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Ants from the Pongara National Park, Gabon - an updated list (Hymenoptera: Formicidae)

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Abstract

Advances in taxonomic knowledge have enabled us to update our 2008 list of ant species collected in Pongara National Park, Gabon. We now recognise 111 described and six possible undescribed forms. These come from eight subfamilies, the most speciose of which are Formicines, 30, and Myrmicines, 64. From studying original descriptions, type specimens images and fresh specimens, we have assigned species status to the following: *Oecophylla annectens* Wheeler, 1922; *Crematogaster* (*Atopogyne*) *tibialis* Santschi, 1922; *Crematogaster* (*Sphaerocrema*) *nigrans* Forel, 1915; *Myrmicaria taeniata* Santschi, 1930; *Pheidole bayeri* Forel, 1916; *Pheidole conigera* Forel, 1910; *Pheidole impressifrons* Wasmann, 1905. *Pheidole neutralis* Santschi, 1914; *Pheidole nkomoana* Forel, 1916. *Pheidole pullata* Santschi, 1914; *Brachyponera decolor* (Santschi, 1921); *Tetraponera angolensis* Santschi, 1930; and, *Tetraponera unidens* Santschi, 1928. We also propose one new synonymy - *Anochetus katonae*, Forel, 1907, j. syn. *Anochetus siphneus* Brown, 1978.

Keywords: Formicidae, Pongara, Gabon

Introduction

In 2008, we authored a report on the ant species collected during a four month field survey of the Pongara National Park in Gabon (BRAET & TAYLOR, 2008). At that time we had made some of our identifications using modern keys but those covered only a limited number of genera. In many instances we had to try to unravel numerous taxonomic papers dating back at least 100 years. Here we provide a fully revised list of ant species collected in Pongara NP by the first author.

Historically, Dr. Gustav L. Mayr wrote the "*Formicina austriaca*" (MAYR, 1855). This set the benchmark for all ant taxonomy, including full taxonomic definitions and, for the first time, dichotomous keys. The only thing missing, apart from five examples of wing structure, were drawings. In the "Die Ameisen des baltischen Bernsteins", there are over 100 accurate, high quality drawings (MAYR, 1868). Mayr's last ant taxonomy paper was published in 1907. In the same era, Frederick Smith at the British Museum was writing minimalist descriptions in the style unchanged since Fabricius in 1787. The good work and standard set by Mayr, however, was then reduced by the works of Auguste Forel, who as he recorded in 1922, began publishing in 1869. In 1920, he wrote in his 231st paper how the glaucoma prevented him from continuing to describe ants (FOREL, 1920). His first major ant work was his 1874, "Les Fourmis de la Suisse", in which he expressed his admiration for the works of Mayr and related how he adopted Mayr's methods for the analytical tables. In a curious move, Forel noted how it was contrary to reproach Mayr for "la trop grande multiplication des

genres" (FOREL, 1874). WEHNER (1990) noted how all eminent myrmecologists before Forel had strictly used binomials. Forel introduced the deliberate splitting of species into subspecies and variations, although he used the term "race" and, later, Santschi used "stirps" for these lower levels. Forel himself said that he used "races" for species that were badly determined or showed transitions between them, one could also call them "sub-species". Seemingly he felt this would be helpful for dealing with intermediate or aberrant forms. The difficulties this system imposed were summed up by ANDRÉ (1881): "with the ants the separation of species presents great difficulties, and nothing is harder than to decide where the species ends and the variety commences". [Chez les fourmis la séparation des espèces présente de grandes difficultés, et rien n'est plus ardu que de décider où finit l'espèce et où commence la variété.] On a sad note, Forel's reference to glaucoma probably explains the apparently wrong colours he gave for some species in his late papers.

This muddled and muddling thinking prevailed for the next 80 years. Its legacy still makes it difficult for anyone trying to sort out field collections and to evaluate variations in behaviour, etc. Thus, in 2008, accurate identification was difficult due to the generally cursory approach to descriptions, with rare illustrations, and not uncommonly referring back to an earlier description and simply giving differences from that.

Recent developments in taxonomic knowledge have enabled us to revisit our species list. Particularly useful has been the free availability from Antweb.org of high quality photographs of type specimens of almost all ant species, plus the many forms originally described as "subspecies", "varieties" and "stirps". Revisionary studies since the compilation of our original paper include BOLTON & FISHER (2008), BOLTON & FISHER (2011), BOROWIEC (2016), LAPOLLA, BRADY & SHATTUCK (2010), RIGATO (2016) and SCHMIDT & SHATTUCK (2014).

