

INTRODUCTION TO THE ANT GENERA

It has been more than 20 years since the last keys to the ant genera of the Afrotropical and Malagasy regions were published (Bolton, 1994). Taxonomy has advanced at a startling rate since then, much of the advancement fueled by the development of DNA analysis, which has revealed numerous relationships that were not apparent from the study of morphology alone. In recent years many researchers have become aware that the phenomena of convergence of characters and parallel evolution, especially in the huge subfamily Myrmicinae, are extensive. But progress toward untangling the mass of suppositions has been hampered by a lack of knowledge concerning which morphological characters were trustworthy enough to produce monophyletic groups, and which were the products of convergence and parallelism. DNA analysis has indicated the existence of numerous monophyletic groups that were previously unsuspected, and this in turn has allowed a reexamination of morphological features and a re-sorting of characters thus isolated.

The purpose of this volume is to reflect changes in, and additions to, the genus-rank taxonomy in the Afrotropical and Malagasy regions that have accrued through the intervening years and to present up-to-date keys and definitions that indicate the present state of the taxonomy. For the purposes of this book the Afrotropical region consists of sub-Saharan Africa and the islands in the Gulf of Guinea; the Malagasy region consists of Madagascar and the Indian Ocean islands of Aldabra, the Chagos Archipelago, Comoros, Europa, Farquhar, Mauritius, Mayotte, Réunion, Rodrigues, and Seychelles. In these 2 regions we currently recognize a total of 122 genera, distributed through 11 subfamilies. Many of these genera are common to both regions, but some are restricted to one or the other; some are represented by introductions from other zoogeographical regions, and 4 known genera await descriptions of their newly discovered regional species.

Among the endemic genera listed for the Afrotropical and Malagasy regions, 23 are currently monotypic. Of these genera, 21 contain only a single named taxon, of species rank, but in 2 genera (*Megaponera* and *Paltothyreus*) there are also formally described subspecies whose status has not been tested by modern techniques. In addition, there is *Oecophylla*, only 1 species of which is Afrotropical; but again, this species possesses 7 described African subspecies that have never been properly scrutinized.

Of the remaining genera, 60 have had their species-rank taxonomy revised since 1960, for one or both regions, so that relatively modern keys are available for the identification of the species in these genera. In some genera there are keys that were produced much earlier than 1960, but these are generally overloaded with infraspecific names and now

TABLE 1 Endemicity of Regional Genera

+ = present; +i = present as an introduction, either certain or suspected; +X = genus present but species undescribed or indeterminate; 0 = absent; ? = taxonomy dubious.

Subfamilies and genera	Occurrence of genera	
	<i>Afrotropical</i>	<i>Malagasy</i>
AGROECOMYRMECINAE		
<i>Ankylomyrma</i>	+	0
Agroecomyrmecinae total genera	1	0
AMBLYOPONINAE		
<i>Adetomyrma</i>	0	+
<i>Concoctio</i>	+	0
<i>Mystrium</i>	+	+
<i>Prionopelta</i>	+	+
<i>Stigmatomma</i>	+	+
<i>Xymmer</i>	+	+X
Amblyoponinae total genera	5	5
APOMYRMINAE		
<i>Apomyrma</i>	+	0
Apomyrminae total genera	1	0
DOLICHODERINAE		
<i>Aptinoma</i>	0	+
<i>Axinidris</i>	+	0
<i>Ecphorella</i>	+	0
<i>Linepithema</i>	+i	0
<i>Ochetellus</i>	0	+i
<i>Ravavy</i>	?	+
<i>Tapinoma</i>	+	+
<i>Technomyrmex</i>	+	+
Dolichoderinae total genera	5	5
DORYLINAE		
<i>Aenictogiton</i>	+	0
<i>Aenictus</i>	+	0
<i>Chrysapace</i>	0	+X
<i>Dorylus</i>	+	0
<i>Eburopone</i>	+	+
<i>Lioponera</i>	+	+
<i>Lividopone</i>	0	+
<i>Ooceraea</i>	0	+i
<i>Parasyscia</i>	+	+
<i>Simopone</i>	+	+
<i>Tanipone</i>	0	+
<i>Vicinopone</i>	+	0
<i>Zasphinctus</i>	+	0
Dorylinae total genera	9	8

(continued)

TABLE 1 (continued)

+ = present; +i = present as an introduction, either certain or suspected; +X = genus present but species undescribed or indeterminate; 0 = absent; ? = taxonomy dubious.

Subfamilies and genera	Occurrence of genera	
	<i>Afrotropical</i>	<i>Malagasy</i>
FORMICINAE		
<i>Acropyga</i>	+	0
<i>Agraulomyrmex</i>	+	0
<i>Anoplolepis</i>	+	+i
<i>Aphomomyrmex</i>	+	0
<i>Brachymyrmex</i>	?	+i
<i>Camponotus</i>	+	+
<i>Cataglyphis</i>	+	0
<i>Lepisiota</i>	+	+X
<i>Nylanderia</i>	+	+
<i>Oecophylla</i>	+	0
<i>Paraparatrechina</i>	+	+
<i>Paratrechina</i>	+	+
<i>Petalomyrmex</i>	+	0
<i>Phasmomyrmex</i>	+	0
<i>Plagiolepis</i>	+	+
<i>Polyrhachis</i>	+	0
<i>Santschiella</i>	+	0
<i>Tapinolepis</i>	+	+X
Formicinae total genera	18	9
LEPTANILLINAE		
<i>Leptanilla</i>	+	0
Leptanillinae total genera	1	0
MYRMICINAE		
<i>Adelomyrmex</i>	0	+X
<i>Anillomyrma</i>	+X	0
<i>Aphaenogaster</i>	0	+
<i>Atopomyrmex</i>	+	0
<i>Baracidris</i>	+	0
<i>Bondroitia</i>	+	0
<i>Calyptomyrmex</i>	+	+X
<i>Cardiocondyla</i>	+	+
<i>Carebara</i>	+	+
<i>Cataulacus</i>	+	+
<i>Crematogaster</i>	+	+
<i>Cyphoidris</i>	+	0
<i>Cyphomyrmex</i>	0	+i
<i>Dicroaspis</i>	+	+X
<i>Diplomorium</i>	+	0
<i>Erromyрма</i>	+i	+i

+ = present; +i = present as an introduction, either certain or suspected; +X = genus present but species undescribed or indeterminate; 0 = absent; ? = taxonomy dubious.

