**FAMILY FORMICIDAE**

**Family FORMICIDAE**

**Formicariae** Latreille, 1809: 124. Type-genus: *Formica*.

**Taxonomic history**

Formicidae as family: Latreille, 1809: 124 [Formicariae]; Leach, 1815: 147 [Formicarides]; Stephens, 1829: 356 [first spelling as Formicidae]; Haliday, 1836: 331; Westwood, 1839: 217; Swainson & Shuckard, 1840: 171; Nylander, 1846a: 877; Foerster, 1850a: 1 [Formicariae]; Mayr, 1855: 275 [Formicina]; Smith, F. 1857a: 52; Smith, F. 1858b: 1; Mayr, 1861: 21; Mayr, 1865: 6; Heer, 1867: 6 [Formicaria]; Forel, 1870: 307 [Formicinae]; Forel, 1874: 19 [Formicariae]; Dalla Torre, 1893: 1; Forel, 1899c: 1; Ruzsky, 1902d: 5 [Formicarii]; Bingham, 1903: 1; Ruzsky, 1905b: 91 [Formicariae or Formicidae]; Ashmead, 1905b: 384; all subsequent authors.

**Subfamilies of Formicidae (extant)**: Aenictinae, Aenictogitoninae, Agroecomyrmecinae, Amblyoponinae, Aneuretinae, Cerapachyinae, Dolichoderinae, Dorylinae, Ecitoninae, Ectatomminae, Formicinae, Heteroponerinae, Leptanillinae, Leptanilloidinae, Martialinae, Myrmeciinae, Myrmicinae, Paraponerinae, Ponerinae, Proceratiinae, Pseudomyrmecinae**.**

**Subfamilies of Formicidae (extinct)**: \*Armaniinae, \*Brownimeciinae, \*Formiciinae, \*Sphecomyrminae.

**Genera (extant) *incertae sedis* in Formicidae**: *Condylodon, Hypochira, Noonilla*.

**Genera (extinct) *incertae sedis* in Formicidae**: *\*Calyptites, \*Eoformica, \*Fonsecahymen, \*Gerontoformica, \*Klondikia, \*Kohlsimyrma, \*Myanmyrma, \*Syntaphus*.

**Genera (extant) excluded from Formicidae**: *Formila, Scyphodon*.

**Genera (extinct) excluded from Formicidae**: \**Cariridris, \*Cretacoformica, \*Myrmicium, \*Palaeomyrmex, \*Promyrmicium*.

**Genus-group *nomina nuda* in Formicidae**: *Ancylognathus, \*Dolichoformica, Hypopheidole, Leptoxenus, Myrmegis, Pergandea, Salticomorpha, Titusia*.

**FAMILY FORMICIDAE REFERENCES, WORLD**

WORLD CATALOGUES

Roger, 1863b: 1 (Formicidae); Mayr, 1863: 394 (Formicidae); Dalla Torre, 1893: 1 (Formicidae); Emery, 1910b: 3 (Dorylinae); Emery, 1911d: 2 (Ponerinae); Emery, 1913a: 2 (Dolichoderinae); Emery, 1921f: 3, Emery, 1922e: 95 and Emery, 1924d: 207 (Myrmicinae); Emery, 1925b: 2 (Formicinae); Shattuck, 1994: 1 (Aneuretinae and Dolichoderinae); Bolton, 1995b: 7 (Formicidae).

WORLD SYNOPTIC CLASSIFICATIONS

Forel, 1893a: 161 (Formicidae); Emery, 1895j: 764 (Formicidae); Emery, 1896e: 173 (Formicidae); Ashmead, 1905b: 381 (Formicidae); Wheeler, W.M. 1910g: 134 (Formicidae); Emery, 1910b: 3 (Dorylinae); Emery, 1911d: 2 (Ponerinae); Emery, 1913a: 2 (Dolichoderinae); Forel, 1917: 235 (Formicidae); Emery, 1921f: 3 and Emery, 1922e: 95 (Myrmicinae); Wheeler, W.M. 1922a: 631 (Formicidae); Emery, 1924d: 207 (Myrmicinae); Emery, 1925b: 2 (Formicinae); Brown, 1973b: 165, 178 (Formicidae); Snelling, R.R. 1981: 387 (Formicidae); Wheeler, G.C. & Wheeler, J. 1985: 256 (Formicidae); Dlussky & Fedoseeva, 1988: 77 (Formicidae); Hölldobler & Wilson, 1990: 9 (Formicidae); Bolton, 1994: 12 (Formicidae); Bolton, 2003: 4 (Formicidae); Engel & Grimaldi, 2005: 4 (Formicidae); Ward, 2007a: 549 (Formicidae).

WORLD IDENTIFICATION KEYS

Emery, 1896e: 173 (Formicidae subfamilies and genera); Emery, 1910b: 4 (Dorylinae tribes and genera); Emery, 1911d: 4 (Ponerinae tribes and genera); Emery, 1913a: 6 (Dolichoderinae tribes and genera); Escherich, 1917: 2 (Formicidae subfamilies); Emery, 1921f: 9, 12, 16 (Myrmicinae tribes and genera); Wheeler, W.M. 1922a: 631 (Formicidae subfamilies, tribes and genera); Emery, 1925b: 7 (Formicinae tribes and genera); Clark, 1951: 14 (Formicidae subfamilies); Wheeler, G.C. & Wheeler, J. 1972a: 42 (Formicidae subfamilies); Snelling, R.R. 1981: 386 (Formicidae subfamilies); Hölldobler & Wilson, 1990: 33 (Formicidae subfamilies and genera); Bolton, 1990c: 1361 (Formicidae subfamilies); Shattuck, 1992c: 20 (Dolichoderinae genera); Ward, 1990: 464 (Pseudomyrmecinae genera); Brothers & Finnamore, 1993: 218 (Formicidae subfamilies); Bolton, 1994: 7 (Formicidae subfamilies and genera); Bolton, 2003: 11 (revision of subfamilies).