Material and methods

After sorting, representative sets of workers from each sample of each suspected species were mounted on individual card points. These were photographed, using a simple 10 megapixel digital camera held on one eyepiece of a standard Wild M3 dissecting microscope with a fluorescent desk lamp as the light source, and photomontages were compiled using photo-image software (Pixelmator imaging software for the Mac OS, currently Version 3.7).

In recent years, the tremendous efforts of the Antweb team at the University of California have made available photographs of a great number of type specimens. This has enabled us to re-examine our evaluation and make reference to many of the types, the reference numbers are given as, for example, CASENTxxxxxxx, entering the code in the search box on the Antweb.org website or a standard search engine will lead to the specimen.

The code letters, or specimen record numbers, mostly are those assigned by Antweb to their photographs and do not indicate the related museum depository. That information is on the specimen pages on their website. Exceptions are MCZ = Museum of Comparative Zoology, Harvard, and BT = in the second author's collection. Those currently are held him but will be deposited in the Oxford University Museum of Natural History, Oxford, U.K.

It is common for ant taxonomists to present photographs of three aspects only, i.e. full-face, lateral and dorsal views. Antweb have done this but that sometimes fails to display important diagnostic features. A problematic feature of most Antweb images is that they have a moderately strong magenta tint and the resulting colour of a specimen may differ from that given in the species description.

An extremely useful technique for comparing digital images is transparency overlay. Fig. 1 shows a stage in the process. An image of *Pheidole fervens* F Smith, 1858, head of a syntype major (from CASENT0901520), was overlaid by an image of *Pheidole voeltzkowii* Forel, 1893, head of the type major (from CASENT0101326). The upper layer was then rendered semi-transparent using an opacity adjuster and the size adjusted so that the two scales match. This can be done with any images taken from a similar aspect, with a minor caution that some images pose a problem, for instance with "full face" views where a head is, for example, tilted slightly backwards and so gives some distortion.

In addition to the structural features, measurements were taken from the photographs and four, sometimes five, indices were calculated. For a comparative study, we find that individuals usually fit

Fig.1. Use of layering and increased opacity to compare type specimen images of *Pheidole fervens* F Smith, 1858, head of a syntype major below (from CASENT0901520), and *Pheidole voeltzkowii* Forel, 1893, head of the type major overlay (from CASENT0101326).

in a range of sizes, albeit generally similar, and inter-nest size variations occur. The useful measurements (all in mm) are maximum head width in full-face view, HW; head length from the anterior most point of the clypeus to a straight line across the posterior margin of the occipital lobes, HL; the mandible length, that is, of the masticatory margin (upper angle to base of terminal tooth), ML; the length of the antennal scape, SL; the maximum length of the eye, EL; the maximum width of the pronotum, PW. An approximate total length, TL, as measured from the apex of the gaster to the anterior clypeal margin, also is given. The indices are the Cephalic Index, CI = (HW/ HL) X 100; the mandible index, MI = (ML/HW) X 100; the Scape Index, SI = (SL/HW) X 100; the Ocular Index, OI = (EL/HW) X 100; and, Pronotal Index, PI = (PW/ HW) X 100. Our choice contrasts with some contemporary authors who use a large set of size measurements, often requiring high magnifications, and calculate many ratios.

The terms major and minor are used for the dimorphic worker castes rather than the, perhaps misleading, soldier and worker. Some species, e.g. *Crematogaster africana*, also have intermediate workers. The term alitrunk is preferred to mesosoma. Both terms have been and are used for the part of the ant consisting of the three thoracic segments and the first abdominal segment (the propodeum, or epinotum of early authors). However, if one looks at almost all ants there are four obvious parts - the head, the alitrunk, the pedicel (of one or two distinct segments) and the gaster. In other words there is no "middle section of the body" which is the translation of mesosoma. Moreover, in strict anatomical terms the abdomen of ants begins with the propodeum, or rearmost segment of the alitrunk.