Subfamilies and genera	Occurrence of genera	
	<i>Afrotropical</i>	<i>Malagasy</i>
<i>Eurhopalothrix</i>	0	+X
<i>Eutetramorium</i>	0	+
<i>Malagidris</i>	0	+
<i>Melissotarsus</i>	+	+
<i>Meranoplus</i>	+	+
<i>Messor</i>	+	0
<i>Metapone</i>	+X	+
<i>Microdacton</i>	+	0
<i>Monomorium</i>	+	+
<i>Myrmecaria</i>	+	0
<i>Nesomyrmex</i>	+	+
<i>Ocymyrmex</i>	+	0
<i>Pheidole</i>	+	+
<i>Pilotrochus</i>	0	+
<i>Pristomyrmex</i>	+	+
<i>Royidris</i>	0	+
<i>Solenopsis</i>	+	+
<i>Strumigenys</i>	+	+
<i>Syllophopsis</i>	+	+
<i>Temnothorax</i>	+	0
<i>Terataner</i>	+	+
<i>Tetramorium</i>	+	+
<i>Trichomyrmex</i>	+	+
<i>Vitsika</i>	0	+
<i>Vollenhovia</i>	0	+i
<i>Wasmannia</i>	+i	0
Myrmicinae total genera	32	30
PONERINAE		
<i>Anochetus</i>	+	+
<i>Asphinctopone</i>	+	0
<i>Boloponera</i>	+	0
<i>Bothroponera</i>	+	+
<i>Brachyponera</i>	+	+i
<i>Centromyrmex</i>	+	0
<i>Cryptopone</i>	+	0
<i>Dolioponera</i>	+	0
<i>Euponera</i>	+	+
<i>Feroponera</i>	+	0
<i>Fisheropone</i>	+	0
<i>Hagensia</i>	+	0
<i>Hypoponera</i>	+	+
<i>Leptogenys</i>	+	+

(continued)

TABLE 1 (continued)

+ = present; +i = present as an introduction, either certain or suspected; +X = genus present but species undescribed or indeterminate; 0 = absent; ? = taxonomy dubious.

Subfamilies and genera	Occurrence of genera	
	<i>Afrotropical</i>	<i>Malagasy</i>
<i>Loboponera</i>	+	0
<i>Megaponera</i>	+	0
<i>Mesoponera</i>	+	+
<i>Odontomachus</i>	+	+
<i>Ophthalmopone</i>	+	0
<i>Paltothyreus</i>	+	0
<i>Parvaponera</i>	+	+
<i>Phrynoponera</i>	+	0
<i>Platythyrea</i>	+	+
<i>Plectroctena</i>	+	0
<i>Ponera</i>	+i	+i
<i>Promyopias</i>	+	0
<i>Psalidomyrmex</i>	+	0
<i>Streblognathus</i>	+	0
Ponerinae total genera	28	11
PROCERATIINAE		
<i>Discothyrea</i>	+	+
<i>Probolomyrmex</i>	+	+
<i>Proceratium</i>	+	+
Proceratiinae total genera	3	3
PSEUDOMYRMECINAE		
<i>Tetraponera</i>	+	+
Pseudomyrmecinae total genera	1	1
Total genera per region	104	72
Total genera, both regions	122	

unavailable infrasubspecific names. These early keys were often produced only by reference to preexisting descriptions; the actual type specimens, the material upon which the names were based, were usually not consulted. As a result, many of the pre-1960 keys were largely guesswork and consequently inaccurate, difficult to use, or both. Recent keys for the identification of species are noted following the descriptions of the individual genera.

Large Afrotropical genera that have a history of contributions by multiple authors over a long period of time usually show, just before the commencement of a full revision, a considerable number of species-rank names, surrounded by a cloud of infraspecific names, together with a number of infrasubspecific (unavailable) names. For instance, B. Bolton's (1980) study of Afrotropical *Tetramorium* commenced with about 104 previously described

names of species rank, 105 names of infraspecific rank, and 19 unavailable names. A number of the species were obviously valid, but several had been described twice or more, by different authors, because of the inadequacies of the original descriptions. At the same time, and for the same reason, a good number of infraspecific names had been attached to species to which they were not truly related. After revision this mass resolved into 175 valid species-rank taxa, an increase in the number of regional species of about 68 percent.

Interestingly, a similar analysis of Bolton's (1987) study of Afrotropical *Monomorium* shows an increase after revision of about 67 percent in terms of number of species. The percentage increase in numbers of *Strumigenys*, however, does not follow this pattern. Bolton (1983) shows a large 168 percent increase in the number of Afrotropical *Strumigenys* species, and B. L. Fisher (2000) an incredible 1775 percent in the same genus in the Malagasy region. The reason for these huge increases is not hard to understand. *Strumigenys* is predominantly a genus of small to minute species, of retiring or cryptic habits, that mostly inhabits leaf litter and topsoil, and so it is hardly ever collected by hand. The vast majority of its species therefore remained unknown to the early authors, and its real numbers did not become apparent until the advent of collections by Winkler bag technique (Fisher, 1998).

But for large genera whose species are generally collectable by hand, and which have been largely described by pre-1960 authors, let us casually assume that the increase in number of species following a formal revision will average about 65 percent. Applying this increase to some other unrevised genera would very roughly indicate a regional fauna of 279 Afrotropical and 83 Malagasy species of *Camponotus*, 223 Afrotropical and 36 Malagasy species of *Crematogaster* (the actual number of Malagasy *Crematogaster* species is currently 37, the figure culled from the various recent revisionary works of B. B. Blaimer; see references). A crude application of the 65 percent guess across the entire fauna yields a very rough total of about 3,000 species in the Afrotropical region and about 1,000 in the Malagasy region. This estimate, however, does not take into account the additional increase likely to result from more intensive sampling across ecoregions of the African mainland, and so likely underestimates the total species for the Afrotropical region. The total number of species in the Afrotropical and Malagasy regions may be as high as 5,000 species.

Of the 122 genera listed in Table 1, some have very restricted distributions, while others are considerably more widespread. The relative distribution of the genera found in the Afrotropical and Malagasy regions, on a worldwide scale, is summarized in Table 2.

