper Thomson Nature Park, 9 Dec 2017, Sk. Yamane leg., SG17-SKY-38 (SKYC).

**Material not physically examined.** In Schlick-Steiner et al. (2006) - queen, Singapore Zoo, 12 Jan 2002, H. Zettel leg.; queen, National University of Singapore campus, 26-28 Jan 2002, H. Zettel leg.; 15 queens, same locality as previous, 21 Oct - 7 Nov 2003, H. Zettel leg. (all in ZCW).

**Literature.** Schlick-Steiner et al. (2006); Wang et al. (2018a); Yamane et al. (2022).

**Localities.** Bukit Timah; Commonwealth Road; Kent Ridge; Mandai; Namly forest; National University of Singapore campus (Clementi/Kent Ridge, multiple sites); Singapore Zoo; Yishun wasteland.

**Habitat/Ecology.** This species is associated mostly with young secondary forests of varying disturbance levels in Singapore, including waste woodland secondary forest. Individuals have been collected on bamboo, tree trunks, in decayed wood, and on foliage of *Wormia* (currently known as '*Dillenia*') shrubs/trees.

**Remarks.** The species has a very broad distribution range throughout most of the Oriental and Indo-Australian realms.

#### ***Tetramorium pulchellum* Emery, 1897**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** This species was found in a garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on literature records.

#### ***Tetramorium scabrum* Mayr, 1879**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Individual workers were collected from a garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on literature records.

#### ***Tetramorium smithi* Mayr, 1879**

**Material examined.** Kent Ridge, 25 Apr 1985, D.H. Murphy leg., ZRC\_HYM\_0000756; Mandai Lake Road, N 01°24'19.3", E 103°46'56.2", 73 m a.s.l., 26 Mar 2020, W. Zhang leg., ZRC\_ENT00047776.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Xiphomyrmex smithi* var. *kanarense*]. Tan & Corlett (2012).

**Localities.** Bukit Timah Road; Kent Ridge.

**Habitat/Ecology.** This tiny species was found mostly in disturbed young or mature secondary forests, in clay mounds and fallen rotting wood or logs. A colony was also found in the ground of a garden.

#### ***Tetramorium tonganum* Mayr, 1870**

**Material examined.** Prince George's Park Residences (NUS), 1.29239, 103.77869, Apr-May 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0045634, -46101, -46770; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000455-456.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** Prince George's Park Residences (NUS); Pulau Ubin.

**Habitat/Ecology.** This species is associated with young secondary habitat in Singapore, mostly disturbed secondary forest fragments within semi-urban settings, or close to man-made infrastructure.

**Remarks.** It has been surmised that Java and Sumba (both part of Indonesia) represent the west-most limits of the species native range, and that populations in Malaysia and Singapore are possibly introduced (Bolton 1977).

***Tetramorium walshi* (Forel, 1890)**

**Material examined.** Sisters' Island, 9 Dec 2016, G.W. Yong leg., ZRC\_ENT00027991; locality unknown, 23 Jul 1996, Sk. Yamane leg. (SKYC).

**Material not physically examined.** CASENT0909099, ANTC31549 (MHNG) [as syntype of *Triglyphothrix walshi* var. *spuria*].

**Literature.** Forel (1912) [as type of *Triglyphothrix walshi* var. *spuria*].

**Localities.** Sisters' Island

**Habitat/Ecology.** This species was found on an offshore island, possibly in young or mature secondary forest.

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

**Material examined.** None available (but see Remarks).

**Material not physically examined.** In Wetterer (2009) – 1899, Haviland (BMNH). ANIC32-061821, Shattuck1345379064 (ANIC).

**Literature.** Wetterer (2009).

**Localities.** Unknown.

**Habitat/Ecology.** Uncertain in the Singapore context, but presumably in and around man-made infrastructure in urban and semi-urban areas, based on anecdotal observations.

**Remarks.** Commonly known as 'the Singapore ant', *T. destructor* is an infamous worldwide cosmopolitan pest species that appears to not be as locally ubiquitous as is suggested by its common name. It is presumably native to the Palearctic region (Wetterer 2015). The species is probably underrepresented in the ZRC – wholly in uncatalogued, unsorted material (W. Wang, pers. obs.). There have been past occasional anecdotal reports of the pest ant causing damage to man-made infrastructure, such as chewing through electrical wiring in urban buildings, but species identities of the reported ants have not been validated. In Bolton (1987), the locality of material supposedly collected from Singapore was indicated as 'Sabang' – which may actually be a city or town located in Indonesia or Malaysia, but does not exist in Singapore.

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

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1911) [as *Monomorium destructor* subsp. *mayri*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this species is known from Singapore based only on a single literature record.

***Tyrannomyrmex rex* Fernández, 2003**

**Material examined.** Mandai, 1.40144, 103.77702, 10 Mar 2016, M.K.L. Wong leg., MKW-SG16-Tyr1, ZRC\_ENT00000703-705.

**Material not physically examined.** In Jacquemin et al. (2015) – SPM\_ID4904401, general inventory 33045 (RBINS).

**Literature.** Jacquemin et al. (2015); Wong & Yong (2017).

**Localities.** MacRitchie Reservoir; Mandai.

**Habitat/Ecology.** This species was found in primary or old/mature secondary forests in Singapore, typically in leaf litter. Nests were found at bases of trees.

**Remarks.** In one literature record, habitat was described as 'selectively logged and regenerated primary forest' – this can be simply and more accurately inferred as 'secondary forest' by our definition (see Introduction).

***Vollenhovia brevicornis* (Emery, 1893)**

*Vollenhovia fridae* Forel, 1923, worker, Sumatra, **syn. nov.**

**Material examined.** Mandai Road, 1.41258, 103.79839, 16-18 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001711-1712; Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., leaf litter, Winkler extraction, ZRC\_ENT00028311; Bukit Timah forest, 3 Sep 1964, D.H. Murphy leg., A-292-10, DHM-SG64-Voll1, ZRC\_ENT00027927; locality unknown, 14 Apr 1993, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Mandai Lake Road; Mandai Road.

**Habitat/Ecology.** This species was found in primary and/or native-dominated old or mature secondary forests, sometimes on tree trunks, but mainly from leaf litter and upper topsoil substrate.

**Remarks.** We have carefully compared the Sumatran specimens (workers) of '*Vollenhovia fridae*' with the images and original description of *V. brevicornis* (described in *Monomorium*), and concluded that these are the same species. Singaporean specimens examined well agree with *V. brevicornis* and '*V. fridae*'. Although these are slightly smaller than the Sumatran specimens, in this species the worker caste is highly variable in size. This species appears almost identical to the Sulawesi species *Vollenhovia pertinax* (Smith, 1861) that was much earlier described than *V. brevicornis*, but we need more information and material to decide the status of these two forms (see also Remarks for *Vollenhovia penetrans* Smith, 1857).

#### *Vollenhovia escherichi* Forel, 1911

**Material examined.** Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001077; Pulau Ubin, Jalan Sam Heng, 15 Oct 2016, G.W. Yong et al. leg., ZRC\_HYM\_0001146.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Ubin

**Habitat/Ecology.** This species was found in young and/or mature secondary forest; an individual was collected from leaf litter by Winkler extraction.

**Remarks.** At the time of writing, *V. escherichi* was identified only from an off-shore island north-east of the mainland. The species resembles *Vollenhovia subtilis*, but can be distinguished by the reticulate sculpture on head dorsum with larger interspaces or areola, larger eyes (also bulging more from sides of head in full face view), and postpetiole in dorsal view distinctly wider than long and as wide as the propodeum.

#### *Vollenhovia minuta* Viehmeier, 1916 stat. n.

*Vollenhovia brevicornis* var. *minuta* Viehmeier, 1916: 129 (w.)

Subspecies of *Vollenhovia brevicornis*: Emery, 1922: 164; Ettershank, 1966: 149; Bolton, 1995: 423.

**Material examined.** Males and workers, Mandai forest, 7 Jun 2018, W. Wang leg., WW-SG18-002, ZRC\_ENT00027960; Nee Soon forest, 7 Jan 2015, W. Wang leg., ZRC\_ENT00000998; Upper Thomson Road, 9 Dec 2017, W. Wang leg., WW-SG17-Voll1, ZRC\_ENT00000963; same locality as previous, 11 Oct 2016, G.W. Yong leg., ZRC\_ENT00048027; queen, Upper Thomson Nature Park, 1.38159, 103.81921, 11 Oct 2016, G.W. Yong et al. leg., ZRC\_ENT00048028.

**Material not physically examined.** Unknown.

**Literature.** None (see Remarks). New record.

**Localities.** Mandai forest

**Habitat/Ecology.** This species was found in old/mature secondary forest, including abandoned plantation forests, typically nesting under bark of large fallen tree trunks or near the bases of live trees.

**Remarks.** The type locality for this species is in Gunong Angsi in Malaysia (see Overbeck 1924), not Singapore as erroneously indicated in most existing publications and online resources (e.g. Bolton 2021, AntWeb).

This species was originally described as a subspecies of *V. brevicornis*, however, it is morphologically completely different from the latter and should be treated as a distinct species. *Vollenhovia minuta* can be distinguished by the following characters: 1) minute size (TL 1.8 – 2 mm), 2) head much longer than wide, 3) head in profile with flattened appearance, 4) antennal scapes very short, not reaching posterior head margin, 5) mesosoma elongate with almost flat dorsum, 6) no propodeal spines, 7) head, mesosoma, petiole and postpetiole densely reticulate-punctate. The species resembles *V. piroskae taipingensis* Forel, 1913, but can be differentiated by its much longer head in full face view (in *V. piroskae taipingensis*, head is scarcely longer than wide).

***Vollenhovia overbecki* Viehmeyer, 1916**

**Material examined.** Queens, Bukit Timah forest, A124-11, 17 Dec 1972, D.H. Murphy leg.

**Material not physically examined.** Types – CASENT0908662, ANTC031013 (MHNG); male and worker, FOCOL0313-314 (DEIC); 2 males and 3 workers, FOCOL1664-1668 (ZMHB).

**Literature.** Type – Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah forest; Bukit Timah Road; Jurong Road.

**Habitat/Ecology.** The type colony was found in a rotten trunk of a tree, macrohabitat unspecified. Individuals were also found in a garden, and in either primary or old/mature secondary forest.

**Remarks.** Type locality/localities in Singapore. Species identity of material examined was largely deduced based on original descriptions of the worker, since no images or descriptions of the queen were available for reference at the time of writing.

***Vollenhovia penetrans* (Smith, 1857)**

**Material examined.** Queen, Mandai Road, 18 Nov 2016, G.W. Yong leg., ZRC\_ENT00027986.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Road

**Habitat/Ecology.** A single queen of this species was collected from native-dominated old/mature secondary forest in Singapore.

**Remarks.** This species was first described as ‘*Atta penetrans*’ based on a single queen from Borneo (Smith 1857). At the time of writing, we verified the identity of ZRC material with the original description and holotype images available online.

We also examined a few queen specimens associated with workers from Borneo and the Malay Peninsula. A single isolated queen from Sulawesi well agreed with these queens. Furthermore, queen-associated workers mentioned above well agreed with separate samples of workers (without queens)

from Borneo, which had in turn been directly compared with type specimens of *V. fridae* at the MHNG by one of us (SKY). All these strongly imply the conspecificity of the four forms: *brevicornis*, *fridae*, *penetrans*, *pertinax* (see Remarks for *V. brevicornis*).

If that is the case, the oldest name should be *V. penetrans*, with all the others being its junior synonyms.

However, we are reluctant to synonymize these three forms under *V. penetrans*, as it remains possible that some of these constitute a cryptic species complex. For example, we detected a slight difference among the queens examined, namely the space between frontal carinae (posterior portion of clypeus) – this area is densely striate-reticulate in the Singapore queen and the type specimen image, but smooth in the queens from Borneo, the Malay Peninsula and Sulawesi. We believe that all these forms are closely related, but final species statuses should be decided with assessment of more information – including male genitalia and DNA – amassed in future.

***Vollenhovia rufiventris* Forel, 1901**

**Material examined.** Bukit Timah forest, 16 Feb 1975, D.H. Murphy leg., ZRC\_HYM\_0000901.

**Material not physically examined.** Types – male and dealate queen, FOCOL2920-FOCOL2921 (ZMHB).

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah forest; Bukit Timah Road.

**Habitat/Ecology.** This species is associated with primary and mature secondary habitats in Singapore. Individuals can sometimes be seen on fallen wood or logs. Colonies can be found in the soft wood of rotting fallen trees.

**Remarks.** The male and queen of this species were first described from Singapore (see Viehmeyer 1916), based on a colony series collected from a garden, many years after the species itself was established in 1901 based on the worker.

## PONERINAE (20 genera, 61 species)

### *Anochetus agilis* Emery, 1901

**Material examined.** None available.

**Material not physically examined.** ANIC32-016869, Shattuck1345241385 (ANIC).

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road.

**Habitat/Ecology.** Individuals including the type queens were collected from a garden. This species was found in either primary or old/mature secondary forest in more recent times.

**Remarks.** The queen of this species was first described by Viehmeyer (1916) based on specimens collected by H. Overbeck from Singapore.