Comments received by us as to the security of the "*Ants of (sub-Saharan) Africa*" website, created and managed by the second author, lead us to make a formal statement here that, with support from the Royal Entomological Society, a ten-year hosting package was secured for www.antsofafrica.org in August 2016. Also the site is archived, with regular updating, by the British Library http://www.webarchive.org.uk/ukwa/. As with all original material on the internet, the sites are formal publications with copyright protection. The authors adhere to a strict philosophy of acknowledging all information sourced from elsewhere.

Revised list of ant species found in the Pongara National Park, Gabon

The first names are as revised here. The collection numbers in BRAET & TAYLOR (2008) are given as Gabon 01, etc., with, where necessary, the previous species names used in 2008, e.g. "previously as *Cerapachys foreli* (Santschi, 1914)". Entering the reference numbers, for example, CASENTxxxxxxx, in the advanced search box on the Antweb.org website will lead to the specimen.

AMBLYOPONINAE

Prionopelta humicola Terron, 1974; Gabon 222; matches non-type CASENT0102504.

CERAPACHYINAE

Lioponera foreli (Santschi, 1914); now in *Lioponera* (BOROWIEC, 2016); Gabon 183, queen, previously as *Cerapachys foreli* (Santschi, 1914); matches type queen CASENT0911258.

DOLICHODERINAE

Tapinoma longiceps Wheeler, 1922; Gabon 45; matches MCZ type and paratype CASENT0178239.
Tapinoma lugubre Santschi, 1917; Gabon 112; matches type CASENT0911569.
Tapinoma melanocephalum (Fabricius, 1793); Gabon 58; no type images but well known.
Tapinoma modestum Santschi, 1932; Gabon 127; matches type CASENT0911574.
Technomyrmex andrei Emery, 1899; Gabon 218; previously as *Technomyrmex* (*Engramma*) *wolfi* (Forel); type CASENT0905067; synonymised by BOLTON (2007).

DORYLINAE

Dorylus (*Anomma*) *congolensis* Santschi, 1910; Gabon 09 & Gabon 10 (amended); major matches the type major at USMNENT00531572.
Dorylus (*Dorylus*) *braunsi* Emery, 1895; Gabon 210; matches type CASENT0903701 (small media worker, TL 4 mm, major is TL 8 mm).
Dorylus (*Dorylus*) probably *depilis* (Emery, 1895); Gabon 08; media worker; type is a male; there are no Antweb images of a worker. The diagnosis of our specimen is not certain as the original worker description by FOREL (1911: 254) is inadequate. The the petiole is short and wider than long, however, and the alitrunk overall is longer and more slender than the other species which are described as workers; the alitrunk appears lacking in pilosity and pubescence.

FORMICINAE

Camponotus (*Myrmisolepis*) *maynei* Forel, 1916; Gabon 43; minor, matches type minor CASENT0910503.
Camponotus (*Myrmopelta*) *vividus* (F Smith, 1858), major worker only; Gabon 42; minor; the type major is shown at CASENT0903485; our specimen matches the minor of *Camponotus meinerti* For. r. *cato* Forel, 1913, CASENT0910573.
Camponotus (*Myrmosaga*) *schoutedeni* Forel, 1911; Gabon 41; minor, matches type minor CASENT0910443.
Camponotus (*Myrmosericus*) *flavomarginatus* Mayr, 1862; Gabon 40 & 44; Gabon 119; minors; type is a major, CASENT0915599; ours match other minors found with verifiable majors.
Camponotus (*Myrmotrema*) *olivieri* Forel, 1886; Gabon 120 & 203; minors; match type minor CASENT0910483.
Camponotus (*Orthonotomyrmex*) *mayri* Forel, 1879; Gabon 122; major, match for type major CASENT0910445.
Camponotus (*Orthonotomyrmex*) *sericeus* (Fabricius, 1798); Gabon 38; no type images but well known.
Camponotus (*Tanaemyrmex*) *brutus* (Forel, 1886); Gabon 123 (major) & 163 & 39 (minors); match types CASENT0910269 & CASENT0910270.
Camponotus (*Tanaemyrmex*) *congolensis* Emery, 1889; Gabon 205; major & minors; match types CASENT0905310 & CASENT0905311.
Camponotus (*Tanaemyrmex*) *crawleyi* Emery, 1920; Gabon 164 previously as "*C.* (*T.*) *wellmani* Forel"; Gabon 165 & 214 previously as "*C.* (*T.*) *pompeius* Forel"; Gabon 164, 165, 213, 215;

Gabon 213 is a major, all others are minors; those match type minor CASENT0905241; major previously unrecorded.