MORPHOLOGY OF FORMICIDAE

Forel, 1878: 339 (proventriculus); Janet, 1902: 25 (general anatomy); Pietschker, 1910: 1 (brain structure); Wheeler, W.M. 1910g: 13 (general morphology, anatomy); Emery, 1913c: 577 (venation); Wheeler, W.M. 1918c: 293 (larvae); Janet, 1923: 5 (anatomical drawings synopsis); Bugnion, 1930: 85 (mouthparts); Brown & Nutting, 1950: 113 (venation); Gregg, 1953a: 328 (promesonotal suture motility); Eisner, 1957: 439 (proventriculus); Gotwald, 1969: 1 (mouthparts and gaster); Crozier, 1970: 109 (karyology); Markl, 1973: 258 (stridulitrum); Wheeler, G.C. & Wheeler, J. 1976b: 45 (larvae); Hölldobler & Engel, 1979: 285 and Hölldobler & Engel-Siegel, 1982: 113 (tergal and sternal glands); Imai, Baroni Urbani, Kubota et al. 1984: 5 (karyology); Imai, Brown, Kubota et al. 1984: 66 (karyology); Imai, Kubota, Brown, et al. 1985: 46 (karyology); Hölldobler & Engel-Siegel, 1985: 201 (metapleural gland); Billen, 1986: 165 (Dufour's gland); Wheeler, G.C. & Wheeler, J. 1986e: 684 (larvae); Brown, 1988h: 17 (malpighian tubule numbers); Caetano, 1988: 129 (digestive tract anatomy); Francoeur & Loiselle, 1988a: 333 (strigil, evolution); Hölldobler & Wilson, 1990: 5, 229 (anatomy, exocrine glands); Hashimoto, 1991a: 125 (antennal and labial sensilla); Hashimoto, 1991b: 289 (tibial spurs); Billen, 1993: 4 (exocrine glands); Bolton, 1994: 191 (morphology glossary); Hölldobler, Obermayer & Peeters, 1996: 157 (metatibial gland); Wenseleers, Schoeters, *et al*. 1998: 121 (cloacal gland); Perrault, 1999: 125 (thoracic anatomy); Perrault, 2004: 291 (anterior metasomal anatomy); Serna & Mackay, 2010: 1 (*Procryptocerus* morphology); Keller, 2011: 1 (phylogenetic analysis of morphology).

EVOLUTION AND PHYLOGENY OF FORMICIDAE

Wheeler, W.M. 1920: 52; Emery, 1920d: 370; Donisthorpe, 1922: xlvi; Wheeler, W.M. 1923f: 156; Wheeler, W.M. 1928f: 124; Stitz, 1936: 211; Morley, 1938: 190; Brown & Nutting, 1950: 113; Bernard, 1951: 1041; Brown, 1954e: 30; Wilson, Carpenter & Brown, 1967: 12; Taylor, 1978a: 982; Rasnitsyn, 1980: 45-46 (foldout page); Lutz, 1986: 213; Dlussky & Fedoseeva, 1988: 137; Baroni Urbani, 1989: 137; Hölldobler & Wilson, 1990: 26; Hashimoto, 1991a: 125; Hashimoto, 1991b: 289; Baroni Urbani, Bolton & Ward, 1992: 301; Shattuck, 1992b: 203; Brothers & Carpenter, 1993: 227; Ward, 1994: 173; Hashimoto, 1996: 340; Crozier, Jermiin & Chiotis, 1997: 22; Grimaldi, Agosti & Carpenter, 1997: 25; Perrault, 1999: 125; Brothers, 1999: 233; Grimaldi & Agosti, 2000: 13680; Ohnishi, Imai *et al*. 2003: 419; Astruc, Julien, *et al*. 2004: 880; Grimaldi & Engel, 2005: 440; Wilson & Hölldobler, 2005: 7411; Brady, Schultz, *et al*. 2006: 18172; Moreau, Bell *et al*. 2006: 101; Ouellette, Fisher *et al*. 2006: 359; Rabeling, Brown & Verhaagh, 2008: 14914.

PALAEONTOLOGY OF FORMICIDAE

Scudder, 1891: 682 (fossil taxa catalogue); Handlirsch, 1907: 859 (fossil taxa catalogue); Wheeler, W.M. 1915h: 1 (Baltic amber fauna synopsis); Burnham, 1979: 108 (fossils in amber checklist); Keilbach, 1982: 272 (fossils in amber checklist); Spahr, 1987: 41 (fossils in amber checklist); Carpenter, 1992: 490 (fossil genera review); Bolton, 1995b: 4 (fossil taxa checklist, in catalogue); Grimaldi, Agosti & Carpenter, 1997: 1 (Cretaceous genera in amber review); Dlussky, 1997: 617 (Baltic amber genera key); Bolton, 2003: 73 (fossil subfamilies synopsis); Dlussky & Rasnitsyn, 2007: 118 (Palaeontological record); Dlussky & Rasnitsyn, 2009: 1024 (European Upper Eocene amber, synopsis of species).