### *Anochetus graeffei* Mayr, 1870

**Material examined.** Kent Ridge Park, 7 Dec 2017, W. Wang leg., WW-SG17-027, ZRC\_ENT00000979; workers and dealate queen, same locality as previous, 7 Dec 2017, Sk. Yamane leg., SG17-SKY-21 (SKYC); Nee Soon forest, 27 Jan 2015, W. Wang leg., WW-SG15-Anoc1, ZRC\_ENT00000978; male, Pulau Semakau Old Fragment, SMO3, 1°12'23.9"N, 103°45'37.6"E, 5-12 Jul 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29342, ZRC\_BDP0014528; queens and males, Pulau Ubin, PU1, 1°24'36.3"N, 103°59'25.5"E, Jul-Nov 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, ZRC\_BDP (multiple); male, Sungei Buloh Wetland Reserve, SB1, 1°26'46.3"N, 103°43'49.9"E, 21-28 Nov 2012, J. Puniamoorthy et al. leg., mangroves, malaise trap, Reg. 29595, ZRC\_BDP0017502; Upper Thomson Road, 24 Oct 2016, G.W. Yong leg., ZRC\_ENT00048414.

**Material not physically examined.** ANIC32-015989, Shattuck1345236804 (ANIC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Anochetus punctiventris*]. Shattuck & Slipinska (2012).

**Localities.** Kent Ridge Park; Labrador Nature Reserve; Nee Soon forest; Pulau Semakau; Pulau Ubin; Sungei Buloh Wetland Reserve; Upper Thomson Road.

**Habitat/Ecology.** Workers of this species were found in a garden, semi-urban parklands, young secondary forest and also *Imperata cylindrica*-dominated grassy scrub. Nests have been collected from dead twigs in leaf litter. Alates were collected from mangroves using malaise traps.

**Remarks.** This species is known to exhibit broad morphological variation between different populations, and may actually comprise a complex of multiple sibling species. In this checklist, we tentatively treat all morphological variants of this potential species complex in the ZRC as conspecific, bearing in mind the possibility that these might be separated into different species should more convincing empirical evidence be made available in future.

### *Anochetus incultus* Brown, 1978

**Material examined.** None available.

**Material not physically examined.** ANIC32-016921, Shattuck1345241729 (ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary or old/mature secondary forest in Singapore. Individuals were found in rotting logs or leaf litter.

**Remarks.** At the time of writing, this species is known from only one specific locality in Singapore.

### *Anochetus muzziolii* Menozzi, 1932

**Material examined.** Mandai, 1.40469, 103.77653, 6 Mar 2016, M.K.L. Wong leg., ZRC\_ENT00000706; Upper Seletar Reservoir, 4 Oct 2020, G.W. Yong leg., GY-SG20-001, ZRC\_ENT00028566.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai; Upper Seletar Reservoir.

**Habitat/Ecology.** This species was collected from either mature or young secondary forest, often close to trailside, on one occasion on dead wood.

**Remarks.** A member of the *A. rugosus* species group, *A. muzziolii* is largely distinguished by its smooth and shiny pronotum, and relatively short mandible.



***Anochetus rugosus* (Smith, 1857)**

**Material examined.** None available.

**Material not physically examined.** Holotype, Singapore, A.R. Wallace leg. (OUMNH).

**Literature.** Type – Smith (1857) [as *Odontomachus rugosus*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore, specifics unknown. The only Smith collection specimen of *Anochetus rugosus* in OUMNH – assumed to be the holotype – bears two locality labels: ‘SAR’ and ‘Gilolo’, which refer to localities outside Singapore. It is speculated that these labels may have been switched with the original type label some time after 1857 (Bolton 2021).

***Anochetus tua* Brown, 1978**

**Material examined.** None available.

**Material not physically examined.** ANIC32-016967, Shattuck1345241965 (ANIC).

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** This species was found in swamp forest, collected from leaf mould berlesate.

***Brachyponera luteipes* (Mayr, 1862)**

**Material examined.** Bukit Timah Nature Reserve, plot III-2, 28 Apr 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048448; Mandai forest, 7 Jun 2018, W. Wang leg., ZRC\_ENT00047995; queen and workers, Mandai, Northern Node, 1.40842, 103.78319, 54 m a.s.l., 25 Jul 2019, J. Tan & S. Tang leg., JTST-MIS-009, ZRC\_ENT00013871; same locality as previous, 4 Sep 2019, J. Tan & N. Chin leg., WW-SG19-008, ZRC\_ENT00027941.

**Material not physically examined.** Harbourfront, Jul-Aug 2014, J.K. Wetterer leg., vials #386, 469 471 (JKWC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Harbourfront; Mandai.

**Habitat/Ecology.** This species was mainly found in old or mature secondary forests in Singapore, sometimes at bases of trees at forest or trail edges. Nests were collected from fallen rotting wood or large branches, sometimes in root-soil-substrate matrices at bases of trees.

**Remarks.** Morphologically very similar to the presumably widespread invasive *B. chinensis*, *B. luteipes* may be differentiated from the former based on characters illustrated in Yashiro et al. (2010). An affiliated unnamed species, currently identified as *Brachyponera* sp.1.of.SKY (= *Pachycondyla* sp.28.of.SKY), was found to be common across secondary forests and seemingly more widespread than *B. luteipes*.

***Brachyponera obscurans* (Walker, 1859)**

**Material examined.** Alate queen and male, University Town (NUS), 1.30622, 103.77458, 12-19 Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0042558, 42561.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** University Town (NUS)

**Habitat/Ecology.** Alates of this species were collected from a malaise trap in cultivated grassy scrub, in an urban setting.

**Remarks.** At the time of writing, the only records of this species in Singapore are that of winged alates collected using malaise traps.

***Buniapone amblyops* (Emery, 1887)**

**Material examined.** Bukit Timah Nature Reserve, plot III-2, 19 Apr 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048455; same locality as previous, below Krung (sic) Hut, 4 Oct 1973, D.H. Murphy leg., A340-1, ZRC\_ENT00047941; Kent Ridge scrub, 15 Jan 1981, D.H. Murphy leg., ZRC\_ENT00047942; Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001090; Selatar Trail, 1.3946, 103.80113, 28 Aug 2015, M.K.L. Wong leg., ZRC\_ENT00000708.

**Material not physically examined.** CASENT0172431, A64-9 (ANIC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pseudoponera amblyops*]; Yong et al. (2017).

**Localities.** Bukit Timah Nature Reserve; Kent Ridge; Pulau Ubin; Seletar Trail.

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests in Singapore, including disturbed secondary forest fragments or scrubland in semi-urban settings. Individuals were sometimes found under stones, planked steps, and imbedded bricks on a rock or sandy paths in mature secondary forest or scrub.

### *Centromyrmex feae greeni* Forel, 1901

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0907211, ANTC27417 (MHNG).

**Literature.** Type – Forel (1901).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this subspecies is known from Singapore only by its type series. Type locality in Singapore.

### *Centromyrmex hamulatus* (Karavaiev, 1925)

**Material examined.** Bukit Timah Nature Reserve, 2016, W. Wang leg., ZRC\_ENT00028294; Nee Soon, 23 May 1973, D.H. Murphy leg., ZRC\_HYM\_0000762-763; alate queen, Pulau Ubin West, 21-28 May 2019, D. Yap et al. leg., mangroves, malaise trap, Reg. 5242, ZRC\_ENT00047844; Sime Road forest, 4 Apr 1975, D.H. Murphy leg., ZRC\_HYM\_0000893-894.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Nee Soon; Pulau Ubin West; Sime Road forest.

**Habitat/Ecology.** This species seems mostly associated with primary or old/mature secondary forests in Singapore, including dry secondary forest adjacent to swamp forest. It is considered subterranean, and individuals could be found in soil at bases of trees, under logs, inside rotting logs and termite mounds, suggesting a possible termitophagous nature of this species. An alate queen was collected from a malaise trap set up in mangroves.

### *Cryptopone butteli* Forel, 1913

**Material examined.** Mandai Lake Road, buffer area (Northern Node), 1°24'36.5"N, 103°47'04.0", 53m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028295; Nee Soon forest, 24 Dec 2014, W. Wang leg., ZRC\_ENT00027965; Seletar Trail, 1.39097, 103.79952, 7 Dec 2015, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000709.

**Material not physically examined.** ANIC32-017898-17899, Berlno3; ANIC32-017067, Shattuck1345242298; ANIC32-017084, Shattuck1345242360 (all ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah forest; Mandai Lake Road; Nee Soon forest; (near) Peirce Reservoir; Seletar Trail.

**Habitat/Ecology.** This species was found in primary or old/mature secondary forests in Singapore, including swamp forest. Typically collected from forest leaf litter via Winkler or Berlese extractions, also in soil and rotting logs.

### *Cryptopone testacea* Emery, 1893

**Material examined.** Mandai Lake Road, buffer area (Northern Node), 1°24'36.5"N, 103°47'04.0", 53m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028296.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Lake Road

**Habitat/Ecology.** Individuals of this species were found in leaf litter and upper soil substrate from mature secondary forest.

**Remarks.** At the time of writing, this species is only known from one locality in Singapore.

*Cryptopone testacea* was first described from Sri Lanka, and currently appears to have a broad geographic distribution from the Malagasy region to Micronesia. Multiple species endemic to different regions have been synonymized under *C. testacea*, albeit with subtle morphological differences observed between the congeners. It remains possible that '*C. testacea*' could comprise a complex of morphologically-similar species, but this issue may only be resolved with DNA evidence.

***Diacamma geometricum* (Smith, 1857)**

**Material examined.** Mandai Lake Road, buffer area (Northern Node), 1°24'36.5"N, 103°47'04.0", 53 m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., ZRC\_ENT00047849; Mandai Road, plot 1, 1.41263, 103.79237, 21 Nov 2016, G.W. Yong et al. leg., MID17GH2031, ZRC\_ENT00047840; Sime Road forest, 2 Jan 1978, D.H. Murphy leg., ZRC\_HYM\_0000812; locality unknown, 14 Apr 1993, Sk. Yamane leg., ZRC\_HYM\_0000421-422; MacRitchie Reservoir, 6 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Holotype - CASENT0901342, ANTC20781 (OUMNH) [as *Ponera geometrica*]. Non-types - CASENT0916122-916123, ANTC43588-ANTC43589 (CASC); Harbourfront, Marang Trail, 4 Aug 2014, J.K. Wetterer leg., vial #473 (JKWC); Punggol Point, 30 Jul 2014, J.K. Wetterer leg., vial #399 (JKWC). In Laciny et al. (2015) – McRitchie (sic) Reservoir, reserve area, 23 Oct 2003, H. Zettel leg. (ZCW).

**Literature.** Type – Smith (1857) [as *Ponera geometrica*]. Viehmeyer (1916), Overbeck (1924) [both as *D. tritschleri*]; Laciny et al. (2015); Zettel et al. (2016).

**Localities.** Bukit Timah Hill; Harbourfront; MacRitchie Reservoir; Mandai Lake Road; Mandai Road; Punggol Point; Seletar Reservoir; Sime Road forest; Thompson Road.

**Habitat/Ecology.** This species is associated mostly with old/mature secondary forests in Singapore, also sometimes in young secondary forest. Individuals have been collected from leaf litter and upper soil substrate.

**Remarks.** Type locality in Singapore. *Diacamma geometricum* was initially considered a synonym of *D. rugosum* (see Wilson 1958), but was revived/restored to species by Laciny et al. (2015).

***Diacamma pallidum* (Smith, 1858)**

**Material examined.** Bukit Timah Nature Reserve, 13 Dec 1995, H.K. Lua et al. leg., NS 212C, ZRC\_ENT00000352; same locality as previous, Hindhede Drive, 25 Dec 1989, H.K. Lua leg., ZRC\_ENT00000241; males and workers, National University of Singapore campus (Clementi/Kent Ridge, multiple sites), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., SG14-SKY-44, ZRC\_HYM\_0000484.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; National University of Singapore campus (Clementi/Kent Ridge); Upper Peirce Reservoir.

**Habitat/Ecology.** This species was found in both mature and young secondary forests broadly variable levels of disturbance and degradation, including disturbed secondary forest fragments in urban or semi-urban settings. In contiguous mature secondary forest, nests were found in rotting wood. Male alates were also collected from malaise traps set up in cultivated grassy scrub in urban settings.

**Remarks.** Most verified records of this species comprise of males collected via malaise traps; the original description of the species by Smith (1858) was also only of the male. This species is often assumed to be *D. rugosum* at first glance, but differs from the latter both morphologically (differences may only be visible under the microscope) and in terms of overall size — *D. pallidum* is generally smaller in size relative to *D. rugosum*.

***Diacamma rugosum* (Le Guillou, 1842)**

**Material examined.** Lower Peirce Reservoir Road, 21 Jul 1990, H.K. Lua leg., ZRC\_HYM\_0000072; Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001093; same locality, collectors, and collection date as previous, Jalan Sam Heng, 1.412604, 103.99317, ZRC\_HYM\_0001094.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907, 1911) [as *Diacamma rugosum birmanum*; see Remarks]. Tan & Corlett (2012).

**Localities.** Central Catchment Nature Reserve; Lower Peirce Reservoir Road; Pulau Ubin.

**Habitat/Ecology.** This species is associated mostly with old/mature secondary forests in Singapore, often disturbed forest fragments in semi-urban settings, less frequently in primary forest.

**Remarks.** At the time of writing, there is much uncertainty surrounding the species *D. rugosum* and the taxonomic validity of its 21 valid subspecies. Given the taxonomic uncertainties at the time of writing, we therefore considered all subspecies of *D. rugosum* (e.g. *D. rugosum birmanum*) as conspecific to the species for the purposes of this checklist. We recognize the possibility that at least some of these subspecies might be raised to species status in future, which should entail a revision of *Diacamma* species in this checklist.

#### *Diacamma vagans* (Smith, 1860)

**Material examined.** Kent Ridge, 1 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000814-815.

**Material not physically examined.** Unknown.

**Literature.** Emery (1893).

**Localities.** Kent Ridge

**Habitat/Ecology.** Individuals of this species were found in grassland or scrub at the fringes of secondary forest in Singapore.