During the long history of ant taxonomy, from 1758 to the present day, many names in the family-group (names applied to families, subfamilies, and tribes) and names in the genus-group (names applied to genera and subgenera) have been proposed. A large proportion of these have survived unchanged to the present, but a number were proposed for supposed groups that were later found to be synonyms of earlier names or were inadmissible because the name was a junior homonym—one that had already been used elsewhere, and earlier, for a different group of insects. Another category of discarded names includes those that were the results of misidentifications, where an author had placed a name in one group, only for it to be discovered later that the grouping was incorrect. This book utilizes only the

TABLE 2 Relative Distributions of the Genera

Genera restricted to the Afrotropical and Malagasy regions

(genera that are present in both regions but are absent from all other regions)

Amblyoponinae: *Xymmer*

Dorylinae: *Eburopone*

Myrmicinae: *Dicroaspis*, *Melissotarsus*, *Terataner*

Number of genera: 5

Genera with uniquely Afrotropical distribution

(genera that are restricted to the Afrotropical region and occur nowhere else)

Agroecomyrmecinae: *Ankylomyrma*

Amblyoponinae: *Concoctio*

Apomyrminae: *Apomyrma*

Dolichoderinae: *Axinidris*, *Ecphorella*

Dorylinae: *Aenictogiton*, *Vicinopone*

Formicinae: *Agraulomyrmex*, *Aphomomyrmex*, *Petalomyrmex*, *Phasmomyrmex*, *Santschiella*

Myrmicinae: *Atopomyrmex*, *Baracidris*, *Bondroitia*, *Cyphoidris*, *Diplomorium*, *Microdaceton*,
Ocymyrmex

Ponerinae: *Asphinctopone*, *Boloponera*, *Dolioponera*, *Feroponera*, *Fisheropone*, *Hagensia*,

Loboponera, *Megaponera*, *Ophthalmopone*, *Paltothyreus*, *Phrynoponera*, *Plectroctena*, *Promyopias*,

Psalidomyrmex, *Streblognathus*

Number of genera: 34

Genera with uniquely Malagasy distribution

(genera that are restricted to the Malagasy region and occur nowhere else)

Amblyoponinae: *Adetomyrma*

Dolichoderinae: *Aptinoma*, *Ravavy*

Dorylinae: *Lividopone*, *Tanipone*

Myrmicinae: *Eutetramorium*, *Malagidris*, *Pilotrochus*, *Royidris*, *Vitsika*

Number of genera: 10

Genera in the Afrotropical and other region(s) but absent from the Malagasy region

(genera that occur in the Afrotropical region plus one or more other regions but are absent from the Malagasy region)

Dorylinae: *Aenictus*, *Dorylus*, *Zasphinctus*

Formicinae: *Acropyga*, *Cataglyphis*, *Oecophylla*, *Polyrhachis*

Myrmicinae: *Anillomyrma*, *Messor*, *Myrmicaria*, *Temnothorax*, *Wasmannia*

Ponerinae: *Centromyrmex*, *Cryptopone*

Number of genera: 14

Genera in the Malagasy and other region(s) but absent from the Afrotropical region

(genera that occur in the Malagasy region plus one or more other regions but are absent from the Afrotropical region)

Dolichoderinae: *Ochetellus*

Dorylinae: *Chrysapace*, *Ooceraea*

Myrmicinae: *Adelomyrmex*, *Aphaenogaster*, *Cyphomyrmex*, *Eurhopalothrix*, *Vollenhovia*

Number of genera: 8

Genera common to the Afrotropical and Malagasy and other regions

(genera that occur in both the Afrotropical region and the Malagasy region and are also present in one or more other regions)

Amblyoponinae: *Mystrium*, *Prionopelta*, *Stigmatomma*

Dolichoderinae: *Tapinoma*, *Technomyrmex*

Dorylinae: *Lioponera*, *Parasyscia*, *Simopone*

Formicinae: *Anoplolepis*, *Brachymyrmex*, *Camponotus*, *Lepisiota*, *Nylanderia*, *Paraparatrechina*,
Paratrechina, *Plagiolepis*, *Tapinolepis*

Myrmicinae: *Calyptomyrmex*, *Cardiocondyla*, *Carebara*, *Cataulacus*, *Crematogaster*, *Erromyrmex*,
Meranoplus, *Metapone*, *Monomorium*, *Nesomyrmex*, *Pheidole*, *Pristomyrmex*, *Solenopsis*,
Strumigenys, *Sylophopsis*, *Tetramorium*, *Trixchomyrmex*

Ponerinae: *Anochetus*, *Bothroponera*, *Brachyponera*, *Euponera*, *Hypoponera*, *Leptogenys*, *Mesoponera*,
Odontomachus, *Parvaponera*, *Platythyrea*, *Ponera*

Proceratiinae: *Discothyrea*, *Probolomyrmex*, *Proceratium*

Pseudomyrmecinae: *Tetraponera*

Number of genera: 49

Genera that occur in both the Afrotropical region and the Malagasy region

(genera present in both regions, regardless of their occurrence in other regions)

Amblyoponinae: *Mystrium*, *Prionopelta*, *Stigmatomma*, *Xymmer*

Dolichoderinae: *Tapinoma*, *Technomyrmex*

Dorylinae: *Eburopone*, *Lioponera*, *Parasyscia*, *Simopone*

Formicinae: *Anoplolepis*, *Brachymyrmex*, *Camponotus*, *Lepisiota*, *Nylanderia*, *Paraparatrechina*,
Paratrechina, *Plagiolepis*, *Tapinolepis*

Myrmicinae: *Calyptomyrmex*, *Cardiocondyla*, *Carebara*, *Cataulacus*, *Crematogaster*, *Dicroaspis*,
Erromyrmex, *Melissotarsus*, *Meranoplus*, *Metapone*, *Monomorium*, *Nesomyrmex*, *Pheidole*,
Pristomyrmex, *Solenopsis*, *Strumigenys*, *Sylophopsis*, *Terataner*, *Tetramorium*, *Trichomyrmex*

Ponerinae: *Anochetus*, *Bothroponera*, *Brachyponera*, *Euponera*, *Hypoponera*, *Leptogenys*, *Mesoponera*,
Odontomachus, *Parvaponera*, *Platythyrea*, *Ponera*

Proceratiinae: *Discothyrea*, *Probolomyrmex*, *Proceratium*

Pseudomyrmecinae: *Tetraponera*

Number of genera: 54

most recent applications of the various names, but older literature will often show these now discarded names, whose fates can be tracked in Box 1.

The genera recognized here vary enormously in terms of the number of species that each contains, but the figures given for numbers of species are at best only an approximation of the true numbers of species represented in the wild. Collections in natural history museums, and in other collections of ants in the world, contain large numbers of species that are known to be undescribed. The task of identifying and describing these species is far from complete. Furthermore, the species-rank taxonomy of some of the largest and most important genera remains unstudied in detail and consequently rather confused. For the Afrotropical and Malagasy regions, the numbers of species currently recognized in the 110 native genera are summarized in Table 3.

BOX 1 Current Synonyms of Family-Group and Genus-Group Names

A number of subfamilies and genera that occur in the Afrotropical and Malagasy regions are senior synonyms of other names in the family-group (families, subfamilies, tribes), and names in the genus-group (genera, subgenera), that were originally proposed in the regions. These synonymized names may be encountered in the older literature. This alphabetically arranged list indicates these synonyms, with the valid senior synonym in **bold**; names that lack junior synonyms, and have never been subject to changes, are omitted. In addition, some species have been referred incorrectly to genera that do not occur in the regions under consideration; the genera in question are also listed here.