OTHER GENERAL REFERENCES

Bolton, 1995a: 1038 (census of extant taxa); Ward, Bolton, Shattuck & Brown, 1996: 55 (bibliography of systematics); Brown, 2000: 46 (overview of genera); Brandão, 2000: 172 (list of major ant collections); Bolton, 2003: 15, 77 (diagnosis, synopsis); Bolton, 2007b: 51 (method for taxonomic revisions); Taylor, 2007: 580 (eusociality in ants).

**Regional catalogues and checklists**

NEARCTIC: Smith, M.R., 1951a: 778; Smith, M.R. 1958c: 108 (first supplement to previous); Smith, M.R. 1967: 343 (second supplement); Smith, D.R. 1979: 1323.

NEOTROPICAL: Kempf, 1972a: 3; Brandão, 1991: 319 (supplement to previous). AFROTROPICAL AND MALAGASY: Wheeler, W.M. 1922a: 727, 1005.

ORIENTAL AND MALESIAN: Chapman & Capco, 1951: 9.

AUSTRAL: Taylor & Brown, D.R. 1985: 5; Taylor, R.W. 1987a: 1; Taylor, R.W. 1987b: 1 (supplement to previous).

**Regional and national faunas with keys**

PALAEARCTIC

Mayr, 1855: 299 (Austria); Mayr, 1861: 25 (Europe); André, 1874: 167 (Europe); Forel, 1874: 19 (Switzerland); Saunders, E. 1880: 202 (Britain); André, 1882a: 125 (Europe & Algeria); Nasonov, 1889: 50 (Russia); Lameere, 1892: 62 (Belgium); Saunders, E. 1896: 18 (Britain); Ruzsky, 1905b: 99 (Russian Empire); Wasmann, 1906: 7 (Luxemburg); Emery, 1908a: 165, 1908c: 305, 1908e: 437, 1908f: 549, 1908h: 663, 1909a: 19, 1909b: 179, 1909c: 355, 1909d: 695, 1910a: 127 (Palaearctic); Bondroit, 1910: 480 (Belgium); Stitz, 1914: 54 (Central Europe); Donisthorpe, 1915d: 65 (Britain); Forel, 1915d: 1 (Switzerland); Emery, 1916b: 92 (Italy); Bondroit, 1918: 12 (France & Belgium); Kutter, 1920b: 132 (Switzerland); Soudek, 1922: 17 (Czechoslovakia); Lomnicki, 1925a: 160 (Poland); Stärcke, 1926: 79 (Netherlands); Karavaiev, 1927c: 254 (Ukraine); Donisthorpe, 1927b: 66 (Britain); Arnol'di, 1933b: 596 (Russia); Menozzi, 1933b: 87 (Israel); Karavaiev, 1934: 48 (Ukraine); Stitz, 1939: 56 (Germany); Kratochvíl, 1941: 69 (Central Europe); Novák & Sadil, 1941: 69 (Central Europe); Ceballos, 1943: 313 (Spain); Holgersen, 1943b: 166 and Holgersen, 1944: 198 (Norway); Boven, 1947: 168 (Belgium); Collingwood, 1958a: 69 (Britain); Somfai, 1959: 1 (Hungary); Boven, 1959: 1 (Netherlands); Collingwood, 1964: 93 (Britain); Bernard, 1967: 75 (Western Europe); Boven, 1970b: 7 (Netherlands); Tarbinsky, 1976: 14 (Kyrghyzstan); Bolton & Collingwood, 1975: 1 (Britain); Boven, 1977: 1 (Belgium); Kutter, 1977c: 19 (Switzerland); Brian, 1977: 33 (Britain); Arnol'di & Dlussky, 1978: 520 (former European U.S.S.R.); Collingwood, 1978: 65 (Iberian Peninsula); Collingwood, 1979: 28 (Fennoscandia & Denmark); Schembri & Collingwood, 1981: 417 (Malta); Verhaeghe, Deligne, et al., 1984: 105 (Belgium genera); Gösswald, 1985: 262 (Germany); Collingwood, 1985: 230 (Saudi Arabia); Nilsson & Douwes, 1987: 56 (Norway); Agosti & Collingwood, 1987b: 261 (Balkans); Casevitz-Weulersse, 1990b: 135 and Casevitz-Weulersse, 1990c: 415 (Corsica); Dlussky, Soyunov & Zabelin, 1990: 99 (Turkmenistan); Kupyanskaya, 1990: 83 (Far Eastern Russia); Bolton, in Hölldobler & Wilson, 1990: 34 (Palaearctic genera key); Atanasov & Dlussky, 1992: 47 (Bulgaria); Arakelian, 1994: 1 (Armenia); Radchenko, 1994b: 95 (South Siberia); Seifert, 1994: 1 (Germany, synopsis); Onoyama & Terayama, 1994: 1 (Japan bibliography); Bolton, 1994: 22, 42, 75, 153 (Dolichoderinae, Formicinae, Myrmicinae, Ponerinae genera keys); Douwes, 1995: 83 (Sweden); Kupyanskaya, 1995: 327 (Far Eastern Russia); Wu, J. & Wang, 1995: 30 (China); Fontenla Rizo, 1995d: 16 (Cuba, tramp species key); Collingwood & Agosti, 1996: 300 (Saudi Arabia); Seifert, 1996b: 106 (Central Europe); Skinner & Allen, 1996: 40 (Britain); Dlussky, 1997: 616 (\*Baltic Amber genera); Collingwood & Prince, 1998: 9 (Portugal); Czechowski, Radchenko & Czechowska, 2002: 133 (Poland); Aktaç & Radchenko, 2002: 53 (Turkey genera); Yoshimura & Onoyama, 2002: 424 (Japan genera, males key); Imai, Kihara, Kondoh et al. 2003: 8 (Japan); Radchenko, 2005b: 183 (North Korea); Seifert, 2007: 107 (North and Central Europe); Boer, 2010: 8 (Benelux); Lapeva-Gjonova *et al*. 2010: 1 (Bulgaria species catalogue); Csösz, Markó & Gallé, 2010: pagination? (Hungary species catalogue); Czechowski, Radchenko, *et al*. 2012: 333 (Poland).