#### *Ectomyrmex leeuwenhoekii* (Forel, 1896)

**Material examined.** Worker and queen, Bukit Timah Nature Reserve, 1.34772, 103.77766, 30 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000711-712; same locality as previous, plot II-I, 15 Aug 2011, J. Koh leg., Winkler extraction, ZRC\_ENT00000888; same locality as previous, BT04, 1.35342, 103.7782, 19 Jan 2017, W. Wang leg., WW-SG17-010, ZRC\_HYM\_0000583; queen, same locality and collector as previous, near BT02, 1.35599, 103.77397, 8 Aug 2017, ZRC\_HYM\_0001746; queen and worker, same lo-

cality and collector as previous, near BT01, 7 Jun 2017, ZRC\_ENT00014153; same locality and collector as previous, BT09, 1.35127, 103.78161, 5 Jul 2017, ZRC\_ENT00014154; Central Catchment Nature Reserve, 16 Feb 2016, G.W. Yong leg., ZRC\_ENT00047846; same locality as previous, 10 Aug 2011, E.J.Y. Soh leg., ZRC\_ENT00048001; Lower Peirce Reservoir, 7 May 2017, G.W. Yong leg., ZRC\_ENT00048420; same locality as previous, Forest B, 10 Aug 1990, collector unknown, ZRC\_ENT00000205; same locality as previous, Forest A, 7 Aug 1990, collector unknown, ZRC\_ENT00000127; Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028287-28288; Mandai Road, 1.41054, 103.79809, 5 Dec 2016, G.W. Yong et al. leg., MID5GH2474, ZRC\_ENT00047845; queen and worker, Nee Soon Swamp Forest, 1.38252, 103.80208, 25 Sep 2017, W. Wang leg., NS\_W1, Winkler extraction, ZRC\_ENT00027909; same locality as previous, dry plot 301, 1.38043, 103.8033, 22 Aug 2019, W. Wang leg., WW-SG19-002, ZRC\_ENT00013872; alate queens and males, same location as previous, 2012-2013, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple).

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pachycondyla (Ectomyrmex) leeuwenhoekii*].

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Central Catchment Nature Reserve; Lower Peirce Reservoir; Mandai Lake Road; Mandai Road; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests in Singapore, including swamp forest (drier sections). The ants have also been found in abandoned plantation and native-dominated secondary forests. Nests were found in soil substrate matrices under dead wood, also in rotting wood or branches on forest floors. Individuals were often collected from leaf litter and in soil at bases of living trees.

**Remarks.** Amongst material examined for *E. leeuwenhoekii*, we observed substantial variation across different samples of workers. These variable features include: petiole shape (wider and shorter in dorsal view for some individuals), strength of sculpture on petiolar node (fovea generally weaker in some individuals), and relative dimensions of head. Variation, however, is subtle and can occur between intranidal workers, which sometimes present a gradation of intermediate morphological states.

Some of the variable states we observed are apparently diagnostic, according to original descriptions, for the two subspecies of *E. leeuwenhoekii* – *E. leeuwenhoekii jacobsoni* (Forel, 1915) and *E. leeuwenhoekii sumatrensis* (Forel, 1901). But these traits seem too unstable, at least based on local samples, to reliably differentiate between *E. leeuwenhoekii* and its subspecies.

At the time of writing, we are unable to assess the validity of both subspecies – no access to type material including type images of *jacobsoni* – against *E. leeuwenhoekii*. For now, we choose to err on the side of caution and refrain from making definitive conclusions on species status for the two forms. It remains possible that the two subspecies might be synonymized under *E. leeuwenhoekii*, provided more compelling evidence over a wider geographic range arises in future.

#### *Ectomomyrmex overbecki* (Viehmeyer, 1916)

**Material examined.** Queen, locality unknown, 1994, collector unknown, NS 136A, ZRC\_ENT00000277; Pulau Ubin (OBS area), 28 May 2019, W. Wang leg., ZRC\_ENT00007921; Mandai Road, 1.40869, 103.80138, 19–21 Dec 2016, G.W. Yong et al. leg., M1D3GPc20149, ZRC\_ENT00047847

**Material not physically examined.** Types – CASENT0915272, ANTC40433 (NHMB); FOCOL0958-961 (ZMHB). Non-type – FOCOL0364 (DEIC) [as cotype of unpublished '*Bothroponera helleri*'].

**Literature.** Type – Viehmeyer (1916); Overbeck (1924) [both as *Pachycondyla (Ectomomyrmex) overbecki*].

**Localities.** Bukit Timah Road [type]; Mandai Road; Pulau Ubin.

**Habitat/Ecology.** The type series of this species was found nesting between the roots of a tree in loose earth in a garden. Individuals were also collected from disturbed native-dominated secondary forest, on one occasion in a rotting log on the ground.

**Remarks.** Type locality in Singapore.

#### *Emeryopone buttelreepeni* (Forel, 1912)

**Material examined.** Bukit Timah Nature Reserve, Jun–Oct 1968, D.H. Murphy leg., ZRC\_ENT00027946-27948; same locality as previous, BT07, 1.35499, 103.78167, ZRC\_HYM\_0000350; queen and workers, Nee Soon Swamp Forest, 2 Oct 2017, W. Wang leg., Winkler extraction, WT\_FL1/NSW2, ZRC\_ENT00000976; same locality as previous, 1.39932, 103.80954, 13 Sep 2015, M.K.L. Wong leg., Berlese extraction, ZRC\_ENT00000713.

**Material not physically examined.** Unknown.

**Literature.** Baroni Urbani (1975) [as *Belonopelta buttelreepeni*].

**Localities.** Bukit Timah Nature Reserve; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species was found in primary or old/mature secondary forests in Singapore, including swamp forest. Workers were collected from soil and leaf/forest litter.

#### *Euponera malayana* (Wheeler, 1929)

**Material examined.** Queen and worker, Mandai Besar S3 Mangrove, 5 Aug 1987, S. Teo leg., ZRC\_ENT00048803-48804; males, Prince George's Park Residences (NUS), May–Sep 2015, M.S. Foo & W. Wang leg., ZRC\_BDP multiple.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2018a) [as *Euponera* sp.1.of.WW – but see Remarks].

**Localities.** Mandai Besar Mangrove; Prince George's Park Residences (NUS).

**Habitat/Ecology.** A queen and worker of this species were found in an abandoned mud lobster (*Thalassina* sp.) mound in mangroves. Males were identified from a malaise trap sample from a disturbed secondary forest fragment, in a semi-urban setting.



**Remarks.** This genus appears similar to *Ectomyrmex*, but can be most easily distinguished from the latter by the presence of basal mandibular pits (absent in *Ectomyrmex*).

*Euponera malayana* can be distinguished from most other congeners in Southeast Asia by its relative smaller size (TL 4.3-4.4 mm), indistinct longitudinal subocular groove, and near-trapezoidal petiole in profile view with anterior face weakly convex (the latter condition more evident in dorsal view).

Based on observations of males of other *Euponera* species and their worker nestmates, we deduced that *Euponera* sp.1.of.WW mentioned in Wang et al. (2018a) should be *E. malayana*. The male specimens mentioned in the study correspond to those encoded 'ZRC\_BDP' under 'Material examined'. We observed that petioles of *Euponera* males tend to resemble those of conspecific workers, albeit smaller in size with weaker edges. Males of *Euponera* sp.1.of.WW seem relatively smaller than other congeneric males, and have short, subtriangular petioles with rounded apices, much like a shrunken version of the worker's petiole.

Thus, we tentatively treat these males as *E. malayana*, but this assessment may change in future if full colony series of the species are collected, and our initial deductions are proven otherwise.

### *Euponera sharpi* Forel, 1901

**Material examined.** Queen and workers, Namly Avenue, 28 Apr 1985, D.H. Murphy leg., DHM-SG85-Eup1, ZRC\_ENT00027961; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000450; Upper Seletar Reservoir, 4 Oct 2020, G.W. Yong leg., GY-SG20-002, ZRC\_ENT00028567.

**Material not physically examined.** Syntype – CASENT0907284, ANTC27598 (MHNG).

**Literature.** Type – Forel (1901)[as *Euponera* (*Pseudoponera*) *sharpi*]. Viehmeyer (1916), Overbeck (1924) [both as *Euponera* (*Trachymesopus*) *sharpi*].

**Localities.** Bukit Timah Road [type]; Namly Avenue; Pulau Ubin; Upper Seletar Reservoir.

**Habitat/Ecology.** This species was found in both young and mature secondary forests of varying levels of disturbance in Singapore, including disturbed wasteland secondary forest fragments or scrub in semi-urban settings. Individuals could be found in soil around roots of old fallen trees, or under rocks. Colonies were sometimes observed living together with termites.

**Remarks.** Type locality in Singapore.

### *Harpegnathos venator* (Smith, 1858)

**Material examined.** Sime Road, 30 Dec 1974, D.H. Murphy leg., ZRC\_ENT00007406.

**Material not physically examined.** Unknown.

**Literature.** Davidson et al. (2008).

**Localities.** MacRitchie; Sime Road.

**Habitat/Ecology.** This species is associated with primary or mature secondary forests in Singapore, in fringe forest or near forest edges. Individuals were found foraging on the forest floor; nests were observed to be underground in soil with funnel entrances.

### *Hypoconerops confinis* (Roger, 1860)

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Forel (1912) [as *Ponera confinis*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** At the time of writing, this species is known from Singapore only based on a single literature record, in contrast with its three original subspecies where both literature and physical records are available. We cannot overrule the possibility that this single record may actually correspond to any one of the three subspecies (two raised to species in this paper) later described from Singapore.

***Hypoponera confinis epinotalis* (Viehmeier, 1916)**

**Material examined.** None available.

**Material not physically examined.** Types – CASENT0907306, ANTC27772 (MHNG); FOCOL0358-359 (DEIC); FOCOL0989-991 (ZMHB).

**Literature.** Type – Viehmeier (1916); Overbeck (1924) [both as *Ponera confinis epinotalis*].

**Localities.** Bukit Timah Road [type].

**Habitat/Ecology.** Workers of the type series were found under a flower pot in a garden.

**Remarks.** Type locality in Singapore.

***Hypoponera javana* (Forel, 1905) stat. n.**

*Ponera confinis* var. *javana* Forel, 1905: 6 (w.q.)  
Combination in *Hypoponera*: Bolton, 1995: 215.  
Subspecies of *Hypoponera confinis*: Forel, 1907a: 17; Forel, 1911a: 194; Emery, 1911: 90; Wheeler, 1919: 57; Wheeler, 1924: 242; Wheeler & Chapman, 1925: 69; Wheeler, 1937: 21; Chapman & Capco, 1951: 69; Baltazar, 1966: 246; Bolton, 1995: 215; Pfeiffer et al., 2011: 56.

**Material examined.** Kent Ridge, 25 Apr 1985, D.H. Murphy leg., DHM-SG85-Hypo4, ZRC\_ENT00027998; Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00028303; queen and workers, Namly Avenue (kampong), 28 Apr 1985, D.H. Murphy leg., DHM-SG85-Hypo3, ZRC\_ENT00027997.

**Material not physically examined.** Unknown.

**Literature.** Forel (1907) [as *Ponera confinis javana*].

**Localities.** Kent Ridge; Mandai Lake Road; Namly Avenue.

**Habitat/Ecology.** This species was found in young or mature secondary forest, often disturbed fragments in semi-urban settings close to man-made infrastructure. In one instance, the ants were found nesting under brick. Usually, individuals were collected from leaf litter and topsoil substrate.

**Remarks.** *Hypoponera javana* was originally described as a subspecies of *H. confinis* (then known as '*Ponera confinis*'). Workers of both species appear very similar, but can be distinguished based on the following (*H. confinis* characters in parentheses): 1) head wider with broadly convex sides, slightly narrowed anteriorly (head less wide with almost parallel sides, not narrowed anteriorly), 2) antennal scapes reaching posterior margin of head (antennal scapes not reaching posterior margin of head), 3) petiole shorter in dorsal view, thinner in profile (petiole longer and nearly reniform in dorsal view, thicker in profile), 4) propodeal dorsum relatively short, not much longer than wide, distinctly shorter than declivitous slope in profile (propodeal dorsum long, distinctly longer than wide, as long as or slightly longer than propodeal declivity).

The queen of *H. javana* can also be separated from that of *H. confinis* by its more distinctly angulate propodeal junction and longer, more sharply truncate propodeal slope.

*Hypoponera javana* closely resembles *Hypoponera singaporensis* Viehmeier, 1916 stat. n., which was also originally described as a subspecies of *H. confinis*. Differences between the two species are discussed under Remarks for *H. singaporensis*.

***Hypoponera malayana* (Wheeler, 1929)**

**Material examined.** Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, ZRC\_ENT00048408.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Lake Road

**Habitat/Ecology.** Individuals of this species were collected in leaf litter and upper soil substrate from mature secondary forest.

**Remarks.** At the time of writing, since both type images and physical specimens of this species were unavailable for comparison, identities of ZRC material examined were deduced based on the original species description by Wheeler (1929).

***Hypoponera pygmaea* (Forel, 1907)**

**Material examined.** Bukit Timah Nature Reserve, BT03, 1.34913, 103.77914, 17 May 2017, W. Wang leg., WW-SG17-056, ZRC\_ENT00028316; Nee Soon forest, 26 Apr 2018, W. Wang leg., ZRC\_ENT00047964.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Nee Soon forest.