Acantholepis: homonymous name replaced by *Lepisiota*

Acidomyrmex: junior synonym of *Tetramorium*

Acrocoelia: junior synonym of *Crematogaster* (*Crematogaster*)

Acrophyga Roger, 1862 = *Malacomyrma* Emery, 1922

Aenictinae: junior synonym of Dorylinae

Aenictogitoninae: junior synonym of Dorylinae

Aeromyrma: junior synonym of *Carebara*

Aethiopopone: junior synonym of *Zasphectus*

Afroxyidris: junior synonym of *Carebara*

Anacantholepis: junior synonym of *Plagiolepis*

Anelus: junior synonym of *Carebara*

Anergatides: junior synonym of *Pheidole*

Anoplolepis Santschi, 1914 = *Zealleyella* Arnold, 1922

Aphaenogaster Mayr, 1853 = *Deromyrma* Forel, 1913

Aphinctopone Santschi, 1914 = *Lepidopone* Bernard, 1953

Atopogyne: junior synonym of *Crematogaster* (*Crematogaster*)

Atopula: junior synonym of *Tetramorium*

Axinidriini: junior synonym of Dolichoderinae

Brunella: homonymous name replaced by *Malagidris*

Cacopone: junior synonym of *Plectroctena*

Cardiocondyla Emery, 1869 = *Emeryia* Forel, 1890, = *Dyclona* Santschi, 1930, = *Loncyda* Santschi, 1930

Carebara Westwood, 1840 = *Pheidologeton* Mayr, 1862, = *Oligomyrmex* Mayr, 1867, = *Aeromyrma* Forel, 1891, = *Anelus* Emery, 1900, = *Paedalgus* Forel, 1911, = *Crateropsis* Patrizi, 1948, = *Sporocleptes* Arnold, 1948, = *Nimbamyрма* Bernard, 1953, = *Afroxyidris* Belshaw and Bolton, 1994

Cataglyphis Foerster, 1850 = *Monocombus* Mayr, 1855

Cataulacus Smith, F., 1853 = *Otomyrmex* Forel, 1891

Centromyrmecini: junior synonym of Ponerini

Centromyrmex Mayr, 1866 = *Glyphopone* Forel, 1913, = *Leptopone* Arnold, 1916

Cephaloxys: homonymous name replaced by *Smithistruma* (itself now a junior synonym of *Strumigenys*)

Cerapachyinae: junior synonym of Dorylinae

Cerapachys Smith, F., 1857. Species of this genus are absent from the Afrotropical and Malagasy regions.

Champsomyrmex: junior synonym of *Odontomachus*

Cladarogenys: junior synonym of *Strumigenys*

Crateropsis: junior synonym of *Carebara*

Cratomyrmex: junior synonym of *Messor*

Crematogaster Lund, 1831. Two subgenera are currently retained, from an earlier 8 that were recognized in the regions. Subgenus *C. (Crematogaster)* = *C. (Acrocoelia)* Mayr, 1853, = *C. (Oxygyne)* Forel, 1901, = *C. (Decacrema)* Forel, 1910, = *C. (Atopogyne)* Forel, 1911, = *C. (Nematocrema)* Santschi, 1918, = *C. (Sphaerocrema)* Santschi, 1918. Subgenus *C. (Orthocrema)* Santschi, 1918 = *C. (Eucrema)* Santschi, 1918

Cysias: junior synonym of *Ooceraea*

Decacrema: junior synonym of *Crematogaster (Crematogaster)*

Decamorium: junior synonym of *Tetramorium*

Deromyrma: junior synonym of *Aphaenogaster*

Diplorhoptum: junior synonym of *Solenopsis*

Discothyrea Roger, 1863 = *Pseudosysphincta* Arnold, 1916

Dodous: junior synonym of *Pristomyrmex*

Dolichoderinae Forel, 1878 = Axinidriini Weber, 1941

Dorylinae Leach, 1815 = Cerapachyinae Forel, 1893, = Aenictinae Emery, 1901, = Aenictogitoninae Ashmead, 1905

Dyclona: junior synonym of *Cardiocondyla*

Ectomomyrmex Mayr, 1867. Species of this genus are absent from the Afrotropical and Malagasy regions.

Emeryia: junior synonym of *Cardiocondyla*

Engramma: junior synonym of *Technomyrmex*

Epitritus: junior synonym of *Strumigenys*

Epixenus: junior synonym of *Monomorium*

Equestrimessor: junior synonym of *Trichomyrmex*

Escherichia: junior synonym of *Probolomyrmex*

Eucrema: junior synonym of *Crematogaster (Orthocrema)*

Euponerinae: junior synonym of Ponerini

Glamyromyrmex: junior synonym of *Strumigenys*

Glyphopone: junior synonym of *Centromyrmex*

Goniothorax: homonymous name replaced by *Nesomyrmex*

Heptacondylus: junior synonym of *Myrmicaria*

Holcomyrmex: junior synonym of *Trichomyrmex*

Hoplomyrmus: junior synonym of *Polyrhachis*

Hylidris: junior synonym of *Pristomyrmex*

Icothorax: junior synonym of *Temnothorax*

Ireneopone: junior synonym of *Nesomyrmex*

Iridomyrmex Mayr, 1862. Species of this genus are absent from the Afrotropical and Malagasy regions.

Isolcomyrmex: junior synonym of *Trichomyrmex*

Lampromyrmex: junior synonym of *Monomorium*

Lepidopone: junior synonym of *Asphinctopone*

Lepisiota Santschi, 1926 = *Acantholepis* Mayr, 1861 (homonym), = *Pseudacantholepis* Bernard, 1953 (unavailable name)

Leptogenyini: junior synonym of Ponerini

Leptogenys Roger, 1861 = *Lobopelta* Mayr, 1862, = *Machaerogenys* Emery, 1911, = *Microbolbos* Donisthorpe, 1948

Leptopone: junior synonym of *Centromyrmex*

Limnomyrmex: junior synonym of *Nesomyrmex*

Lioponera Mayr, 1879 = *Phyracaces* Emery, 1902

Lobopelta: junior synonym of *Leptogenys*

Loncyda: junior synonym of *Cardiocondyla*

(continued)

BOX 1 Current Synonyms of Family-Group and Genus-Group Names (*continued*)

Machaerogenys: junior synonym of *Leptogenys*

Macromischoides: junior synonym of *Tetramorium*

Malacomyrma Emery, 1922: junior synonym of *Acropyga*

Malagidris Bolton and Fisher, 2014 = *Brunella* Forel, 1917 (homonym)

Mesanopolepis: junior synonym of *Tapinolepis*

Mesoponera Emery, 1900 = *Xiphopelta* Forel, 1913

Messor Forel, 1890 = *Cratomyrmex* Emery, 1892, = *Sphaeromessor* Bernard, 1985 (unavailable name)

Miccostruma: junior synonym of *Strumigenys*

Microbolbos: junior synonym of *Leptogenys*

Monocombus: junior synonym of *Cataglyphis*

Monomorium Mayr, 1855 = *Lampromyrmex* Mayr, 1868, = *Epixenus* Emery, 1908, = *Xeromyrmex* Emery, 1915, = *Paraphacota* Santschi, 1919, = *Pharaophanes* Bernard, 1967

Myopias Roger, 1861. Species of this genus are absent from the Afrotropical and Malagasy regions.