NEARCTIC

Provancher, 1883: 596 (Canada); Provancher, 1887: 225 (Canada); Cresson, 1887: 93 (U.S.A.); Wheeler, W.M. 1910g: 557 (North America genera); Wheeler, W.M. 1916m: 579 (U.S.A., Connecticut); Cole, 1942: 359 (U.S.A., Utah); Smith, M.R. 1943f: 276 (U.S.A. subfamilies & genera, males); Buren, 1944a: 278 (U.S.A., Iowa); Smith, M.R. 1947f: 524 (U.S.A. genera); Creighton, 1950a: 29 (North America); Gregg, 1963: 278 (U.S.A., Colorado); Wheeler, G.C. & Wheeler, J. 1963: 149 (U.S.A., North Dakota); Francoeur, 1979: 48 (Canada, Québec, introduction); Allred, 1982: 437 (U.S.A., Utah); Wheeler, G.C. & Wheeler, J. 1986g: 16 (U.S.A., Nevada); Mackay, Lowrie, et al., 1988: 81 (U.S.A., New Mexico); Cover, in Hölldobler & Wilson, 1990: 62 (Nearctic genera key); Mackay & Mackay, 2002: 16 (U.S.A., New Mexico); Dlussky & Rasnitsyn, 2002: 430 (\*Eocene North American genera); Bolton, 1994: 25, 38, 48, 95, 160 (Dolichoderinae, Ecitoninae, Formicinae, Myrmicinae, Ponerinae genera keys); Coovert, 2005: 1 (U.S.A., Ohio); Ward, 2005: 20 (U.S.A., California genera); Fisher & Cover, 2007: 1 (North American genera key).

NEOTROPICAL

Gallardo, 1915: 30 (Argentina genera); Menozzi & Russo, 1930: 169 (Dominican Republic); Smith, M.R. 1937: 822 (Puerto Rico); Kusnezov, 1956: 7 (Argentina); Kusnezov, 1960b: 330 (West Patagonia); Snelling, R.R. & Hunt, 1976: 63 (Chile); Kempf, 1978: 33 (Neotropical subfamilies); Baroni Urbani, 1984: 73 (Neotropical genera); Mackay & Mackay, 1989: 1 (Mexico genera); Cover, in Hölldobler & Wilson, 1990: 69 (Neotropical genera key); Lattke, in Jaffe, 1993: 145 (Neotropical subfamilies & genera); Bolton, 1994: 26, 38, 49, 98, 162 (Dolichoderinae, Ecitoninae, Formicinae, Myrmicinae, Ponerinae genera keys); Fernández, Palacio, Mackay & Mackay, 1996: 353 (Neotropical subfamilies); Fernández & Ospina, in Fernández, 2003d: 49 (Neotropical genera synopsis); Palacio & Fernández, in Fernández, 2003d: 233 (Neotropical subfamilies and genera keys).

AFROTROPICAL AND MALAGASY

Forel, 1891b: 8 (Madagascar genera); Arnold, 1915: 6 (South Africa); Arnold, 1916: 159 (South Africa); Bolton, 1973a: 321 (West Africa subfamilies & genera); Bolton, in Hölldobler & Wilson, 1990: 39 (Afrotropical and Malagasy genera key); Bolton, 1994: 23, 44, 79, 155 (Dolichoderinae, Formicinae, Myrmicinae, Ponerinae genera keys); Yoshimura & Fisher, 2007: 27 (Malagasy subfamilies, males key).

ORIENTAL AND MALESIAN

Forel, 1892j: 219 (India & Sri Lanka); Bingham, 1903: 1 (India, Sri Lanka & Burma); Wilson & Taylor, 1967: 10 (Polynesia); Bolton, in Hölldobler & Wilson, 1990: 46 (Oriental and Indo-Australian genera key); Bolton, 1994: 23, 45, 84, 158 (Dolichoderinae, Formicinae, Myrmicinae, Ponerinae genera keys); Wu, J. & Wang, 1995: 30 (China); Zhou, 2001b: 21 (China, Guangxi subfamilies); Clouse, 2007b: 190 (Micronesia); Framenau & Thomas, 2008: 52 (Christmas I.); Terayama, 2009 (Taiwan); Eguchi, Bui & Yamane, 2011: 7 (Vietnam subfamilies key); Pfeiffer, *et al*. 2011: 32 (ants of Borneo, checklist); General & Alpert, 2012: 68 (Philippines genera key); Sarnat & Economo, 2012: 1 (Fiji).