**Habitat/Ecology.** This species was found mostly in old secondary forest, on one occasion in soil at the base of a large tree.

**Remarks.** This tiny species (< 1.5 mm) can be distinguished from most other congeners by its minute size and distinctly long antennal club. The original description states that the 'last article of the antenna', presumably the apical segment of the club, is about as long as the combined length of its preceding nine segments. In local specimens, we observed the apical antennal segment to be slightly shorter.

Workers of *Hypoponera pygmaea* are also similar to those of another minute species – *Hypoponera butteli* (Forel, 1913), but can be differentiated by their shorter scapes which are distant from posterior margin of head when laid back. In *H. butteli*, the scapes nearly reach the posterior margin of head.

***Hypoponera singaporensis* (Viehmeyer, 1916) stat. n.**

*Ponera confinis* var. *singaporensis* Viehmeyer, 1916: 115 (w.q.)

Combination in *Hypoponera*: Bolton, 1995: 216.

Subspecies of *Hypoponera confinis*: Chapman & Capco, 1951: 69; Bolton, 1995: 216.

**Material examined.** Labrador beach, 29 Apr 1985, D.H. Murphy leg., DHM-SG85-Hypo1, ZRC\_ENT00027995.

**Material not physically examined.** Types – FOCOL0356-357 (DEIC); queen and workers, FOCOL0985-988 (ZMHB).

**Literature.** Type – Viehmeyer (1916). Overbeck (1924) [both as *Ponera confinis singaporensis*].

**Localities.** Bukit Timah Road [type]; Labrador beach.

**Habitat/Ecology.** Type specimens of this species were found in a garden, specifically in the wet pulp of a large fungus on a termite-infested tree, also in the rotten wood of a decaying branch. Individuals were also collected from a considerably rocky beach, in close proximity to coastal beach forest.

**Remarks.** Type locality in Singapore. Originally described as a subspecies of *H. confinis*, workers of *H. singaporensis* can be differentiated from those of the former by points (1) – (3) mentioned in Remarks under *H. javana*. In addition, *H. singaporensis* workers are darker in colour and visibly more shiny than those of *H. confinis*. The propodeal junction in *H. singaporensis* workers is also less sharply angular and more ill-defined than that of *H. confinis*, because of a slightly bulging sclerite.

*Hypoponera singaporensis* can be distinguished from *H. javana* based on the following (*H. javana* traits in parentheses): 1) in workers, propodeum distinctly longer than wide, propodeal dorsum as long as or slightly longer than declivitous slope in profile (propodeal dorsum relatively shorter, not much longer than wide, propodeal dorsum shorter than declivitous slope), 2) in queens, propodeal junction mirrors that of workers, rounded and ill-defined (propodeal junction distinctly angulate and well-defined).

***Hypoponera truncata* (Smith, 1860)**

**Material examined.** Nee Soon Swamp Forest, 17 Dec 2021, W.N. Lam et al. leg., ZRC\_ENT00057832 – 57833.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Nee Soon Swamp Forest

**Habitat/Ecology.** This species was found in freshwater swamp forest, collected from leaf litter and soil debris.

**Remarks.** *Hypoponera truncata* was first described based on a holotype queen (Smith 1860). At the time of writing, both reliably-identified worker images and physical specimens of this species were unavailable for comparison. Thus, the identities of ZRC material examined (all workers) were deduced based on the original worker description by

Forel (1905), and the holotype queen image on AntWeb. These specimens should be considered *Hypoponera truncata sensu lato*.

This blackish species resembles *Hypoponera elliptica* (Forel, 1900) from Australia, but is generally smaller (worker TL 2.7–3.1 mm, see Forel 1905), has longer antennal scapes that visibly exceed the posterior margin of head, more strongly convex sides of head, and shorter propodeal dorsum.

### *Hypoponera zwaluwenburgi* (Wheeler, 1933)

**Material examined.** University campus ‘flood-plain’ (sic), 14 Aug 1964, D.H. Murphy leg., ZRC\_ENT00027944.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** University campus (Bukit Timah)

**Habitat/Ecology.** It is not clearly understood from information on the original ZRC specimen label what type of habitat this species was associated with. A ‘flood plain’ is technically defined as an area of low-lying ground adjacent to a river or stream, formed largely of silt and sediment and subject to flooding. However, there were no known major water bodies within said university campus grounds at the time of specimen collection. The most we can infer from locality data is that the species was possibly found in a disturbed secondary forest fragment in an urban setting/matrix.

### *Leptogenys borneensis* Wheeler, 1919

**Material examined.** Bukit Timah Nature Reserve, 11 Sep 1967, D.H. Murphy leg., A82-13, DHM-SG67-Lep2, ZRC\_ENT00047690.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** Individuals were collected from primary or old/mature secondary forest in Singapore.

### *Leptogenys chinensis* (Mayr, 1840)

**Material examined.** Mandai, Bird Park Buffer, 17 Jul 2019, J. Tan & N. Chin leg., JTNC-MIS-003, ZRC\_ENT00013544; Prince George’s Park Residences, 1.292389, 103.7787, 3 Dec 2016, W. Wang leg., WW-SG16-013, ZRC\_HYM\_0000506.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai; Prince George’s Park Residences (NUS).

**Habitat/Ecology.** This species was found in disturbed secondary forest fragments in semi-urban settings. The ants were found nesting in fallen rotting branches or wood, in one instance alongside a *Gnamptogenys* nest.

### *Leptogenys diminuta* (Smith, 1857)

**Material examined.** Males and workers, Bukit Timah Nature Reserve, 30 Sep 1964, D.H. Murphy, A-292-11, DHM-SG64-Lep1, ZRC\_ENT00027949; same locality and collector as previous, Fern Valley contour, 14 May 1967, DHM-SG67-Lep1, ZRC\_ENT00027950; same locality as previous, 1965, collector unknown, ZRC\_ENT00048393.

**Material not physically examined.** Unknown.

**Literature.** None. New record (see Remarks).

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary or mature secondary forests in Singapore. Individuals were found in rotting wood, under bark of fallen dead trees, or in leaf litter and soil debris.

**Remarks.** Supposed historical literature records of this species in Singapore (i.e., Viehmeyer 1916, Overbeck 1924) actually reported specimens from Gunong Angsi in Malaysia, not Singapore. This error has unfortunately been perpetuated in contemporary online databases and some secondary literature sources, e.g. Xu & He (2015).

***Leptogenys hemioptica* Forel, 1901**

**Material examined.** Bukit Timah Nature Reserve, 1 May 1967, D.H. Murphy leg., C2-3, DHM-SG67-Lep3, ZRC\_ENT00047820; same locality as previous, plot II-2, 30 May 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048383; same locality as previous, 1 Apr 1967, D.H. Murphy leg., ZRC\_HYM\_0000680.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species was found in either primary or old/mature secondary forest, typically on the ground or in forest litter (leaves and soil debris).

***Leptogenys iridescens* (Smith, 1857)**

**Material examined.** Bukit Timah Nature Reserve, 1.34772, 103.77766, collector unknown, 30 Nov 2015, ZRC\_ENT00000714; same locality as previous, 18 May 1969, D.H. Murphy leg., A24-10, ZRC\_HYM\_0000672; same locality and collector as previous, 4 October 1973, ZRC\_HYM\_0000676; same locality and collector as previous, 8 Jun 1967, ZRC\_HYM\_0000874; Central Catchment Nature Reserve, MacRitchie, 10 Sep 2011, E.J.Y. Soh leg., ZRC\_ENT00000858; Nee Soon forest, 1.37770, 103.80645, 3 Aug 2017, W.N. Lam leg., NS02\_04, ZRC\_ENT00000859; Seletar Trail, 1.3946, 103.80113, 28 Aug 2015, M.K.L. Wong leg., Berlese extraction, ZRC\_ENT00000715.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve (MacRitchie); Nee Soon forest; Seletar Trail.

**Habitat/Ecology.** This species is associated with primary or old/mature secondary forests in Singapore, including swamp forest where individuals were found in the lower pitcher contents of *Nepenthes ampullaria*. The ants were also collected from leaf litter, and on forest paths or trails.

**Remarks.** At the time of writing, most examined material in the ZRC were expert-identified to the '*L. iridescens* complex' – broad morphological variation was observed between different samples. Some specimens had characters that would more closely confer with *L. mutabilis sensu lato* (W. Wang 2021, pers. obs.). In the absence of more compelling empirical evidence supporting different species hypotheses, we tentatively treat these variable specimens as conspecific for the purposes of this checklist.

***Leptogenys kraepelini* Forel, 1905**

**Material examined.** Alate queens, males, and workers, National University of Singapore (multiple sites), Apr-Sep 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); National University of Singapore campus, 13 Oct 2016, P. Escoubas leg., Esco-SG16-SG005, ZRC\_ENT00047817-47819; Pulau Ubin, 15 Oct 2016, P. Escoubas leg., SG016-18, ZRC (uncatalogued); Seletar, 18 Oct 2016, same collector as previous, SG023, ZRC (uncatalogued).

**Material not physically examined.** Singapore Botanic Gardens, 5 Aug 2014, J.K. Wetterer leg., vial #477 (JKWC).

**Literature.** Wang et al. (2018a).

**Localities.** National University of Singapore campus (Clementi/Kent Ridge); Pulau Ubin; Seletar; Singapore Botanic Gardens.

**Habitat/Ecology.** This species was often found mostly in disturbed secondary forest fragments in urban or semi-urban settings, including waste woodland forest. Numerous alates were collected from cultivated grass patches or scrubland in urban settings using malaise traps. Nests were sometimes found in fallen rotting wood.

**Remarks.** Broad morphological variation was observed between samples determined as *L. kraepelini sensu lato*, suggesting possible cryptic species or a species complex. Pending the availability of empirical evidence proving multiple species, for this checklist we tentatively treat all variants as conspecific.



***Leptogenys mutabilis* (Smith, 1861)**

**Material examined.** Lower Peirce Reservoir, 7 Aug 1990, collector unknown, ZRC\_ENT00000121, ZRC\_ENT00000126; same locality as previous, 7 May 2017, G.W. Yong leg., ZRC\_ENT00048418; Mandai Lake Road, 5 Nov 2016, G.W. Yong leg., ZRC\_ENT00048423; male and workers, Mandai Road, 13 Jan 2016, G.W. Yong leg., GY-SG16-Lep1, ZRC\_ENT00048407; Nee Soon Swamp Forest, 26 Apr 2018, W. Wang leg., WW-SG18-Lepto1, ZRC\_ENT00000950.

**Material not physically examined.** Unknown [but see Remarks under '*L. processionalis*'].

**Literature.** None. New record.

**Localities.** Lower Peirce Reservoir; Mandai Lake Road; Mandai Road; Nee Soon Swamp Forest.

**Habitat/Ecology.** This species appears associated mostly with primary and old/mature secondary forests, including swamp forest where a nest was found in a mud mound on water-logged ground.

**Remarks.** This species is similar to *L. iridescens*, but may be distinguished from the latter by a few characters such as: 1) head in full face view more squarish, only slightly longer than wide (in *L. iridescens* distinctly longer than wide); 2) lateral margins of head in full face view evenly and broadly convex (in *L. iridescens* the sides are almost straight); 3) eye farther from lateral head margin in full face view (in *L. iridescens* the eye is about half the former distance from lateral head margin); 4) antennal scape relatively thicker across its entire length (more 'flattened' laterally) in proportion to head width.

***Leptogenys myops* (Emery, 1887)**

**Material examined.** Central Catchment Nature Reserve (Venus Loop), 1.35550, 103.81577, 15 Jun 2015, M.K.L. Wong leg., pitfall trap, ZRC\_ENT00000717; Lim Chu Kang mangrove, 10 Mar 1987, D.H. Murphy leg., ZRC\_ENT00000886; Seletar Trail, 1.39192, 103.80081, 18 Oct 2015, M.K.L. Wong leg., pitfall trap, ZRC\_ENT00000716; Sunset Way, 1.32609, 103.77187, 22-24 Aug 2016, G.W. Yong leg., pitfall trap, SW2GP023, ZRC\_HYM\_0001188.2.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Central Catchment Nature Reserve; Lim Chu Kang mangrove; Seletar Trail; Sunset Way.

**Habitat/Ecology.** This species was found in both young and mature secondary forests, such as an abandoned plantation forest, and also in a mangrove, where individuals were collected from atop a mud lobster (*Thalassina* sp.) mound.

***Leptogenys pangui* Xu, 2000**

**Material examined.** Bukit Timah Nature Reserve, collection date unknown, D.H. Murphy leg., C1-19, ZRC\_HYM\_0000681; Sime Road, 15 Dec 1975, D.H. Murphy leg., ZRC\_HYM\_0000907.

**Material not physically examined.** Unknown.

**Literature.** None. New record (but see Remarks).

**Localities.** Bukit Timah Nature Reserve; Sime Road.

**Habitat/Ecology.** This species was found in either primary or old/mature secondary forest.

**Remarks.** The Singapore specimens may in fact be a closely-related but different species with characters intermediate between *L. pangui* and the smaller *L. assamensis*. General characters of the ZRC material, however, confer more with the original description of the former species, thus we tentatively treat this material as *L. pangui*. This treatment may possibly change in future when more empirical evidence is made available.