Myrmicaria Saunders, W.W., 1842 = *Heptacondylus* Smith, F., 1857, = *Physatta* Smith, F., 1857

Myrmisaraka: junior synonym of *Vitsika*

Nematocrema: junior synonym of *Crematogaster* (*Crematogaster*)

Nesomyrmex Wheeler, W.M., 1910 = *Goniothorax* Emery, 1896 (homonym), = *Tetramyrma* Forel, 1912, = *Limnomyrmex* Arnold, 1948, = *Ireneopone* Donisthorpe, 1946

Nimbamyрма: junior synonym of *Carebara*

Odontomachidae: junior synonym of Ponerini

Odontomachus Latreille, 1804 = *Champsomyrmex* Emery, 1892

Oligomyrmex: junior synonym of *Carebara*

Ooceraea Roger, 1862 = *Cysias* Emery, 1902

Otomyrmex: junior synonym of *Cataulacus*

Oxygyne: junior synonym of *Crematogaster* (*Crematogaster*)

Paedalgus: junior synonym of *Carebara*

Paraphacota: junior synonym of *Monomorium*

Parapheidole: junior synonym of *Pheidole*

Parholcomyrmex: junior synonym of *Trichomyrmex*

Pharaophanes: junior synonym of *Monomorium*

Pheidole Westwood, 1839 = *Parapheidole* Emery, 1915, = *Anergatides* Wasmann, 1915

Pheidologeton: junior synonym of *Carebara*

Phyracaces: junior synonym of *Lioponera*

Physatta: junior synonym of *Myrmicaria*

Plagirolepis Mayr, 1861 = *Anacantholepis* Santschi, 1914

Plectroctena Smith, F., 1858 = *Cacopone* Santschi, 1914

Plectroctenini: junior synonym of Ponerini

Polyrhachis Smith, F., 1857 = *Hoplomyrmex* Gerstäcker, 1859, = *Pseudocyrtomyrma* Emery, 1921

Ponerini Lepeletier de Saint-Fargeau, 1835 = Odontomachidae Mayr, 1862, = Leptogenyini Forel, 1893, = Euponerinae Emery, 1909, = Centromyrmecini Emery, 1911, = Plectroctenini Emery, 1911

Prenolepis Mayr, 1861. Species of this genus are absent from the Afrotropical and Malagasy regions.

Pristomyrmex Mayr, 1866 = *Hylidris* Weber, 1941, = *Dodous* Donisthorpe, 1946

Probolomyrmex Mayr, 1901 = *Escherichia* Forel, 1910

Proceratiinae Emery, 1895 = Discothyriinae Clark, 1951

Proceratium Roger, 1863 = *Sysphingta* Roger, 1863

Proscopomyrmex: junior synonym of *Strumigenys*

Pseudacantholepis: unavailable name, the material of which is referable to *Lepisiota*

Pseudocryptomyrma: junior synonym of *Polyrhachis*
Pseudolasius Emery, 1887. Species of this genus are absent from the Afrotropical and Malagasy regions.
Pseudoponera Emery, 1900. Species of this genus are absent from the Afrotropical and Malagasy regions.
Pseudosysphincta: junior synonym of *Discothyrea*
Quadristruma: junior synonym of *Strumigenys*
Pyramica: junior synonym of *Strumigenys*
Rhoptromyrmex: junior synonym of *Tetramorium*
Semonius: junior synonym of *Tapinoma*
Serrastruma: junior synonym of *Strumigenys*
Smithistruma: junior synonym of *Strumigenys*
Solenopsis Westwood, 1840 = *Diplorhoptum* Mayr, 1855
Sphaerocrema: junior synonym of *Crematogaster* (*Crematogaster*)
Sphaeromessor: unavailable name, the material of which is referable to *Messor*
Sphinctomyrmex Mayr, 1866. Species of this genus are absent from the Afrotropical and Malagasy regions.
Sporocleptes: junior synonym of *Carebara*
Strumigenys Smith, F., 1860 = *Pyramica* Roger, 1862, = *Cephaloxys* Smith, F., 1865 (homonym), = *Epitritus* Emery, 1869, = *Trichoscapa* Emery, 1869, = *Glomyrmex* Wheeler, W.M., 1915, = *Proscopomyrmex* Patrizi, 1946, = *Smithistruma* Brown, 1948, = *Serrastruma* Brown, 1948, = *Miccostruma* Brown, 1948, = *Quadristruma* Brown, 1949, = *Cladarogenys* Brown, 1976
Sysphingta: junior synonym of *Proceratium*
Tapinolepis Emery, 1925 = *Mesanoplolepis* Santschi, 1926
Tapinoma Foerster, 1850 = *Semonius* Forel, 1910
Tapinoptera: junior synonym of *Technomyrmex*
Technomyrmex Mayr, 1872 = *Engramma* Forel, 1905 = *Tapinoptera* Santschi, 1925
Temnothorax Mayr, 1861 = *Icothorax* Hamann and Klemm, 1967
Terataner Emery, 1912 = *Tranetera* Arnold, 1952
Tetramorium Mayr, 1855 = *Xiphomyrmex* Forel, 1887, = *Triglyphothrix* Forel, 1890, = *Rhoptromyrmex* Mayr, 1901, = *Atopula* Emery, 1912, = *Decamorium* Forel, 1913, = *Acidomyrmex* Emery, 1915, = *Macromischoides* Wheeler, W.M., 1920
Tetramyrma: junior synonym of *Nesomyrmex*
Tetraoponera Smith, F., 1852 = *Sima* Roger, 1863, = *Pachysima* Emery, 1912, = *Viticola* Wheeler, W.M., 1919
Trachymesopus Emery, 1911. This genus is a junior synonym of *Pseudoponera* Emery, 1900, of which no species are Afrotropical; some African species were wrongly referred to as *Trachymesopus*.
Tranetera: junior synonym of *Terataner*
Trichomyrmex Mayr, 1865 = *Holcomyrmex* Mayr, 1879, = *Parholcomyrmex* Emery, 1915, = *Isolcomyrmex* Santschi, 1917, = *Equestrimessor* Santschi, 1919
Trichoscapa: junior synonym of *Strumigenys*
Triglyphothrix: junior synonym of *Tetramorium*
Vitsika Bolton and Fisher, 2014 = *Myrmisaraka* Bolton and Fisher, 2014
Xeromyrmex: junior synonym of *Monomorium*
Xiphomyrmex: junior synonym of *Tetramorium*
Xiphopelta: junior synonym of *Mesoponera*
Zasphinctus Wheeler, W.M., 1918 = *Aethiopopone* Santschi, 1930 (Afrotropical species were originally described in *Sphinctomyrmex*)
Zealleyella: junior synonym of *Anoplolepis*