Lepisiota ngangela (Santschi, 1937); Gabon 117; matches type CASENT0912399; distinctly smaller than *L. oculata*.

Lepisiota oculata (Santschi, 1935); Gabon 48; matches type CASENT0912401.

Lepisiota sp undet.; Gabon 106; previously as *Lepisiota mota* (Santschi, 1937); small TL ca 2.0 mm.

Oecophylla annectens Wheeler, 1922, stat. nov.; *Oecophylla longinoda* variety *annectens* Wheeler, 1922; Gabon 13, 14 & 15; previously as *Oecophylla longinoda* (Latreille); majors are an exact match for the major CASENT0903255; minor type unknown but Gabon 13 differs from the type minor of *O. longinoda* (*brevinodis*, CASENT0913754. The major is very similar to the type *O. longinoda* (Latreille, 1802) but brown instead of ferruginous, the gaster sometimes slightly darker than the remainder of the body. Mandibles, except in the small workers, darker brown than the front, cheeks, and clypeus. Incrassated tips of antennal scapes with a dark brown spot; funiculi, knees, tarsi, and tips of tibiae pale yellow; pulvilli black. Comparing fresh major workers of *annectens* and *longinoda*, when viewed from the underside, the head capsule of *annectens* has a shallower anterior arc, the mandibles are proportionally longer, with a more slender basal part, and the apical tooth is longer. The dorsum of the head in *annectens* is more coarsely spiculate than the near smooth *longinoda.*

Paraparatrechina subtilis (Santschi, 1920); Gabon 57; previously *Paratrechina subtilis* (Emery); matches type but slightly larger.

Paratrechina (*Nylanderia*) *grisoni* (Forel, 1916); Gabon 16, 126, 139, 171 & 230; match type CASENT0910992; this may be synonymous with the darker *P. lepida* (Santschi, 1915).

Paratrechina (*Nylanderia*) possibly *impolita* (LaPolla, Hawkes & Fisher, 2011); previously as *Technomyrmex* (*Technomyrmex*) *semiruber* Emery; Gabon 191, queen; the worker type is CASENT0179589, the queen is unknown. See the queen of *P. silvula* (LaPolla & Fisher, 2011) LACM272721, from Kenya, however, which is morphologically similar but larger.

Paratrechina (*Nylanderia*) *incallida* (Santschi, 1915); Gabon 56; matches type CASENT0912304.

Paratrechina longicornis (Latreille, 1802); Gabon 54, 55, 162, 209, & 211; no type images but well known.

Polyrhachis concava André (1889); Gabon 96; matches type CASENT0910903.

Polyrhachis decemdentata André, 1889; Gabon 60; matches type CASENT0913674.

Polyrhachis schistacea (Gerstäcker, 1859); Gabon 59 & 204; match type FOCOL2576.

MYRMICINAE

"*Pongara pongarensis*" ? new species; Gabon 28; appears to be a new species or even a new Genus; the closest relative appear to be the minors of *Pheidole katonae* Forel, 1907 (CASENT0249072) and *Pheidole bequaerti* Forel, 1913 (CASENT0904211).

Baracidris sitra Bolton, 1981; Gabon 167; matches the MCZ holotype (not on Antweb).

Cardiocondyla venustula Wheeler, 1908; Gabon 66; matches the MCZ type (not on Antweb).

Cataulacus guineensis (F Smith, 1853); Gabon 46; no type images but well known.

Cataulacus pygmaeus André, 1890; Gabon 109; matches the type CASENT0915359.

Cataulacus traegaordhi Santschi, 1914; Gabon 110; matches the type CASENT0912571.

Cataulacus vorticus Bolton, 1972; Gabon 128; matches the type CASENT0900272.

Crematogaster (*Atopogyne*) *africana* Mayr, 1895; Gabon 102, 118, 131, 161 & 170; range of workers sizes; types are media (CASENT0919658) and minor workers.

Crematogaster (*Atopogyne*) *jullieni* Santschi, 1910; Gabon 01; matches type CASENT0912628.

Crematogaster (*Atopogyne*) *kasaiensis* Forel, 1913; Gabon 07 & 121 (larger); matches type CASENT0908629;.