***Leptogenys peuqueti* (André, 1887)**

**Material examined.** Bukit Timah Nature Reserve, 8 Sep 2005, collector unknown, ZRC\_HYM\_0000276; same locality as previous, collection date unknown, D.H. Murphy leg., C2-1, ZRC\_HYM\_0000683; same locality as previous, 25 Dec 1989, H.K. Lua leg., ZRC\_ENT00000242; Labrador beach, 29 Apr 1985, D.H. Murphy leg., DHM-SG85-Lep1, ZRC\_ENT00047823; Lower Peirce Reservoir Road, Aug 1990, collector unknown, ZRC\_ENT00000153; Mandai Lake Road, N 01°24'19.3", E 103°46'56.2", 73 m, 26 Mar

2020, W. Zhang leg., WZ\_MIS\_020, ZRC\_ENT00047799; Rifle Range Road, pipeline track, 26 Jan 1986, D.H. Murphy leg., DHM-SG86-Lep1, ZRC\_ENT00047822; beside Temasek Polytechnic, 1.34355, 103.93572, 13-15 Dec 2016, G.W. Yong et al. leg., TT2G-Pd561, ZRC\_ENT00047862; Prince George's Park Residences (NUS), 6 Dec 2017, Sk. Yaman leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924) [both as *Leptogenys (Lobopelta) peuqueti*].

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Labrador beach; Lower Peirce Reservoir Road; Prince George's Park Residences (NUS); Mandai Lake Road; Rifle Range Road; Temasek Polytechnic (adjacent waste woodland).

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests, sometimes also in young secondary forest including coastal beach forest, and cultivated gardens in Singapore. Individuals and nests have been sampled from inside fallen rotting or decayed wood, and logs.

### *Leptogenys pompiloides* (Smith, 1857)

**Material examined.** None available.

**Material not physically examined.** Male, CASENT0281941, ANTC20700 (BMNH).

**Literature.** Type – Smith (1857) [as *Ponera pompiloides*; see Remarks].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** This species was first described based on males apparently collected from Singapore, though type locality was indicated as 'Borneo (Sarawak)' in Smith (1857). The worker for this species remains a mystery till present day. Donisthorpe (1932) concluded that the locality labels on the type male specimens were probably miswritten, since no males in the A.R. Wallace collections were associated with Sarawak, but two males linked to Singapore matched the original description of *L. pompiloides* [as *Ponera pompiloides*].

### *Leptogenys processionalis* (Jerdon, 1851)

**Material examined.** None available.

**Material not physically examined.** CASENT0217534, ANTC17790 (CASC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species was found in either primary or old/mature secondary forest in Singapore.

**Remarks.** The unexamined specimen at CASC might be misidentified *L. mutabilis* – upon observation of the full face image on AntWeb, it appears that there are no striations on the anterior one-third of the head dorsum, a feature diagnostic of *L. processionalis*.

### *Mesoponera rubra* (Smith, 1857)

**Material examined.** Bukit Timah Nature Reserve, 1.35499, 103.78167, 19 Jul 2017, W. Wang leg., WW-SG17-050, ZRC\_ENT00027968; same locality as previous, 1.35130, 103.77859, 31 Jul 2015, M.K.L. Wong leg., SPT15, ZRC\_ENT00000720; same locality as previous, 28 Apr 2016, D.J. Court leg., ZRC\_ENT00048450; locality and collection date unknown, D.H. Murphy leg., ZRC\_HYM\_0000798; locality and collection date unknown, D.H. Murphy leg., ZRC\_HYM\_00000832.

**Material not physically examined.** Holotype queen – CASENT0901349, ANTC20788 (OUMNH).

**Literature.** Type – Smith (1857) [as *Ponera rubra*]. Emery (1893, 1911) [as *Ponera rubra*].

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary or old/mature secondary forests in Singapore. Individuals were sometimes found in soil at base of large trees, or collected using pitfall traps.

**Remarks.** Type locality in Singapore, but specific location unknown. This species was first described based on a dealate queen from Singapore.

***Mesoponera javana* (Forel, 1905) stat. n.**

*Euponera* (*Mesoponera*) *rubra* var. *javana* Forel, 1905: 6 (q.m)

Combination in *Pachycondyla*: Brown, 1995: 306.  
Combination in *Mesoponera*: Schmidt & Shattuck, 2014: 111.

Subspecies of *Mesoponera rubra*: Emery, 1911: 81; Wheeler, 1924: 242; Karavaiev, 1926: 419; Chapman & Capco, 1951; Bolton, 1995: 306.

Senior synonym of *Mesoponera rubra minirubra*: Özdikmen, 2010 (unnecessary replacement name)

**Material examined.** Queen and worker, Lower Peirce, 7 May 2017, G.W. Yong leg., ZRC\_ENT00027967; Bukit Timah forest, 26 Nov 1969, D.H. Murphy leg., ZRC\_HYM\_0000832; Upper Thomson Nature Park, 19 Oct 2016, G.W. Yong et al. leg., ZRC\_ENT00057834.

**Material not physically examined.** Unknown

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Lower Peirce; Upper Thomson Nature Park.

**Habitat/Ecology.** Individuals were found in either primary or old/mature secondary forests in Singapore, usually in leaf litter or in soil at bases of trees. In one instance, workers were collected under bark of a rotting log, in wet sand.

**Remarks.** *Mesoponera javana* resembles *M. rubra*, but is generally smaller – the queen of *M. javana* is either similar in size to or smaller than the worker of *M. rubra*. The workers of *M. javana* can also be differentiated from *M. rubra* based on the following (*M. rubra* traits in parentheses): 1) median part of clypeus produced anteriorly as a broad, subtriangular lobe with median apical point and distinct rounded, translucent lamellate edge (median part of clypeus weakly produced anteriorly as a shallow, broadly convex lobe with indistinct lamellate edge), 2) eye relatively larger and closer to anterior margin of head, shortest distance of eye to mandibular insertions less than 2x eye length (eye relatively smaller and further away from anterior margin of head, shortest distance of eye to mandibular insertion more than or equal to 2x eye length).

Condition of the clypeus, i.e., character (1) previously mentioned, can be used to differentiate between queens of the two species as well, besides body size.

***Myopias mayri* (Donisthorpe, 1932)**

**Material examined.** Mandai forest, 7 Jun 2018, W. Wang leg., ZRC\_ENT00007263.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai

**Habitat/Ecology.** A worker was collected from fallen rotting wood in secondary forest.

***Odontomachus litoralis* Wang, Yamada & Yamane, 2020**

**Material examined.** Types – holotype, Sungei Buloh Wetland Reserve, 28 Mar 2018, W. Wang & M.S. Foo leg., WW-SG18-Odonto1, ZRC\_ENT00013883; paratype male, queens and workers, same collection data as holotype, ZRC\_ENT0000917. Non-types – Admiralty, 6 Apr 2019, Benjamin Yeap leg., ZRC\_ENT00048015; Lim Chu Kang mangrove, 1987, Serena Teo leg., ZRC\_ENT00000778; Loyang mangroves, 29 Nov 2002, N. Sivasothi leg., ZRC\_ENT00027921; Mandai mangroves, 1 Apr 2009, S.P. Goh & D. Pitta de Araujo leg., ZRC\_ENT00000774; workers and males, same locality as previous, 15 Oct 1978, D.H. Murphy leg., DHM-SG78-Odo1, ZRC\_ENT00027918; workers and males, same locality and collector as previous, 18 Oct 1977, DHM-SG77-Odo1, ZRC\_ENT00027920; Pulau Ubin, Celestial Resort Ubin, 6 Mar 2012, I. Iesa leg., CMBS-M01, ZRC\_ENT00007278; males, queens and workers, Sungei Buloh Wetland Reserve, 5 Dec 2018, W. Wang et al. leg., WW-SG18-Odonto3/4, ZRC\_ENT00007635-7636; males, queens and workers, same locality as previous, 20 Dec 2018, W. Wang & M.S. Foo leg., WW-SG18-Odonto6/7, ZRC\_ENT00007645-7646.

**Material not physically examined.** Unknown.

**Literature.** Type – Wang et al. (2020).

**Localities.** Admiralty; Lim Chu Kang mangroves; Loyang mangroves; Mandai mangroves; Pulau Ubin; Sungei Buloh Wetland Reserve [type].

**Habitat/Ecology.** This species is found exclusively in mangroves in Singapore. Nests were usually found in abandoned *Thalassina* (mud lobster) mounds, sometimes well above maximum tide levels. Nests have also been reported from soil mounds among roots of uprooted trees. Workers were often observed foraging on mud and debris in close proximity to mangrove back forests during low tide.

**Remarks.** Type locality in Singapore.

### *Odontomachus malignus* Smith, 1859

**Material examined.** Lim Chu Kang mangrove, 23 Sep (year unknown), D.H. Murphy leg., ZRC\_HYM\_0000902; males, Pulau Semakau Old Fragment, 1°12'23.9"N, 103°45'37.6"E, Jul-Nov 2012, J. Puniamoorthy et al. leg., malaise trap, ZRC\_BDP (multiple); male, Pulau Semakau New Fragment, SMN2, 1°12'04.5"N, 103°45'46.1"E, 6-13 Dec 2012, same collectors as previous, malaise trap, Reg. 29626, ZRC\_BDP0016086.

**Material not physically examined.** Unknown.

**Literature.** Wang et al. (2020).

**Localities.** Lim Chu Kang mangrove; Pulau Semakau.

**Habitat/Ecology.** A worker of this species was found foraging in mangrove at low tide, close to mudflats opening to the sea. Nests have never been found in mangroves in Singapore. Most specimens were males collected in malaise traps set up in mangroves at an offshore landfill. It is possible that these males could have originated from actual nests in extensive coral rubble surrounding the mangrove fragments on this landfill.

**Remarks.** This species is similar to *O. litoralis*, but can be differentiated from the latter by the absence of a strongly carinate posterior propodeal edge in the worker, and also a generally less coarse or shagreened, somewhat shinier mesosoma. *Odontomachus malignus* has been reported to nest in coastal coral rubble and limestone rockfaces facing the sea in other countries – this apparent nesting preference may also distinguish it from *O. litoralis* which has only been found nesting in mangroves.

### *Odontomachus rixosus* Smith, 1857

**Material examined.** Bukit Batok East, 1.34304, 103.76235, Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001294-1295; Bukit Timah Nature Reserve, 19 Feb 2016, collector unknown, ZRC\_ENT00000723; same locality as previous, 1.35386, 103.77988, 23 Aug 2017, W. Wang leg., ZRC\_ENT00007559; same locality as previous, 15 Aug 1983, D.H. Murphy leg., ZRC\_HYM\_0000669; same locality as previous, plot III-2, 19 Apr 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048454; males, Bukit Timah Summit, 13-22 Apr 2009, Z. Chen leg., malaise trap, ZRC\_ENT00048020-48022; Catchment forest, 15 Sep 1964, D.H. Murphy leg., ZRC\_HYM\_0000663; Lower Peirce Reservoir, 11 Aug 1990, collector unknown, ZRC\_ENT00000109; same locality as previous, 7 Aug 1990, collector unknown, ZRC\_ENT00000122; same locality as previous, 31 Jul 1990, collector unknown, ZRC\_ENT00000209; MacRitchie Reservoir, 9 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000424; Mandai, 1.40661, 103.78848, 13 Nov 2018, W. Wang leg., ZRC\_ENT00007586; Mandai Road, Nov-Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001303-1322; male, Pulau Ubin, PU1, 1°24'36.3"N, 103°59'25.5"E, 23-30 Jun 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29319, ZRC\_BDP0016035; Seletar Trail, 1.39097, 103.79952, 7 Dec 2015, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000722; Upper Thomson Nature Park, 1.38311, 103.79839, Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001298-1302.

**Material not physically examined.** Syntype – CASENT0900656, ANTC19758 (BMNH). Non-types – ANIC32-031703, RWTacc.68.11 (ANIC); ANIC32-031673, Shattuck134500711 (ANIC); CASENT0217544, ANTC17803 (CASC); FMNHINS0002821936, FMHD\_81-282 (FMNH).

**Literature.** Type – Smith (1857). Viehmeyer (1916); Overbeck (1924); Tan & Corlett (2012); Satria et al. (2015).



**Localities.** Bukit Batok East; Bukit Timah Nature Reserve; Bukit Timah Road; Lower Peirce Reservoir; MacRitchie Reservoir; Mandai; Mandai Road; Pulau Ubin; Seletar Trail; Singapore Botanic Gardens; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mostly with primary and old/mature secondary forests in Singapore, but has sometimes also been found in more degraded or disturbed young secondary forests, including mangrove back forest. Individual foragers have occasionally been collected from under bushes beachside, presumably originating from adjacent coastal beach forest. These ants were often found foraging in and around leaf litter.

**Remarks.** Type locality in Singapore.

### *Odontomachus simillimus* Smith, 1858

**Material examined.** Queen, Bukit Timah, Hindhede Drive, 12 Nov 1989, H.K. Lua leg., ZRC\_HYM\_0000133; Commonwealth Road, 1.31115, 103.78171, 22-24 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001329-1333; Hougang Avenue 4, 1.34561, 103.88884, 12-14 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001334-1338; queen, Jurong East, 27 Jul 2018, D. Safaruan leg., ZRC\_ENT00007417; Labrador beach, 29 Apr 1985, D.H. Murphy leg., ZRC\_HYM\_0000670; Loyang mangroves, 29 Nov 2002, N. Sivasothi leg., ZRC\_ENT00027922; male, Block 78 Marine Drive, 5 Nov 2016, W. Wang leg., ZRC\_ENT00000895; male, Pulau Semakau New Fragment, SMN3, 1°12'05.6"N, 103°45'46.5"E, 13-20 Sep 2012, J. Puniamorthy et al. leg., malaise trap, Reg. 29471, ZRC\_BDP0015375; male, Pulau Semakau Old Fragment, SMO2, 1°12'20.2"N, 103°45'35.8"E, 18-25 Oct 2012, same collectors as previous, malaise trap, Reg. 29538, ZRC\_BDP0016524; Pulau Ubin, 1.40308, 103.96924, 4 Dec 2016, G.W. Yong et al. leg., ZRC\_HYM\_0001083; Seletar Link, 1.40518, 103.88555, 16-18 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001339-1344; Sunset Way, 1.32609, 103.77187, 21-23 Sep 2016, ZRC\_HYM\_0001323-1325; Temasek Polytechnic, adjacent waste woodland, 1.34239, 103.93598, 13-15 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001326-1328.