AUSTRAL

Forel, 1905a: 353 (New Zealand); Brown, 1958h: 1 (New Zealand); Brown & Taylor, 1970: 958 (Australia subfamilies); Greenslade, 1979: 10 (South Australia subfamilies); Taylor, R.W., in Hölldobler & Wilson, 1990: 55 (Australia genera key); Taylor, R.W. 1991d: 987 (Australia subfamilies); Bolton, 1994: 24, 47, 91, 159 (Dolichoderinae, Formicinae, Myrmicinae, Ponerinae genera keys); Shattuck, 1999: 21 (Australia subfamilies & genera); Andersen, 2000: 14 (northern Australia subfamilies & genera); Don, W. 2007: 39 (New Zealand); Heterick, 2009: 16, 28 (south-western Australia subfamilies & genera).

**GENERA *INCERTAE SEDIS* AND EXCLUSIONS FROM FORMICIDAE**

**Genera *incertae sedis* in FORMICIDAE**

**Genus** \****CALYPTITES***

\****Calyptites*** Scudder, 1877b: 270 [as member of family Braconidae]. Type-species: \**Calyptites antediluvianum*, by monotypy.

**Taxonomic history**

\**Calyptites* in Braconidae: Scudder, 1891: 629; Donisthorpe, 1943f: 629.

\**Calyptites* in Formicidae: Wheeler, W.M. 1911f: 160.

\**Calyptites incertae sedis* in Formicidae: Carpenter, 1930: 21; Brown, 1973b: 179; Bolton, 1995b: 23, 83 (family unresolved).

**Genus *CONDYLODON***

***Condylodon*** Lund, 1831a: 131. Type-species: *Condylodon audouini*, by monotypy.

**Taxonomic history**

*Condylodon* in family Mutillidae?: Swainson & Shuckard, 1840: 173.

*Condylodon* as junior synonym of *Pseudomyrma*: Dalla Torre, 1893: 55.

*Condylodon* in Ponerinae?: Emery, 1921f: 28 (footnote).

*Condylodon* not in Pseudomyrmecinae, dubiously Ponerinae: Ward, 1990: 471.

*Condylodon incertae sedis* in Ponerinae: Bolton, 1994: 164; Bolton, 1995b: 146.

*Condylodon incertae sedis* in Formicidae: Bolton, 2003: 263.

**Genus \**EOFORMICA***

\****Eoformica*** Cockerell, 1921: 38. Type-species: \**Eoformica eocenica* (junior synonym of \**Eoformica pingue*), by monotypy.

**Taxonomic history**

\**Eoformica incertae sedis* in Ponerinae: Cockerell, 1921: 38.

\**Eoformica* in Formicinae, Oecophyllini: Donisthorpe, 1943f: 643.

\**Eoformica incertae sedis* in Myrmicinae: Carpenter, 1930: 17; Bolton, 1994: 106; Bolton, 1995b: 188.

\**Eoformica incertae sedis* in Formicidae: Dlussky & Rasnitsyn, 2002: 424.

[\**Formicites* (collective group name) material absorbed into \**Eoformica*: Dlussky & Rasnitsyn, 2002: 424.]

**Genus \**FONSECAHYMEN***

\****Fonsecahymen*** Martins-Neto & Mendes, 2002: 29. Type-species: \**Fonsecahymen stigmata*, by original designation.

**Taxonomic history**

\**Fonsecahymen* related to *Oecophylla*: Martins-Neto & Mendes, 2002: 30.

\**Fonsecahymen incertae sedis* in Formicidae: current status (unpublished).

**Genus \**GERONTOFORMICA***

\****Gerontoformica*** Nel & Perrault, in Nel, Perrault, Perrichot & Néraudeau, 2004: 24. Type-species: \**Gerontoformica cretacica*, by original designation.

**Taxonomic history**

\**Gerontoformica incertae sedis* in Formicidae: Nel, Perrault, Perrichot & Néraudeau, 2004: 24.

**Genus *HYPOCHIRA***

***Hypochira*** Buckley, 1866: 169 [as subgenus of *Formica*]. Type-species: *Formica (Hypochira) subspinosa*, by monotypy.

**Taxonomic history**

*Hypochira* in Formicinae, Formicini: Donisthorpe, 1943f: 652.

*Hypochira incertae sedis* in Dolichoderinae: Smith, D.R. 1979: 1422.

*Hypochira* as junior synonym of *Formica*: Dalla Torre, 1893: 192; Agosti, 1994a: 106.

*Hypochira* as questionable junior synonym of *Dolichoderus*: Emery, 1895c: 338; Emery, 1925b: 271.

*Hypochira incertae sedis* in Formicidae: Bolton, 1995b: 31 (**unidentifiable taxon**).

**Genus \**KLONDIKIA***

\****Klondikia*** Dlussky & Rasnitsyn, 2002: 427. Type-species: \**Klondikia whiteae*, by original designation.

**Taxonomic history**

\**Klondikia incertae sedis* in Formicidae: Dlussky & Rasnitsyn, 2002: 427.

**Genus \**KOHLSIMYRMA***

\****Kohlsimyrma*** Dlussky & Rasnitsyn, 2002: 427. Type-species: \**Kohlsimyrma laticeps*, by original designation.