TABLE 3 Number of Described Species in Endemic Regional Genera

Subfamilies and genera	Number of species	
	<i>Afrotropical</i>	<i>Malagasy</i>
AGROECOMYRMECINAE		
<i>Ankylomyrma</i>	1	0
Agroecomyrmecinae total species	1	0
AMBLYOPONINAE		
<i>Adetomyrma</i>	0	9
<i>Concoctio</i>	1	0
<i>Mystrium</i>	1	10
<i>Prionopelta</i>	3	6
<i>Stigmatomma</i>	2	1
<i>Xymmer</i>	1	0
Amblyoponinae total species	8	26
APOMYRMINAE		
<i>Apomyrma</i>	1	0
Apomyrminae total species	1	0
DOLICHODERINAE		
<i>Aptinoma</i>	0	2
<i>Axinidris</i>	21	0
<i>Ecphorella</i>	1	0
<i>Ravavy</i>	0	1
<i>Tapinoma</i>	14 [6]	5
<i>Technomyrmex</i>	27	12
Dolichoderinae total species	63 [6]	20
DORYLINAE		
<i>Aenictogiton</i>	7	0
<i>Aenictus</i>	34 [17]	0
<i>Dorylus</i>	55 [63]	0
<i>Eburopone</i>	1	1
<i>Lioponera</i>	10	2
<i>Lividopone</i>	0	1
<i>Ooceraea</i>	0	1
<i>Parasyscia</i>	14	1
<i>Simopone</i>	18	16
<i>Tanipone</i>	0	10
<i>Vicinopone</i>	1	0
<i>Zasphinctus</i>	2	0
Dorylinae total species	142 [80]	32
FORMICINAE		
<i>Acropyga</i>	3	0
<i>Agraulomyrmex</i>	2	0
<i>Anoplolepis</i>	9 [4]	0 [1]
<i>Aphomomyrmex</i>	1	0

Number of species

Subfamilies and genera	<i>Afrotropical</i>	<i>Malagasy</i>
FORMICINAE (<i>continued</i>)		
<i>Camponotus</i>	169 [116]	50 [33]
<i>Cataglyphis</i>	4 [4]	0
<i>Lepisiota</i>	47 [29]	0
<i>Nylanderia</i>	17	10 [6]
<i>Oecophylla</i>	1 [7]	0
<i>Paraparatrechina</i>	11	5
<i>Paratrechina</i>	3	3
<i>Petalomyrmex</i>	1	0
<i>Phasmomyrmex</i>	4 [2]	0
<i>Plagiolepis</i>	20 [7]	2
<i>Polyrhachis</i>	48	0
<i>Santschiella</i>	1	0
<i>Tapinolepis</i>	11 [3]	0
Formicinae total species	352 [172]	70 [40]
LEPTANILLINAE		
<i>Leptanilla</i>	3	0
Leptanillinae total species	3	0
MYRMICINAE		
<i>Aphaenogaster</i>	0	3 [3]
<i>Atopomyrmex</i>	3	0
<i>Baracidris</i>	3	0
<i>Bondroitia</i>	2	0
<i>Calyptomyrmex</i>	16	0
<i>Cardiocondyla</i>	14	5 [1]
<i>Carebara</i>	62 [11]	3
<i>Cataulacus</i>	39	8
<i>Crematogaster</i>	135 [173]	37
<i>Cyphoidris</i>	4	0
<i>Dicroaspis</i>	2	0
<i>Diplomorium</i>	1	0
<i>Eutetramorium</i>	0	3
<i>Malagidris</i>	0	6
<i>Melissotarsus</i>	3	1
<i>Meranoplus</i>	8	4
<i>Messor</i>	15 [1]	0
<i>Metapone</i>	0	3
<i>Microdacton</i>	4	0
<i>Monomorium</i>	132	19
<i>Myrmecaria</i>	22 [27]	0
<i>Nesomyrmex</i>	25	4
<i>Ocymyrmex</i>	34	0
<i>Pheidole</i>	72 [69]	25 [6]
<i>Pilotrochus</i>	0	1

(continued)

TABLE 3 (continued)

Subfamilies and genera	Number of species	
	<i>Afrotropical</i>	<i>Malagasy</i>
MYRMICINAE (continued)		
<i>Pristomyrmex</i>	5	3
<i>Royidris</i>	0	15
<i>Solenopsis</i>	12 [9]	2
<i>Strumigenys</i>	135	90
<i>Syllophopsis</i>	7	10
<i>Temnothorax</i>	6	0
<i>Terataner</i>	6	6
<i>Tetramorium</i>	235	108
<i>Trichomyrmex</i>	7	2
<i>Vitsika</i>	0	16
Myrmicinae total species	1,009 [290]	374 [10]
PONERINAE		
<i>Anochetus</i>	19	5
<i>Asphinctopone</i>	3	0
<i>Boloponera</i>	1	0
<i>Bothroponera</i>	22 [14]	8
<i>Brachyponera</i>	1 [2]	0
<i>Centromyrmex</i>	10	0
<i>Cryptopone</i>	1	0
<i>Dolioponera</i>	1	0
<i>Euponera</i>	5 [1]	14
<i>Feroponera</i>	1	0
<i>Fisheropone</i>	1	0
<i>Hagensia</i>	2 [4]	0
<i>Hypoconera</i>	54	7 [4]
<i>Leptogenys</i>	56	60
<i>Loboponera</i>	9	0
<i>Megaponera</i>	1 [5]	0
<i>Mesoponera</i>	15 [5]	1 [1]
<i>Odontomachus</i>	2	3
<i>Ophthalmopone</i>	5 [1]	0
<i>Paltothyreus</i>	1 [6]	0
<i>Parvaponera</i>	2 [1]	1 [1]
<i>Phrynoponera</i>	5	0
<i>Platythyrea</i>	14	4
<i>Plectroctena</i>	16	0
<i>Promyopias</i>	1	0
<i>Psalidomyrmex</i>	6	0
<i>Streblognathus</i>	2	0
Ponerinae total species	256 [39]	103 [6]

Subfamilies and genera	Number of species	
	<i>Afrotropical</i>	<i>Malagasy</i>
PROCERATIINAE		
<i>Discothyrea</i>	7	1
<i>Probolomyrmex</i>	3	3
<i>Proceratium</i>	9	3
Proceratiinae total species	19	7
PSEUDOMYRMECINAE		
<i>Tetraponera</i>	30 [14]	21 [5]
Pseudomyrmecinae total species	30 [14]	21 [5]
Total species	1,884	644
Total subspecies	[601]	[61]
Total species + subspecies	2,485	705

The entries represent the current number of validly described species for each native genus in each region; introduced genera (known or suspected), and known but undescribed species, are ignored. Numbers of unresolved infraspecific taxa (subspecies) in taxonomically unrevised genera are indicated by [n].