**Material not physically examined.** Non-types, ANIC32-031799 (ANIC); CASENT0009624/9624-D01/9624-D02, ANTC7554 (CASC). Non-types, J.K. Wetterer leg. (JKWC) – Katong, Amber Road, 28 Jul 2014, vial #350; Marine Parade, 28 Jul 2014, vials #355, 371; City Hall, by church, 29 Jul 2014, vial #377; Harbourfront, 29 Jul 2014, vial #385; Dhoby Ghaut, Istana Park, 30 Jul 2014, vial #403; Tai Seng, by MRT station, 31 Jul 2014, vial #420; Katong, 1 Aug 2014, vials #445, 449; Buona Vista, by MRT station, 5 Aug 2014, vial #486; Pasir Panjang, by MRT station, 5 Aug 2014, vial #484.

**Literature.** Tan & Corlett (2012); Satria et al. (2015).

**Localities.** Amber Road (Katong); Bukit Timah; Buona Vista; City Hall; Commonwealth Road; Dhoby Ghaut; Harbourfront; Hougang Avenue 4; Jurong East; Katong; Labrador beach; Loyang mangroves; Marine Drive; Marine Parade; Pasir Panjang; Pulau Semakau; Pulau Ubin; Seletar Link; Singapore Botanic Gardens; Sunset Way; Tai Seng; (beside) Temasek Polytechnic.

**Habitat/Ecology.** This species was found in a wide range of habitats of varying quality and levels of disturbance, including abandoned plantation and waste woodland secondary forests, mangroves and beachside coastal forest. Individuals including winged alates have also been frequently found in or close to urban residential areas and cultivated gardens or parks. Nests were found in soil at the bases of living trees, or in rotting wood or under rocks.

### *Odontoponera denticulata* (Smith, 1858)

**Material examined.** Ang Mo Kio Garden West, Jul-Nov 2013, Klara M.C. Chua leg., NT1-8B, ZRC\_ENT00027904; Bedok Town Park, same collection date and collector as previous, DT1-5A, ZRC\_ENT00027903; Bukit Batok East, 1.34304, 103.76235, 27-29 Sep 2016, G.W. Yong leg., ZRC\_HYM\_0001349; Bukit Timah, Hindhede Drive, Dec 1989, H.K. Lua leg., ZRC\_ENT00000250; Choa Chu Kang Avenue 2, 1 Mar 2017, D.J. Court leg., ZRC\_HYM\_0001724; Commonwealth Road, 1.31115, 103.78171, 22-24 Nov 2016,



G.W. Yong leg., ZRC\_HYM\_0001350-1356; Kent Ridge, 1 Jun 1985, D.H. Murphy leg., ZRC\_HYM\_0000817; Kranji Road, 1.42638, 103.75413, 8-10 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001362-1371; Linden Drive, 27 Oct 1974, D.H. Murphy leg., ZRC\_HYM\_0000818; MacRitchie Reservoir, 13 Apr 1993, collector unknown, NS37, ZRC\_HYM\_0000198; Mandai Road, 1.41119, 103.80513, 29 Nov-1 Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001357; males, Prince George's Park Residences (NUS), Jun-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0045703,-47328; Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001095; Seletar Link, 1.40518, 103.88555, 18-25 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001358-1361; Sunset Way, 1.32609, 103.77187, 29-31 Aug 2016, G.W. Yong leg., ZRC\_HYM\_0001345; male, Telok Blangah Street 31, 28 Apr 2019, N. Chin leg., ZRC\_ENT00013541; Upper Peirce Reservoir, 10 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000410-411; queen and workers, Upper Thomson Nature Park, Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001372-1385.

**Material not physically examined.** Holotype queen – CASENT0900664 (BMNH). Non-types, J.K. Wetterer leg. (JKWC) – City Hall, by church, 29 Jul 2014, vial #377; Outram Park, by MRT station, 29 Jul 2014, vial #379.

**Literature.** Type – Smith (1858) [as *Ponera denticulata*; see Remarks on erroneous type locality indicated in the original description]. Yamane (2009); Tan & Corlett (2012); Wang et al. (2018a).

**Localities.** Ang Mo Kio Garden West; Bedok Town Park; Bukit Batok East; Bukit Timah; City Hall; Choa Chu Kang; Commonwealth Road; Kent Ridge; Kranji Road; Linden Drive; MacRitchie Reservoir; Mandai Road; Outram Park; Prince George's Park Residences (NUS); Pulau Ubin; Seletar Link; Sunset Way; Telok Blangah; Upper Peirce Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species seemed common in cultivated vegetation patches and/or disturbed forest fragments and fringes in urban or semi-urban settings, including urban residential ar-

eas and parks. Individuals were also collected from both mature and young secondary forests, such as abandoned plantation and waste woodland forests, usually while foraging at ground level. The species has sometimes been collected from open grassland or scrub.

**Remarks.** Type locality in Singapore – this species was first described based on the holotype queen from Singapore. The type locality for *O. denticulata* was indicated as 'South Africa: Cape of Good Hope' in its original description (see Smith 1858). However, this was later clarified as an error due to mislabelling of the specimen (Donisthorpe 1943).

### *Odontoponera transversa* (Smith, 1857)

**Material examined.** Queen and workers, Bukit Batok East, 1.34304, 103.76235, Aug-Oct 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001390-1395; Bukit Timah Nature Reserve, 8 Sep 2005, collector unknown, ZRC\_HYM\_0000047-50; same locality as previous, near BT07, 1.35499, 103.78167, 19 Jul 2017, W. Wang leg., ZRC\_ENT000047930; same locality as previous, plot III-2, 12 Oct 2015, D.J. Court leg., pitfall trap, ZRC\_ENT000048441; Central Catchment Nature Reserve, Venus Loop, 1.35549, 103.81578, 15 Jun 2015, M.K.L. Wong leg., ZRC\_ENT00000724; Lower Peirce Reservoir, 25 Aug 1990, collector unknown, ZRC\_ENT00000117; same locality as previous, Aug 1990, collector unknown, ZRC\_ENT00000155; same locality as previous, 18 Aug 1990, collector unknown, ZRC\_ENT00000170; queens and workers, same locality as previous, 7 Aug 1990, collector unknown, ZRC\_ENT00000197; Mandai, 27 Jun 2019, J. Tan & N. Chin leg., NN-L01, ZRC\_ENT00013537; Mandai Road, Nov-Dec 2016, G.W. Yong leg., ZRC\_HYM\_0001424-1459; Nee Soon Swamp Forest, 1.38252, 103.80208, 25 Sep 2017, W. Wang leg., Winkler extraction, NS\_W1, ZRC\_ENT00027908; Rifle Range Road, 3 Jun 1993, collector unknown, NS110, ZRC\_HYM\_0000190; male, Seletar Reservoir, 16 May 1994, collector unknown, NS 134B, ZRC\_ENT00000267; Upper Thomson Nature Park, 1.38311, 103.79839, Sep-Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001397-1423.

**Material not physically examined.** Syntype workers, A.R. Wallace leg., SINC.55/9 (BMNH), including CASENT0900666, ANTC19768 (BMNH) [as type of *Ponera transversa*]. Non-types – CASENT0249126, PSW10256-1 (PSWC); Harbourfront, Marang Trail, 4 Aug 2014, J.K. Wetterer leg., vial #473 (JKWC).

**Literature.** Type – Smith (1857) [as *Ponera transversa*]. Viehmeyer (1916); Overbeck (1924); Yamane (2009); Tan & Corlett (2012).

**Localities.** Bukit Batok East; Bukit Timah Nature Reserve; Bukit Timah Road; Central Catchment Nature Reserve; Harbourfront; Lower Peirce Reservoir; Mandai; Mandai Road; Nee Soon Swamp Forest; Rifle Range Road; Seletar Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This species was found mostly in primary and old/mature secondary forests in Singapore, including swamp forest, frequently in or on leaf litter. Sometimes, individuals have been collected from well-developed young secondary forest such as abandoned plantation patches. In one instance, foragers were collected from inside an *Anoplolepis gracilipes* nest in a fallen rotting tree branch.

**Remarks.** Type locality in Singapore.

### *Parvaponera darwinii* (Forel, 1893)

**Material examined.** Alate queens and males, Raffles Lighthouse, 10 Aug 2019, J. Tan leg., ZRC\_ENT00027936.

**Material not physically examined.** Alate queen, CASENT0249179, PSW09596-2 (PSWC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Euponera (Trachymesopus) darwini* var. *indica*].

**Localities.** Bukit Timah Road; Kent Ridge.

**Habitat/Ecology.** Alate queens and males of this species were collected from around lamps in urban parklands and a garden. Alates were also collected on an offshore dive boat in surrounding waters of a lighthouse islet, where they swarmed around lights on the vessel at night. Actual habitat preferences of this species are unknown in the Singapore context at the time of writing.

### *Platythyrea parallela* (Smith, 1859)

**Material examined.** Bukit Batok, 1 Sep 2016, G.W. Yong leg., ZRC\_ENT00047913; Bukit Batok East, 28 Aug 2016, G.W. Yong leg., ZRC\_ENT00048025; Bukit Timah Nature Reserve, 13 Dec 1967, D.H. Murphy leg., ZRC\_ENT00027924; queens, males and workers, Bukit Timah forest, Jalan Jambul, 4 Oct 1973, D.H. Murphy leg., A340-3, DHM-SG73-Plat1, ZRC\_ENT00027923; Kranji Road, 29 Jan 2016, G.W. Yong leg., ZRC\_ENT00048026; Lower Peirce, 7 May 2017, G.W. Yong leg., ZRC\_ENT00048419; Mandai forest, 15 Jan 2020, W. Wang leg., ZRC\_ENT00027938; Mandai Road, 1.41258, 103.79839, 16 Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001552; male, Nee Soon Swamp Forest, 1°23'00.3"N, 103°48'46.5"E, 28 Mar-4 Apr 2012, J. Puniamoorthy et al. leg., malaise trap, NS1, Reg. 29157, ZRC\_BDP0012762; alate queen, Prince George's Park Residences (NUS), 1.29239, 103.77869, 15-22 Apr 2015, M.S. Foo & W. Wang leg., malaise trap, NUS0013, ZRC\_BDP0045470; Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001080-1082; Seletar Link, 1.40581, 103.88629, 23 Oct 2016, G.W. Yong et al. leg., ZRC\_ENT00047914; alate queen and workers, same locality as previous, 23-25 Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001546-1548; alate queens and worker, Upper Thomson Nature Park, 1.38311, 103.79839, Oct 2016, G.W. Yong leg., ZRC\_HYM\_0001549-1551.

**Material not physically examined.** ANIC32-065989, RWT68.11 (ANIC); ANIC32-065991-65992, AreaK7, A64-6/A66-4 (ANIC); ANIC32-065994, RWTAcc.68.35 (ANIC); queens [types of *Platythyrea coxalis*], FOCOL0847-849 (ZMHB); FOCOL0850-851 [types of *P. pusilla* var. *egena*] (ZMHB). Non-types, Katong, Amber Road, 28 Jul 2014, J.K. Wetterer leg., vial #337 (JKWC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Platythyrea coxalis* and *P. pusillia* var. *egena*].

**Localities.** Amber Road (Katong); Bukit Batok; Bukit Batok East; Bukit Timah Nature Reserve; Bukit Timah Road; Kranji Road; Mandai; Mandai Road; Nee Soon Swamp Forest; Prince George's Park Residences (NUS); Pulau Ubin; Seletar Link; Singapore Botanic Gardens; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mainly with both mature and young secondary forests, including native-dominated, abandoned plantation, and waste woodland forests, often fragments in urban or semi-urban settings. Sometimes the ants have been found on low vegetation and foliage in urban parklands. The species is considered arboreal and individuals are often found on tree trunks or branches, or foliage in general. Nests have been found under bark of living trees or large fallen logs.

**Remarks.** *Platythyrea parallela* is known to exhibit broad (body) size variation among both sympatric and allopatric populations. Other variable traits include shape and size of propodeal angles, shape of the petiolar node (specifically that of the posterodorsal margin), and body sculpture. At the point of writing, all size and morphological variants observed from local material have thus been treated as conspecific, pending future more refined analyses to distinguish between different species of this potential species complex.

#### *Platythyrea sagei* Forel, 1900

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916); Overbeck (1924).

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Workers of this species were found in a half-decayed tree trunk on the ground in a garden.

**Remarks.** At the time of writing, this species is only known from Singapore based on dated literature records.

#### *Ponera menglana* Xu, 2001

**Material examined.** Bukit Timah forest, 6 Jun 1968, D.H. Murphy leg., D7-4, ZRC\_HYM\_0000644; same locality and collection data as previous, D7-4, ZRC\_HYM\_0000649; Bukit Batok abandoned park, 28 Jan 2015, W. Wang leg., ZRC\_ENT00027964; queen and workers, Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 Jul 2019, J.S. Tan & N.L. Chin leg., Winkler extraction, JTNC\_MIS\_013, ZRC\_ENT00028291.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Batok; Bukit Timah Nature Reserve; Mandai Lake Road.