**Taxonomic history**

\**Kohlsimyrma incertae sedis* in Formicidae: Dlussky & Rasnitsyn, 2002: 427.

**Genus \**MYANMYRMA***

\****Myanmyrma*** Engel & Grimaldi, 2005: 13. Type-species: \**Myanmyrma gracilis*, by original designation.

**Taxonomic history**

*\*Myanmyrma incertae sedis* in Formicidae: Engel & Grimaldi, 2005: 13; Archibald, Cover & Moreau, 2006: 510.

**Genus *NOONILLA***

***Noonilla*** Petersen, 1968: 582. Type-species: *Noonilla copiosa*, by original designation.

**Taxonomic history**

*Noonilla* in Leptanillinae: Petersen, 1968: 582; Baroni Urbani, 1977c: 482; Dlussky & Fedoseeva, 1988: 79.

*Noonilla* in Leptanillinae, Leptanillini: Bolton, 1990b: 276; Hölldobler & Wilson, 1990: 12; Bolton, 1994: 70; Bolton, 1995b: 292;

*Noonilla incertae sedis* in Formicidae: Ogata, Terayama & Masuko, 1995: 33.

**Genus references**

Baroni Urbani, 1977c: 482 (review of genus); Ogata, Terayama & Masuko, 1995: 33 (review of genus).

**Genus \**SYNTAPHUS***

\****Syntaphus*** Donisthorpe, 1920: 84. Type-species: \**Syntaphus wheeleri*, by original designation.

**Taxonomic history**

\**Syntaphus* in Ponerinae, Ectatommini: Donisthorpe, 1920: 84; Donisthorpe, 1943g: 730; Hölldobler & Wilson, 1990: 10; Bolton, 1994: 164; Bolton, 1995b: 399.

\**Syntaphus incertae sedis* in Formicidae: Bolton, 2003: 264.

**Genera excluded from FORMICIDAE**

The following were all originally described as members of Formicidae but are now excluded.

**Genus \**CARIRIDRIS***

\****Cariridris*** Brandão & Martins-Neto, 1990: 201. Type-species: \**Cariridris bipetiolata*, by original designation.

**Taxonomic history**

\**Cariridris incertae sedis* in Myrmeciinae: Brandão & Martins-Neto, 1990: 203; Bolton, 1994: 73; Bolton, 1995b: 134.

\**Cariridris* in Sphecidae: Verhaagh, 1996: 11; Dlussky & Rasnitsyn, 2002: 418.

\**Cariridris incertae sedis* in Hymenoptera, Aculeata: Grimaldi, Agosti & Carpenter, 1997: 7.

**Genus \**CRETACOFORMICA***

\****Cretacoformica*** Jell & Duncan, 1986: 190. Type-species: \**Cretacoformica explicata*, by original designation.

**Taxonomic history**

\**Cretacoformica incertae sedis* in Formicidae: Jell & Duncan, 1986: 190.

\**Cretacoformica* excluded from Formicidae: Naumann, 1993: 355.

\**Cretacoformica* dubiously Formicidae: Bolton, 1995b: 25, 166.

\**Cretacoformica incertae sedis* in Hymenoptera, Apocrita: Grimaldi, Agosti & Carpenter, 1997: 7.

**Genus *FORMILA***

***Formila*** de Romand, 1846: xxxii. Type-species: *Formila chevrolatii*, by monotypy.

**Taxonomic history**

*Formila* in Formicidae: de Romand, 1846: xxxii; Dalla Torre, 1893: 193.

*Formila* in Embolemidae: Muesebeck & Walkley, 1951: 1043.

**Genus \**MYRMICIUM***

\****Myrmicium*** Westwood, 1854: 396. Type-species: \**Myrmicium heerii*, by monotypy.

**Taxonomic history**

\**Myrmicium* in Myrmicinae: Dalla Torre, 1893: 108 (as \**Myrmecium*, incorrect subsequent spelling); Bolton, 1995b: 37 (anachronism).

\**Myrmicium* in \*Myrmiciidae (Symphyta): Maa, 1949: 17; Rasnitsyn, 1969: 17; Jarzembowski, 1993: 179.

\**Myrmicium* in \*Pseudosiricidae: Handlirsch, 1906: 577; Abe & Smith, D.R. 1991: 53.

\**Myrmicium* as junior synonym of \**Pseudosirex*: Handlirsch, 1906: 577.

\**Myrmicium* as junior synonym of *Myrmica*: Dalla Torre, 1893: 108; Forel, 1915d: 9.

\**Myrmicium* as genus: Westwood, 1854: 396; Maa, 1949: 17; Rasnitsyn, 1969: 17; Jarzembowski, 1993: 179; Bolton, 1995b: 37.

**Genus \**PALAEOMYRMEX***

\****Palaeomyrmex*** Heer, 1865: 91. Type-species: \**Palaeomyrmex prodromus*, by monotypy.

**Taxonomic history**

\**Palaeomyrmex* in Formicidae: Heer, 1865: 91.

\**Palaeomyrmex* in Homoptera: Handlirsch, 1906: 507.

**Genus \**PROMYRMICIUM***

\****Promyrmicium*** Baroni Urbani, 1971b: 362.

**Taxonomic history**

[Replacement name for \**Myrmicium* Heer, 1870: 78; junior homonym of \**Myrmicium* Westwood, 1854: 396.]