Table 3 includes only genera that occur naturally in the Afrotropical and Malagasy regions. Deliberately omitted are the few species that represent known or suspected introductions from other zoogeographical regions, which belong to the Neotropical genera *Brachymyrmex*, *Cyphomyrmex*, *Linepithema*, and *Wasmannia*, and the Oriental-Malesian genera *Erromyrmex*, *Ochetellus*, *Ponera*, and *Vollenhovia*. When those are taken into account, the genera fall into the size categories listed in Box 2. It is interesting to note that the sum of species in just the 7 largest genera exceeds the sum of all of the other 111 genera combined, and that the most species-rich genus, hyperdiverse *Tetramorium*, has 115 more species than the second largest genus, *Strumigenys*. In other words, *Tetramorium* is so successful in the Afrotropical and Malagasy regions that it contains more species than the combined total of the first 82 genera listed in Box 2.

A SHORT HISTORY OF ANT TAXONOMY IN THE REGIONS

In species-rank taxonomy, our understanding of the Malagasy region's ants began with what should have been a great advantage: the early production of a couple of authoritative volumes by A. Forel (1891, 1892), which summarized all the small taxonomic contributions to date and added a large number of new taxa, all in a unified system. Unfortunately, this excellent beginning was not developed further, and for the next hundred years only minor contributions were added. Most of these took the form of small papers that described a few new taxa collected by a single individual on Madagascar itself as well as additions to the restricted faunas of the Indian Ocean islands that constitute part of the region.

Real comprehension of the entire region's extensive ant fauna began only with the publications of B. L. Fisher and his associates (see references), which focused on the revisionary

BOX 2 Summary of Genera by Number of Species

This list provides a simple estimate of the relative sizes of the 118 genera recorded from the Afrotropical and Malagasy regions, in terms of number of described species per genus. Described introductions are included, but known species that remain undescribed are excluded. Species common to both regions are counted only once. Omitted are 4 genera (*Adelomyrmex*, *Anillomyrma*, *Chrysapace*, *Eurhopalothrix*) because although the genera have been collected in the regions, their species remain undescribed.

GENERA WITH ONLY 1 SPECIES

Ankylomyrma, *Aphomomyrmex*, *Apomyrma*, *Boloponera*, *Brachymyrmex*, *Concoctio*, *Cryptopone*, *Cyphomyrmex*, *Diplomorium*, *Dolioponera*, *Eburopone*, *Ecphorella*, *Erromyrmex*, *Feroponera*, *Fisheropone*, *Linepithema*, *Lividopone*, *Megaponera*, *Ochetella*, *Oecophylla*, *Ooceraea*, *Paltothyreus*, *Petalomyrmex*, *Pilotrochus*, *Promyopias*, *Ravavy*, *Santschiella*, *Vicinopone*, *Wasmannia*, *Xymmer*

GENERA WITH 2-3 SPECIES

Agraulomyrmex (2), *Aptinoma* (2), *Bondroitia* (2), *Brachyponera* (2), *Dicroaspis* (2), *Hagensia* (2), *Parvaponera* (2), *Streblognathus* (2), *Volenhovia* (2), *Zaspinctus* (2), *Acropyga* (3), *Aphaenogaster* (3), *Asphinctopone* (3), *Atopomyrmex* (3), *Baracidris* (3), *Eutetramorium* (3), *Leptanilla* (3), *Metapone* (3), *Ponera* (3), *Stigmatomma* (3)

GENERA WITH 4-6 SPECIES

Cataglyphis (4), *Cyphoidris* (4), *Melissotarsus* (4), *Microdacton* (4), *Odontomachus* (4), *Phasmomyrmex* (4), *Ophthalmopone* (5), *Paratrechina* (5), *Phrynoponera* (5), *Malagidris* (6), *Probolomyrmex* (6), *Psalidomyrmex* (6), *Temnothorax* (6)

GENERA WITH 7-10 SPECIES

Aenictogiton (7), *Trichomyrmex* (7), *Discothyrea* (8), *Pristomyrmex* (8), *Adetomyrma* (9), *Anoplolepis* (9), *Loboponera* (9), *Prionopelta* (9), *Centromyrmex* (10), *Tanipone* (10)

GENERA WITH 11-15 SPECIES

Mystrium (11), *Tapinolepis* (11), *Lioponera* (12), *Meranoplus* (12), *Proceratium* (12), *Terataner* (12), *Solenopsis* (14), *Messor* (15), *Parasyscia* (15), *Royidris* (15), *Syllophopsis* (15)

GENERA WITH 16-20 SPECIES

Calyptomyrmex (16), *Cardiocondyla* (16), *Mesoponera* (16), *Paraparatrechina* (16), *Plectroctena* (16), *Vitsika* (16), *Platythyrea* (18), *Tapiroma* (18), *Euponera* (20)

GENERA WITH 21-30 SPECIES

Axinidris (21), *Plagiolepis* (21), *Myrmecaria* (22), *Anochetus* (24), *Nylanderia* (25), *Nesomyrmex* (29), *Bothroponera* (30)

GENERA WITH 31-40 SPECIES

Aenictus (34), *Ocymyrmex* (34), *Simopone* (34), *Technomyrmex* (36)

GENERA WITH 41-50 SPECIES

Cataulacus (46), *Lepisiota* (47), *Polyrhachis* (48)

GENERA WITH 51-60 SPECIES

Tetraoponera (51), *Dorylus* (55), *Hypoponera* (60)

GENUS WITH 61-70 SPECIES

Carebara (65)

GENUS WITH 91-100 SPECIES

Pheidole (95)

GENUS WITH 101-120 SPECIES

Leptogenys (112)

GENUS WITH 141-150 SPECIES

Monomorium (144)

GENUS WITH 161-170 SPECIES

Crematogaster (169)

GENUS WITH 211-220 SPECIES

Camponotus (216)

GENUS WITH > 220 SPECIES

Strumigenys (221)

GENUS WITH > 300 SPECIES

Tetramorium (336)

taxonomy of whole genera, or groups of genera, from the entire region. These were based on exhaustive collecting conducted over many years by Fisher himself or by his students and colleagues. The results of these endeavors have so far covered 32 genera as represented in the region, but perhaps the most spectacular result was Fisher's (2000) revision of the Malagasy species of the genus *Strumigenys*. In this genus of small, cryptic ants only 6 species had been recorded in the entire Malagasy region up to that date. Fisher's work, coupled with a very minor contribution by Bolton (2000), raised the number to 90 well-defined, valid species.