**Habitat/Ecology.** This species is associated mostly with different grades of secondary forest (i.e., young, mature, old) at varying levels of disturbance, including waste woodland forest of an abandoned park. The ants were typically collected from rotten wood, leaf litter, and upper soil substrate.

#### *Ponera swezeyi* (Wheeler, 1933)

**Material examined.** Prince George's Park Residences (NUS), 1.29239, 103.7787, 6 Dec 2017, W. Wang leg., ZRC\_ENT00027912; alate queen, Kent Ridge Park, YM site 2, 7 Dec 2017, W. Wang leg., ZRC\_ENT00027984; Bukit Timah Nature Reserve, 1.35599, 103.77397, 8 Aug 2017, W. Wang leg., WW-SG17-058, ZRC\_ENT00028318; same locality as previous, 8 Sep 2005, collector unknown, ZRC\_ENT00048385.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Kent Ridge Park; Prince George's Park Residences (NUS).

**Habitat/Ecology.** This species is associated mostly with old/mature secondary forests at varied levels of disturbance. Individuals were collected from leaf litter and soil substrate via Winkler extraction, and also soil at bases of trees. On one occasion, some workers were found with a *Brachyponera* colony in rotting wood.

**Remarks.** Despite being fairly widespread throughout Australasia and Oceania, *P. swezeyi* is suspected to actually be native to the Oriental region because of its shared characters with three other minute Oriental species: *P. baka* Xu, 2001, *P. xantha* Xu, 2001, and *P. shennong* Terayama, 2009 (Leong et al. 2019). These similarities include: relatively small body size (HW 0.28-0.35), thick petiolar node in lateral view, yellowish-brown body, and 5-segmented antennal club (sometimes indistinct).

***Pseudoneoponera havilandi* (Forel, 1901)**

**Material examined.** None available.

**Material not physically examined.** Syntype – CASENT0907253, ANTC27462 (MHNG).

**Literature.** Type – Forel (1901) [as *Pachycondyla* (*Bothroponera*) *havilandi*].

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, the species is known only from Singapore, by its type series. While there has been no recent material for objective comparisons, based on type images of *P. havilandi* on AntWeb and its original description, the validity of the species seems well-justified. The more striking characters that distinguish *P. havilandi* from other congeners known to the region would be: 1) small eyes, each with only 9-10 ommatidia along its maximum diameter, 2) petiolar node in dorsal view 1.3-1.5x wider than long, truncate with convex sides and slightly concave posterior margin.

***Pseudoneoponera insularis* (Emery, 1889)**

**Material examined.** Alate queen, Nee Soon Swamp Forest, NS1, 1°23'00.3"N, 103°48'46.5"E, 11-18 Apr 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29181, ZRC\_BDP0012698.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Pachycondyla* (*Bothroponera*) *insularis*].

**Localities.** Bukit Timah Road.

**Habitat/Ecology.** Individuals were found in a termite 'hill' between the roots of a tree in a garden. An alate queen was collected from swamp forest, caught in a malaise trap sample.

***Pseudoneoponera rufipes* (Jerdon, 1851)**

**Material examined.** Bukit Timah Nature Reserve, Jun-Aug 1967, D.H. Murphy leg., pitfall trap, ZRC\_ENT00027992; same locality as previous, plot III-2, 28 Apr 2016, D.J. Court leg., pitfall trap, ZRC\_ENT00048451; same locality as previous, collection date unknown, D.H. Murphy leg., ZRC\_HYM\_0000873; same locality as previous, Aug 1967, D.H. Murphy leg., ZRC\_HYM\_0000869; Lower Peirce Reservoir, 7 Aug 1990, collector unknown, ZRC\_HYM\_0000242; Sunset Way, 1.32609, 103.77187, 21-23 Sep 2016, G.W. Yong leg., pitfall trap, ZRC\_HYM\_0001184; same locality, collection date and collector as previous, ZRC\_HYM\_0001633.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Lower Peirce Reservoir; Sunset Way.

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests, sometimes also in young secondary forests such as abandoned plantation forests, in Singapore. These ants are usually ground-foraging and were often collected using pitfall traps.

***Pseudoneoponera tridentata* (Smith, 1858)**

**Material examined.** Bukit Timah Nature Reserve, Jun-Aug 1967, D.H. Murphy leg., pitfall trap, ZRC\_ENT00027993; same locality and collector as previous, 14 May 1967, pitfall trap, A6-70/C2-2, ZRC\_ENT00048392; Lower Peirce Reservoir, 7 Aug 1990, collector unknown, ZRC\_HYM\_0000237-238; Mandai, 1.4083, 103.77803, 12 Nov 2015, M.K.L. Wong leg., ZRC\_ENT00000728; Mandai Road, 1.41258, 103.79839, 12 Jul 2016, G.W. Yong leg., MID7GH2506, ZRC\_HYM\_0001634; alate male, Nee Soon Swamp Forest, NS1, malaise trap, Reg. 29181, ZRC\_BDP0012698; University Campus, 1 Apr 1972, D.H. Murphy leg., ZRC\_HYM\_0000909; Upper Thom-



son Nature Park, 1.38311, 103.79839, 11-13 Sep 2016, G.W. Yong leg., UT2GP226, ZRC\_HYM\_0001635; Upper Thomson Road, Oct 2016, G.W. Yong leg., GY-SG16-Pseu1, ZRC\_ENT00028000.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Pachycondyla* (*Bothroponera*) *tridentata*].

**Localities.** Bukit Timah Nature Reserve; Lower Peirce Reservoir; Mandai; Mandai Road; Nee Soon Swamp Forest; University Campus (not specified if Bukit Timah or Clementi/Kent Ridge); Upper Thomson Nature Park; Upper Thomson Road.

**Habitat/Ecology.** This species is associated mostly with primary or old/mature secondary forests, sometimes also in well-developed young secondary forest fragments in Singapore. A single alate was collected from swamp forest in a malaise trap sample. These are very large ground-foraging ants that form relatively small colonies.

### PROCERATIINAE (3 genera, 7 species)

#### *Discothyrea bryanti* (Wheeler, 1917)

**Material examined.** Seletar Trail, 1.39151, 103.80056, 16 Apr 2016, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000675.

**Material not physically examined.** ANIC32-030767, D4-60PP.RA-38 (ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Seletar.

**Habitat/Ecology.** This species is associated with primary or old/mature secondary forests in Singapore, typically collected from leaf litter and topsoil debris.

#### *Discothyrea sauteri* Forel, 1912

**Material examined.** Bukit Timah Nature Reserve, 20 Jun 1967, D.H. Murphy leg., D4-6, ZRC\_HYM\_0000253; same locality as previous, BT09, 1.35127, 103.78161, 5 Oct 2016, W. Wang leg., Winkler extraction, ZRC\_HYM\_0000563.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve

**Habitat/Ecology.** This species is associated with primary or old/mature secondary forests in Singapore. Individuals were typically found in leaf litter and soil substrate from mature secondary forest.

**Remarks.** At the time of writing, this species is known from only one locality in Singapore.

#### *Probolomyrmex vietii* Eguchi, Yoshimura & Yamane, 2006

**Material examined.** Alate queen, Pulau Semakau, SMO3, 1.20664, 103.76044, 22-29 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29604, ZRC\_BDP0015248.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Semakau

**Habitat/Ecology.** A single alate queen of this species was found in a malaise trap sample from old growth mangroves on an offshore landfill.

**Remarks.** At the time of writing, this species is known from only one locality in Singapore, based on a single alate. The presence of a reproductive individual may suggest that this species is not a mere transient visitor to the area.

#### *Probolomyrmex watanabei* Tanaka, 1974

**Material examined.** Bukit Timah Nature Reserve, 4 Jul 1969, D.H. Murphy leg., D12-6, ZRC\_HYM\_0000017; Central Catchment Nature Reserve, 24 Aug 2011, E.J.Y. Soh leg., CASENT0317191, ZRC\_ENT00048018; queen, Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 July 2019, J.S. Tan & N. Chin leg., Winkler extraction, ZRC\_ENT00028309; queen and workers, Seletar Trail, 1.39151, 103.80056, 16 Apr 2016, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000676.

**Material not physically examined.** ANIC32-030944, D9-1/A124-7 (ANIC); CASENT0172416, D8-1 (ANIC).

**Literature.** None. New record.

**Localities.** Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Mandai Lake Road; Seletar.



**Habitat/Ecology.** This species was found in primary and/or old/mature secondary forests in Singapore. Individuals were mostly collected from leaf litter.

**Remarks.** Some specimens examined were observed to have petiole in profile elongate with nearly flat dorsal margin, closely resembling of *Probolomyrmex itoi* or *P. longiscapus*. However, the same specimens in dorsal view each had posterodorsal margin of petiole medially produced into a horn, a feature unique to and diagnostic of *P. watanabei*.

#### *Proceratium deelemani* Perrault, 1981

**Material examined.** Queens and workers, Bukit Timah Nature Reserve, 1.35127, 103.78161, 8 May 2017, W. Wang leg., WW-SG17-014, ZRC\_HYM\_0000610; Seletar Trail, 1.39151, 103.80056, 16 Apr 2016, M.K.L. Wong leg., Winkler extraction, ZRC\_ENT00000677.

**Material not physically examined.** ANIC32-025871, RWTacc.68.34 (ANIC); FMNHINS0002821932-2821935, FMHD\_81-282 (FMNH).

**Literature.** Baroni Urbani & de Andrade (2003).

**Localities.** Bukit Timah Nature Reserve; Seletar.

**Habitat/Ecology.** This species was found in primary or old/mature secondary forests in Singapore. Nests have been found in soil substrate and debris in fallen wood (at the base of a large liana). Specimens have also been collected in litter from forest floors and crevices of tree buttresses.

#### *Proceratium malesianum* de Andrade, 2003

**Material examined.** Mandai Lake Road, Northern Node, 1°24'36.5"N, 103°47'04.0", 53 m, 18 July 2019, J.S. Tan & N. Chin leg., Winkler extraction, ZRC\_ENT00028314.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Mandai Lake Road

**Habitat/Ecology.** This species was found in a mature secondary forest fragment in Singapore. Individuals were collected from a mixture of leaf litter and topsoil substrate.

**Remarks.** At the time of writing, this species is known from only one locality in Singapore.

#### *Proceratium papuanum* Emery, 1897

**Material examined.** Queen, Pulau Ubin, 1.41662, 103.99443, 4 Dec 2016, G.W. Yong & M.K.L. Wong leg., ZRC\_HYM\_0001092; queen, Sungei Buloh Wetland Reserve, 28 Mar 2018, W. Wang leg., ZRC\_ENT00000961.

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Pulau Ubin; Sungei Buloh Wetland Reserve.

**Habitat/Ecology.** This species was identified based on queens collected from disturbed old/mature secondary forest, and also mangroves. Actual nesting sites are unknown.

**Remarks.** The queens from Singapore identified as *P. papuanum* confer mostly with the original description of the species, but differ from the holotype queen in terms of body coloration – the Singapore queens appear darker in coloration. At the time of writing, we undertake the assumption that this might be a case of intraspecific variation among allopatric populations.

#### PSEUDOMYRMECINAE (1 genus, 11 species)

##### *Tetraponera allaborans* (Walker, 1859)

**Material examined.** Kent Ridge, 3 Jan 1983, D.H. Murphy leg., ZRC\_HYM\_0000765; same locality and collector as previous, 13 May 1985, ZRC\_HYM\_0000766; Mandai mangroves, 2 Oct 1978, D.H. Murphy leg., ZRC\_HYM\_0000764; Pulau Semakau New Fragment, SMN3, 1°12'05.6"N, 103°45'46.5"E, 13-20 Sep 2012, J. Puniamorthy et al. leg., malaise trap, Reg. 29471, ZRC\_BDP0016113; queen and workers, University Hall (NUS), 1.29711, 103.77658, May-Aug 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP (multiple); Upper Thomson Road, 13 Sep 2016, G.W. Yong leg., ZRC\_ENT00048105; Sungei Buloh, 8 Jan 2013, Sk. Yamane leg. (SKYC).

**Material not physically examined.** Alate queen, CASENT0752596, ANTC42318 (CASC); CASENT0795901, tc1162110327 (PSWC); queens, males, and workers, CASENT0795901-795912 (PSWC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Sima* (*Tetraponera allaborans*, and *S. allaborans* var. *sumatrensis*); Ward (2001); Wang et al. (2018a).

**Localities.** Bukit Timah; Kent Ridge; Lim Chu Kang; Mandai mangroves; Pulau Semakau; Sungei Buloh; University Hall (NUS); Upper Thomson Road.

**Habitat/Ecology.** This arboreal species was found in a broad range of habitats at varying levels of disturbance in Singapore, such as mangroves, young secondary forest fragments and scrubland in urban or semi-urban settings. In mangroves, individuals were found on low vegetation, in dead twigs of coastal plants such as *Hibiscus tiliaceus*; nests have been found in *Sonneratia* branches. The ants were also collected from secondary forest fringes, roadsides and urban parklands, in fallen dead twigs of various tree or shrub species including: *Clerodendron disparifolium*, *Mallotus* sp., *Citharexylum spinosum*, *Delonix regia*, and *Vitex pubescens*. Sometimes individuals were found on foliage in secondary forest, including on *Bromhedia* orchids.

**Remarks.** Specimens examined were observed to be morphologically rather variable across samples, but this is to be expected of the species (see Ward 2001) and all morphological variants were treated as conspecific at the time of writing.