\**Promyrmicium* in Formicidae, Myrmicinae: Baroni Urbani, 1971b: 362; Bolton, 1994: 106 (anachronism).

\**Promyrmicium* in Ichneumonidae: Birket-Smith, 1977: 8.

**Homonym replaced by \**PROMYRMICIUM***

\****Myrmicium*** Heer, 1870: 78. Type-species: \**Myrmicium boreale*, by monotypy.

**Taxonomic history**

[Junior homonym of \**Myrmicium* Westwood, 1854: 396 (\*Pseudosiricidae).]

**Genus *SCYPHODON***

***Scyphodon*** Brues, 1925: 93. Type-species: *Scyphodon anomalum*, by original designation.

**Taxonomic history**

*Scyphodon* in Leptanillinae: Petersen, 1968: 591; Baroni Urbani, 1977c: 482; Dlussky & Fedoseeva, 1988: 79; Bolton, 1990b: 277; Hölldobler & Wilson, 1990: 12; Bolton, 1994: 70; Bolton, 1995b: 382.

*Scyphodon incertae sedis* in Formicidae: Wheeler, G.C. & Wheeler, J. 1985: 259.

*Scyphodon incertae sedis* in Hymenoptera, Aculeata: Ogata, Terayama & Masuko, 1995: 33 (excluded from Formicidae).

**Genus *Scyphodon* references**

Petersen, 1968: 591 (review of genus); Baroni Urbani, 1977c: 482 (review of genus); Ogata, Terayama & Masuko, 1995: 33 (review of genus).

**Unavailable family-group names in FORMICIDAE**

ALLOFORMICINAE [unavailable name]

Alloformicinae Emery, 1925b: 9 [as "section" of Formicinae]. Section designated to include tribes Melophorini, Myrmelachistini and Plagiolepidini. Unavailable name; not based on genus rank taxon. Contained material referable to Formicinae: Bolton, 1994: 51.

EUCAMPONOTINAE [unavailable name]

Eucamponotinae Forel, 1912i: 88 [as "section" of Camponotinae]. Section designated to include tribes Camponotini, Formicini, Gesomyrmecini, Oecophyllini and Prenolepidini. Unavailable name, not based on genus rank taxon. Contained material referable to Formicinae: Bolton, 1994: 51.

EUDOLICHODERINAE [unavailable name]

Eudolichoderinae Forel, 1917: 247 [as "section" of Dolichoderinae]. Section designated to include tribe Tapinomini. Unavailable name, not based on genus rank taxon. Contained material referable to Dolichoderinae: Bolton, 1994: 27.

EUDORYLINAE [unavailable name]

Eudorylinae Forel, 1917: 239 [as "section" of Dorylinae]. Section designated to include tribe Dorylini. Unavailable name, not based on genus rank taxon. Contained material referable to Dorylinae: Bolton, 1990c: 1358.

EUFORMICINAE [unavailable name]

Euformicinae Emery, 1925b: 37 [as "section" of Formicinae]. Section designated to include tribes Brachymyrmecini, Camponotini, Dimorphomyrmicini, Formicini, Gigantiopini, Lasiini, Oecophyllini and Santschiellini. Unavailable name, not based on genus rank taxon. Contained material referable to Formicinae: Bolton, 1994: 51.

EUMYRMICINAE [unavailable name]

Eumyrmicinae Emery, 1914a: 35 [as "section" of Myrmicinae]. Section designated to include all Myrmicinae except Metaponini and Pseudomyrmecini. Unavailable name, not based on genus rank taxon. Contained material referable to Myrmicinae: Bolton, 1994: 106.

EXEUPONERINAE [unavailable name]

Exeuponerinae Donisthorpe, 1943d: 438 [as "section" of Ponerinae]. Section designated to include only *Pseudoneoponera* (junior synonym of *Pachycondyla*). Unavailable name, not based on genus rank taxon. Contained material referable to Ponerini: Bolton, 1994: 164.

HETEROFORMICINAE [unavailable name]

Heteroformicinae Emery, 1925b: 35 [as "section" of Formicinae]. Section designated to include tribes Myrmecorhynchini and Myrmoteratini. Unavailable name; not based on genus rank taxon. Contained material referable to Formicinae: Bolton, 1994: 51.

MESOCAMPONOTINAE [unavailable name]

Mesocamponotinae Forel, 1912i: 88 [as "section" of Camponotinae]. Section designated to include tribes Melophorini and Plagiolepidini. Unavailable name; not based on genus rank taxon. Contained material referable to Formicinae: Bolton, 1994: 51.

METADORYLINAE [unavailable name]

Metadorylinae Forel, 1917: 240 [as "section" of Dorylinae]. Section designated to include tribes Ecitonini and Leptanillini. Unavailable name; not based on genus rank taxon. Contained material referable to Ecitoninae and Leptanillinae: Bolton, 1990c: 1357; Bolton, 1994: 70.

MYCETOMYRMICINAE [unavailable name]

Mycetomyrmicinae Forel, 1917: 246 [as "section" of Myrmicinae]. Section designated to include tribes Attini and Proattini. Unavailable name; not based on genus rank taxon. Contained material referable to Myrmicinae: Bolton, 1994: 106.