The species-rank taxonomic situation in the Afrotropical region had no initial unified system such as was available for the Malagasy. From the earliest times to about 1950, taxonomic input for the region consisted almost entirely of scattered descriptions of whatever taxa occurred in a particular area. Frequently, these were reports on collections made in a very small area, over a very limited period, by a single entomologist. Dozens of papers appeared, year after year, and each of them merely added to the confused mass of names that had already been published. Over the years, the descriptions became more and more superficial, and the real identities and affinities of the nominal species, and their infraspecific taxa, became more obscure. It was almost as if the main taxonomists of those earlier times were in a race to see who could produce the most names, regardless of their uniqueness, accuracy, or validity. Very occasionally, an author would produce a revision, or a monograph of a particular genus, but such an offering often became just another production line for dubious names.

There were, of course, examples of authors trying to break this monotonous cycle. Outstanding among these was the production by G. Arnold (1915, 1916, 1917, 1920, 1922, 1924, 1926) of a multivolume study of the entire South African ant fauna. This survey presented keys and descriptions for all the named ant taxa of the country in a systematic order and also successfully added many new taxa to the total. Although now out of date, the work still strikes a modern reader as refreshingly different from the usual scattering of minimalist descriptions that then prevailed. Another landmark was W. M. Wheeler's (1922) production of the monumental faunal study, "The Ants of the Belgian Congo." Not only did this work treat whole genera, but it also included keys to the genera themselves, biological notes, a detailed catalogue, and much more.

By the 1950s it was apparent that the species-rank taxonomy was grossly inflated, if not almost impenetrable, and that a shift away from small-area faunistics and one-by-one descriptions and toward revisionary studies of species groups or whole genera was needed, to pin down which names were truly valid and which were synonyms or even invalid. The impetus for this was provided initially by W. L. Brown, who in the early 1950s began work on the genera of dacetine ants. The task of constructing taxonomic revisions of particular genera, as they occurred in the entire Afrotropical region, was later taken up by Bolton, his colleagues and associates, and other taxonomists between 1973 and the present (see references), so that today a good proportion of the genera (64) have received some relatively recent taxonomic attention. The task is by no means complete, as there is easily more than a

lifetime's accumulation of work remaining, but a scan through the genera included in this volume will show interested taxonomists which genera are still in need of a modern synthesis of their species.

Among higher taxa, such as subfamilies and the genera themselves, there was generally more certainty and stability than at species level. This was because, from very early times, a number of authors had striven to define the groups as accurately as was possible (for example, G. Mayr, 1865). The most influential of these was C. Emery's (1910, 1911, 1913, 1921, 1922, 1924, 1925) masterpiece in the *Genera Insectorum* series. These volumes provided diagnoses and keys to the genera and higher taxa as well as a full catalogue of all named forms. It was extremely influential and was reinforced by W. M. Wheeler's (1922) inclusion of keys to subfamilies and genera in "The Ants of the Belgian Congo." The two works were very interdependent and together formed the Emery-Wheeler classification of ants, some of which still survives today. But in the years after 1925, many changes and additions were made to the Emery-Wheeler system, which gradually lost its uniformity and became partially decrepit. An attempt to update the classification and rectify the many introduced errors was made by Bolton (1994), who presented a unified set of keys to the genera of the world, treating the Afrotropical and Malagasy regions together as a single unit. The most recent printed synopsis of higher ant taxa is that of Bolton (2003), but a considerable amount of work that has improved on this study has been published in the intervening years. These contributions are noted in the text under the entries of the various subfamilies and genera.

Taxonomic catalogues are useful as they show the condition of the classification at a given time. Not only do they list described taxa in the species-group as they stood at the time of the particular catalogue's production, but they also indicate the genera and subfamilies to which those taxa were assigned, which provides a good overview of which higher taxa were considered valid at the time. Early catalogues were published by J. Roger (1863), Mayr (1863), and C.G. de Dalla Torre (1893). In the intermediate period were the works of Emery, in the *Genera Insectorum* series mentioned earlier, and Wheeler's (1922) catalogues of Afrotropical and Malagasy taxa. After a long hiatus, Bolton (1995) produced his world ant catalogue, which is now kept up-to-date online. In addition, reputable revisions of genera or higher taxa may also provide lists of included species, such as in the ponerine revision of C.A. Schmidt and S.O. Shattuck (2014).

The system of nomenclature developed for ants, from very early in its history, was blighted by an overinflated set of subdivisions of names: the weird and unnecessary pentanomial system. Under this system any taxon could have up to five names: 1. Genus; 2. Subgenus; 3. Species; 4. Subspecies (or Race, or Stirps, names of apparently equivalent, or near-equivalent, rank); and 5. Variety. Complicating matters further, a varietal name could be attached directly to a species-rank name as well as to one of subspecies/race/stirps rank. No two authors seemed able to agree on a consistent status for any one name, so that one author would call a taxon a species or a subspecies, while another would call it a subspecies, or a variety of a species, or a variety of a subspecies. For instance, the tortuously long *Camponotus (Myrmoturba) maculatus* st. *melanocnemis* var. *lohieri* Santschi, 1913, was referred to

just a couple of years later as *Camponotus (Myrmoturba) maculatus* var. *lohieri* Emery, 1915; it is currently regarded as a straight synonym of *C. maculatus*. This complexity was complicated further by the fact that a single author often did not show any consistency, referring a name to one grade in one paper and a different grade in another. The International Code of Zoological Nomenclature (fourth edition, 1999) now regulates these excesses. Readers of older taxonomic papers should be aware of its provisions and bear them in mind when trying to interpret the status of the published names.

TAXONOMIC NOVELTIES

A number of modifications to the preexisting taxonomy are initiated in this volume. They are discussed at the appropriate places in the text:

Subfamily Apomyrminae is revived from synonymy and reinstated.

Two genera are newly described: *Erromyrma* (Myrmicinae) and *Lividopone* (Dorylinae).

One new genus-rank synonym is proposed: *Vitsika* = *Myrmisaraka* (Myrmicinae).

One species is transferred between genera: *Euponera suspecta* Santschi, 1914, is newly combined as *Parvaponera suspecta* (Santschi, 1914).

2 new synonyms are proposed of names in the species-group: *Messor galla* = *M. galla obscurus* (Myrmicinae); *Bothroponera cambouei* = *Pachycondyla kipyatkovii* (Ponerinae).