#### ***Tetraponera attenuata* Smith, 1877**

**Material examined.** Queen, Neo Tiew Lane, 16 Jul 2009, H.K. Lua leg., LHK 513, ZRC\_HYM\_0000236; Rifle Range Road, 27 Jul 2016, G.W. Yong leg., ZRC\_ENT00048104; Upper Thomson Nature Park, 1.38009, 103.8258, 4 Oct 2016, G.W. Yong et al. leg., uT7GH1860, ZRC\_ENT00048099.

**Material not physically examined.** CASENT0752611, ANTC42333 (CASC).

**Literature.** Forel (1907) [as *Sima attenuata* var. *thagatensis*]; Viehmeyer (1916), Overbeck (1924) [both as *Sima* (*Tetraponera*) *attenuata*]; Ward (2001).

**Localities.** Bukit Timah Road; Neo Tiew Lane; Rifle Range Road; Seletar Reservoir; Upper Thomson Nature Park.

**Habitat/Ecology.** This arboreal species is associated mainly old/mature secondary forests in Singapore, including abandoned plantation or just disturbed forest fragments in semi-urban settings. Some specimens were collected from above ground foliage using sweepnets.

#### ***Tetraponera crassiuscula* (Emery, 1900)**

**Material examined.** None available.

**Material not physically examined.** Unknown.

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Sima* (*Tetraponera*) *allaborans crassiuscula*].

**Localities.** Bukit Timah Road

**Habitat/Ecology.** Individuals were found in a garden.

**Remarks.** At the time of writing, this species is known from Singapore only based on literature records.

#### ***Tetraponera difficilis* (Emery, 1900)**

**Material examined.** Mandai Road, 1.41488, 103.79917, 6-8 Dec 2016, G.W. Yong et al. leg., ZRC\_ENT00048097; Upper Thomson Nature Park, 1.38012, 103.82616, 4 Oct 2016, G.W. Yong et al. leg., ZRC\_ENT00048098; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg. (SKYC).

**Material not physically examined.** CASENT0907466, ANTC28118 (MHNG) [syntype of *Sima stipitum*]; queen and workers, FOCOL1176-1178 (ZMHB) [types of *Sima fulva*]; CASENT0220759, PSW09602 (UCDC); males and workers, CASENT0796174-796183 (PSWC).

**Literature.** Forel (1912) [as *Sima stipitum*]; Viehmeyer (1916), Overbeck (1924) [both as *Sima* (*Tetraponera*) *fulva*]; Ward (2001).

**Localities.** Bukit Timah Road; Changi Beach; Mandai Road; National University of Singapore; Peirce Reservoir; Pulau Ubin; Seletar Reservoir; Singapore Botanic Gardens; Upper Thomson Nature Park.

**Habitat/Ecology.** This species is associated mainly with primary and old/mature secondary forests, sometimes young secondary habitats, of varying levels of disturbance in Singapore. These include native-dominated and aban-

doned plantation secondary forests. The ants have been found around forest edges, in loose dead twigs of plants such as *Mallotus* sp. The species also occurs sporadically in urban parklands or gardens, and coastal beach forest. Colonies in Singapore have been observed to be polydomous, with aggressive, actively-stinging workers.

#### ***Tetraponera extenuata* Ward, 2001**

**Material examined.** Paratype - Bukit Timah, 100m, 20 Nov 1988, P.S. Ward leg., ZRC\_6\_20705. Non-types - Mandai Bike Trail, 1.4083, 103.77803, 19 Jun 2016, M.K.L. Wong leg., ZRC\_ENT00000678; Nee Soon Swamp Forest, NS2, 1°23'04.2"N, 103°48'40.7"E, 2-9 May 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29221, ZRC\_BDP0014635; Pulau Ubin, PU1, 1°24'36.3"N, 103°59'25.5"E, 12-19 Oct 2013, M.S. Foo et al. leg., malaise trap, Reg. 30212, ZRC\_BDP0016184.

**Material not physically examined.** Holotype - CASENT0902824, PSW09570 (BMNH). Paratypes - CASENT0761615, PSW09570 (PSWC); queen and workers, CASENT0796004-796007, PSW09570 (PSWC). Non-types - CASENT0796008-796011 (PSWC); CASENT0217591, ANTC17842 (CASC).

**Literature.** Type — Ward (2001).

**Localities.** Bukit Timah [type]; Kent Ridge; Mandai; Nee Soon Swamp Forest; Peirce Reservoir; Pulau Ubin; Seletar Reservoir.

**Habitat/Ecology.** This arboreal species is associated mostly with primary or old/mature secondary forests in Singapore, including native-dominated secondary rainforest and freshwater swamp forest. Both colonies and individuals, including the type series, have been found in dead twigs of *Timonius* sp. and *Rhodamnia trinervia*. Individuals have occasionally been collected in malaise traps set up in mangroves and swamp forest.

**Remarks.** Type locality in Singapore.

#### ***Tetraponera inversinodis* Ward, 2001**

**Material examined.** Locality unknown [but deduced as Nee Soon based on 'swamp forest' on original label], 14 Apr 1993, Sk. Yamane-leg. (SKYC).

**Material not physically examined.** Unknown.

**Literature.** None. New record.

**Localities.** Unknown.

**Habitat/Ecology.** A single specimen of this species was collected from a swamp forest.

**Remarks.** Closely related to *T. difficilis*, *T. inversinodis* can be differentiated by its larger eyes, shorter and broader profemur, and shorter metatibia (Ward 2001).

#### ***Tetraponera modesta* (Smith, 1860)**

**Material examined.** Bukit Timah Nature Reserve, BT06, 1.35284, 103.77995, 23 Nov 2016, W. Wang leg., ZRC\_HYM\_0000261; same locality as previous, 25 Mar 1968, D.H. Murphy leg., ZRC\_HYM\_0000768-769; Seletar Trail, 1.39532, 103.80228, 5 Mar 2016, M.K.L. Wong leg., ZRC\_ENT00000679.

**Material not physically examined.** CASENT0907461, ANTC28113 (MHNG) [syntype of *Sima fulva*]; CASENT0796039-796040, PSW0857501/PSW10255-01 (PSWC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Sima (Tetraponera) fulva*]; Baroni Urbani (1977) [as *Tetraponera fulva*]; Ward (2001).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Seletar.

**Habitat/Ecology.** This arboreal species is associated with primary or old/mature secondary forests in Singapore. Colonies were found in hollows and cavities of fallen branches and twigs. Individuals were sometimes collected from foliage by beating.

***Tetraponera nitida* (Smith, 1860)**

**Material examined.** HortPark, 1.27954, 103.79759, 25 Feb 2016, Boyi Zhou leg., ZRC\_ENT00000680; Kent Ridge, 12 Jun 1970, D.H. Murphy leg., ZRC\_HYM\_0000810; Kranji Road, 27-29 Jan 2016, G.W. Yong leg., ZRC\_ENT00048101-48102; Pulau Semakau Old Fragment, SMO3, 1°12'23.9"N, 103°45'37.6"E, 8-15 Nov 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29578, ZRC\_BDP0016208; Pulau Ubin, 7 Jan 2014, Sk. Yamane leg., ZRC\_HYM\_0000473.

**Material not physically examined.** CASENT0220763, PSW10251 (UCDC); queens, males and workers, CASENT0796308-796314 (PSWC); queen and workers, FOCOL1172-1175 (ZMHB) [types of *Sima siggi* var. *setifera*]; males, FOCOL1182-1184 (ZMHB) [types of *Sima difficilis* r. *longiceps*].

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Sima (Tetraponera) difficilis longiceps* and *S. siggi* var. *setifera*]; Ward (2001).

**Localities.** Bukit Timah; Bukit Timah Road; HortPark; Kent Ridge; Kranji Road; Lim Chu Kang; Mandai mangrove; Pulau Semakau; Pulau Ubin; Seletar Reservoir.

**Habitat/Ecology.** This species is associated mostly with disturbed secondary habitats especially rainforest edges/fringes and mangroves or mangrove forests in Singapore. On a few occasions, individuals were collected from secondary forest fragments in semi-urban settings. At rainforest edges, individuals have been found in dead twigs of *Mallotus* sp. and on *Bromheadia* (orchids). In mangroves or mangrove forest, the species was found on low vegetation, and in dead twigs of *Avicennia alba*. The species has also been found nesting in hollow branches of *Chiku* trees, and the hollowed-out pith-channel of a bough in a mangosteen tree.

***Tetraponera pilosa* (Smith, 1858)**

**Material examined.** Bukit Timah Nature Reserve, plot II-I, 15 Aug 2011, J. Koh leg., ZRC\_ENT00000889; Icube (NUS), 1.29347, 103.77633, 6-13 May 2015, M.S. Foo & W. Wang leg., malaise trap, ZRC\_BDP0044952; queen, Kent Ridge, 10 Nov 1991, collector unknown, ZRC\_HYM\_0001750; alate queen, Lim Chu Kang Mangrove, 19 May 1987, Serena Teo leg., ZRC\_ENT00048805; Mandai, 7 Apr 2016, M.K.L. Wong leg., ZRC\_ENT00000681-682; queen, Pulau Ubin, PU1, 1°24'36.3"N, 103°59'25.5"E, 1-8 Sep 2012, J. Puniamoorthy et al. leg., malaise trap, Reg. 29449, ZRC\_BDP0016492; same locality and collectors as previous, 25 Aug-1 Sep 2012, malaise trap, Reg. 29436, ZRC\_BDP0015989; Rifle Range Road, 27 Jul 2016, G.W. Yong leg., ZRC\_ENT00048103; Toh Tuck wasteland, 5 Mar 1978, D.H. Murphy leg., ZRC\_HYM\_0000809.

**Material not physically examined.** CASENT0220765, PSW09567 (UCDC); males and workers, CASENT0796714-796718 (PSWC); queens, FOCOL1163-1165 (ZMHB) [types of *Pseudomyrma pilosa*].

**Literature.** Viehmeyer (1916), Overbeck (1924) [as *Sima pilosa*]; Ward (2001); Wang et al. (2018a).

**Localities.** Bukit Timah Nature Reserve; Bukit Timah Road; Kent Ridge; Lim Chu Kang Mangrove; Mandai; Peirce Reservoir; Pulau Ubin; Rifle Range Road; Toh Tuck.

**Habitat/Ecology.** This species is associated mostly with mature secondary forest and the edges/fringes of such rainforest. It has sometimes also been found in scrub, wasteland, or disturbed secondary forest fragments in urban or semi-urban settings. Alates have been collected from mangroves either using malaise traps, or in mud lobster (*Thalassina* sp.) mounds. Individuals in secondary forest or forest edges were often found in dead twigs, such as that of *Hevea brasiliensis* (rubber), and on low vegetation. Colonies in semi-urban settings such as gardens have also been found in dead twigs of mangosteen trees, and in withered bamboo.

***Tetraponera rufonigra* (Jerdon, 1851)**

**Material examined.** Choa Chu Kang Avenue 2, 1 Mar 2017, D.J. Court leg., ZRC\_HYM\_0001725; Jurong Lake Gardens, 29 Nov 2018, H.H. Tan leg., ZRC\_ENT00007632; Jurong mangroves, 7 Nov 1976, D.H. Murphy leg., ZRC\_HYM\_0000912; Kranji Road, 1.42638, 103.75413, Sep-Nov 2016, G.W. Yong leg., ZRC\_HYM\_0001639-1640; Seletar, 20 Dec 1982, D.H. Murphy leg., ZRC\_HYM\_0000802-805; University Campus, Jan 1977, D.H. Murphy leg., ZRC\_HYM\_0000806.

**Material not physically examined.** Queens, males, and workers, CASENT0796770-796774, tc1162117908/PSW09580 (PSWC).

**Literature.** Viehmeyer (1916), Overbeck (1924) [both as *Sima rufonigra*]; Ward (2001).

**Localities.** Bukit Timah Nature Reserve; Choa Chu Kang; Jurong Lake Gardens; Jurong mangroves; Kranji Road; Mandai; Seletar; University Campus (either Bukit Timah or Clementi/Kent Ridge).

**Habitat/Ecology.** This species was found in a broad range of habitats in Singapore, including mangroves and degraded or heavily modified environments such as urban parklands, gardens and semi-urban waste woodland secondary forests. Individuals were frequently collected from flowering shrubs on granite and tree trunks. The species typically nests in cavities of both dead and living wood. In mangroves, a colony was found occupying live beetle-bored branches of *Sonneratia ovata*, the nest cavities expanded into the bole of the tree. On one occasion, the ants were found preying on *Pomacea* (apple snail) egg masses on wooden stakes supporting planted trees near the edge of a man-made water body, in urban parkland. Workers of the species are known to be behaviourally aggressive and retaliatory when provoked.

***Tetraponera vivax* Ward, 2001**

**Material examined.** None available.

**Material not physically examined.** Holotype alate queen, collection date and locality unspecified, C.F. Baker leg. (MCZ).

**Literature.** Type – Ward (2001).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, this species is known from Singapore only by the holotype queen. The species was first described based on three queens collected from Singapore, Sabah and Java respectively.

***Tetraponera volucris* Ward, 2001**

**Material examined.** None available.

**Material not physically examined.** Holotype alate queen, collection date and locality unspecified, 9209, C.F. Baker leg. (MCZ).

**Literature.** Type – Ward (2001).

**Localities.** Unknown.

**Habitat/Ecology.** Unknown in the Singapore context.

**Remarks.** Type locality in Singapore. At the time of writing, the only record of this species in Singapore is that of the holotype queen. The queen of *T. volucris* appears similar to that of *T. vivax*, but can be distinguished by its tridentate clypeal margin and widely separated frontal carinae, also other traits such as larger eyes, absence of malar pit, and more elongate postpetiole.

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