NEOATTINI [unavailable name]

Neoattini Kusnezov, 1956: 22; Kusnezov, 1964: 62 [as subdivision of tribe Attini]. Designated to include all attine genera except *Apterostigma, Mycocepurus, Myrmicocrypta*. Unavailable name; not based on genus rank taxon. Contained material referable to Attini: Bolton, 2003: 265.

PALEOATTINI [unavailable name]

Paleoattini Kusnezov, 1956: 22; Kusnezov, 1964: 62 (alternatively spelled Palaeoattini, p. 146) [as subdivision of tribe Attini]. Designated to include genera *Apterostigma, Mycocepurus, Myrmicocrypta*. Unavailable name; not based on genus rank taxon. Contained material referable to Attini: Bolton, 2003: 265. [Paleoattini: Sosa-Calvo & Schultz, 2010: 183; unavailable name.]

PALEOPONERINAE [unavailable name]

Paleoponerinae Forel, 1917: 231 [as "section" of Ponerinae]. Section designated to include tribe Myrmeciini. Unavailable name; not based on genus rank taxon. Contained material referable to Myrmeciini: Bolton, 1994: 73.

PROCAMPONOTINAE [unavailable name]

Procamponotinae Forel, 1912i: 88 [as "section" of Camponotinae]. Section designated to include tribe Myrmoteratini. Unavailable name; not based on genus rank taxon. Contained material referable to Myrmoteratini: Bolton, 1994: 51.

PRODOLICHODERINAE [unavailable name]

Prodolichoderinae Forel, 1917: 247 [as "section" of Dolichoderinae]. Section designated to include tribes Aneuretini, Dolichoderini and Leptomyrmicini. Unavailable name; not based on genus rank taxon. Contained material referable to Aneuretinae and Dolichoderinae: Bolton, 1994: 15, 27.

PRODORYLINAE [unavailable name]

Prodorylinae Emery, 1909c: 355 [as "group" of Ponerinae]; Emery, 1911d: 5 [as "sectio" of Ponerinae]. Group designated to include tribe Cerapachyini. Unavailable name; not based on genus rank taxon. Contained material referable to Cerapachyinae: Bolton, 1990a: 66.

PROMYRMICINAE [unavailable name]

Promyrmicinae Forel, 1911h: 446 [as "section" of Ponerinae]; Emery, 1921f: 19. Section designated to include tribe Metaponini. Unavailable name; not based on genus rank taxon. Contained material referable to Metaponini: Bolton, 1994: 106.

Promyrmicinae: Forel, 1917: 240 [incorrect expansion of the above unavailable name to include tribes Metaponini and Pseudomyrmini]. Unavailable name.

Promyrmicidae: Bernard, 1951: 1053 [incorrectly treated as family, including only tribe Pseudomyrmini]. Unavailable name.

PROPONERINAE [unavailable name]

Proponerinae Emery, 1909c: 355 [as "group" of Ponerinae]; Emery, 1911d: 16 [as "sectio" of Ponerinae]. Group designated to include tribes Amblyoponini and Proceratiini. Unavailable name; not based on genus rank taxon. Contained material referable to Ponerinae: Bolton, 1994: 164.

RHAGIOMYRMICINAE [unavailable name]

Rhagiomyrmicinae Forel, 1917: 246 [as "section" of Myrmicinae]. Section designated to include tribes Cataulacini, Cephalotini [=Cryptocerini] and Dacetini. Unavailable name; not based on genus rank taxon. Contained material referable to Myrmicinae: Bolton, 1994: 106.

TARAXOPONERINAE [unavailable name]

Taraxoponerinae Forel, 1917: 231 [as "section" of Ponerinae]. Section designated to include tribes Ectatommini, Paraponerini, Platythyreini, Proceratiini and Thaumatomyrmecini. Unavailable name; not based on genus rank taxon. Contained material referable to Ponerinae: Bolton, 1994: 164.

**Genus-group *nomina nuda* in FORMICIDAE**

*ANCYLOGNATHUS* [*nomen nudum*]

*Ancylognathus* Lund, 1831a: 121, 135. Type-species: *Ancylognathus lugubris, nomen nudum*. [*Ancylognathus* material referred to *Eciton*: Smith, F. 1855c: 160.]

\**DOLICHOFORMICA* [*nomen nudum*]

\**Dolichoformica* Grimaldi & Engel, 2005: 446 (in table), *nomen nudum*. Type-species: \**Dolichoformica helferi, nomen nudum*.

*HYPOPHEIDOLE* [*nomen nudum*]

*Hypopheidole* Ashmead, 1905b: 383, *nomen nudum*.

*LEPTOXENUS* [*nomen nudum*]

*Leptoxenus* Forel, 1917: 245 (attributed to Santschi), *nomen nudum*.

*MYRMEGIS* [*nomen nudum*]

*Myrmegis* Rafinesque, 1815: 124, *nomen nudum*. [Brown, 1973b: 182, places *Myrmegis* as a junior synonym of *Atta*, because the entry in Rafinesque reads, "6. *Myrmegis* R. *Atta* Latr."]

*PERGANDEA* [*nomen nudum*]

*Pergandea* Ashmead, 1905b: 382, *nomen nudum*.

*SALTICOMORPHA* [*nomen nudum*]

*Salticomorpha* Motschoulsky, 1855: 10, *nomen nudum*.

*TITUSIA* [*nomen nudum*]

*Titusia* Ashmead, 1905b: 382, *nomen nudum*.