Crematogaster (*Atopogyne*) *tibialis* Santschi, 1922, stat. nov.; Gabon 04, 06 & 129; previously as *Crematogaster* (*Atopogyne*) *resulcata* Bolton, 1995; type location DRCongo; minors 04 & 06 match type CASENT0912360; major 129 previously unreported. As in the original description, this species is distinguished by the dull yellow appearance with dark brown blotches, the legs and scapes are uniform dark brown; the overall sculpturation is fine. The apparent type minor has a TL ca 3.5 mm, whereas the major we found has a TL ca 6.0 mm.

Crematogaster (*Atopogyne*) *wasmanni* Santschi, 1910; Gabon 02, 03, 05, 104; previously as *Crematogaster* (*Atopogyne*) *buchneri* Forel, 1894; major 05 is close to type CASENT0912631; others are minors.

Crematogaster (*Orthocrema*) *pauciseta* Emery, 1899; Gabon 107 & 108; close to the type CASENT0904490.

Crematogaster (*Sphaerocrema*) *libengensis* Stitz, 1916; Gabon 103 & 219; previously as *Cr.* (*Sph.*) *gabonensis* Emery, 1899; no type images but match *Cr. libengensis* Stitz var. *rufula* Santschi, 1926, CASENT0912807.

Crematogaster (*Sphaerocrema*) *nigrans* Forel, 1915, stat. nov.; original name *Cremastogaster foraminiceps* Sant. r. *nigrans* n. st., Forel, 1915; Gabon 101 & 105; previously as *Crematogaster* (*Sphaerocrema*) *rugosa* André, 1895; match type CASENT0908525. FOREL' s (1915) description of the *nigrans* worker was: TL 3.5-4.2 mm; almost entirely black, with appendages dark brown, the funiculi being wholly dark, readily distinguishing the species from *Cr. striatula* with its distinctive yellow funicular apex. The head and alitrunk are densely but finely striate. *Crematogaster foraminiceps* has the longitudinally divided postpetiole, characteristic of the subgenus *Crematogaster* whereas this has the entire postpetiole shown in *Sphaerocrema*.

Crematogaster (*Sphaerocrema*) *striatula* Emery, 1892; Gabon 188; previously as *Crematogaster* (*Oxygyne*) *trautweini* Viehmeyer, 1914; matches type CASENT0904482.

Monomorium altinode Santschi, 1910; Gabon 207; matches type CASENT0913551.

Monomorium angustinode Forel, 1913; Gabon 96 & 116; match type CASENT0902246.

Monomorium bequaerti Forel, 1913; Gabon 223; previously as *Monomorium invidium* Bolton, 1987; matches type CASENT0908768.

Monomorium cryptobium (Santschi, 1921); Gabon 181 & 186; match type CASENT0010825.

Monomorium exiguum Forel, 1894; Gabon 95, 100 & 114; match type CASENT0101870; Gabon 95 previously as *M. invidium*.

Monomorium rosae Santschi, 1920; Gabon 47; matches type CASENT0010826 (which has a poor colour quality).

Monomorium spectrum Bolton, 1987; Gabon 201; matches MCZ type images.

Monomorium strangulatum Santschi, 1921; Gabon 11; matches type CASENT0913856, smaller but within range given by BOLTON (1987).

Monomorium tynsorum Bolton, 1987; Gabon 12 & 94; match type CASENT0902249; 94 as *M. captator* before.

Monomorium vaguum Santschi, 1930; Gabon 92; matches type CASENT0913862.

Myrmicaria taeniata Santschi, 1930, new status; Gabon 49; this matches the type, CASENT0913048, from DRCongo. The original description of the worker, as *Myrmicaria natalensis* Sm. v. *taeniata* n. var., (my translation) had: brown ochre or pale reddish, the vertex and the gaster darker brown, the borders of the tergites edged with brown. Frons more densely striate, almost as *eumenoides*. Nodes and gaster smooth. Form as *M. irregularis* Sants., but with the petiole as in *eumenoides*. It is a transitional form. The location was given as "Congo Belge: Katanga (Dr Stappers)". The distinguishing features that readily separate it from the accepted *Myrmicaria natalensis* workers are: the greater number of fine longitudinal striations on the face; the relatively pale scapes with almost no longitudinal striae; the longitudinal striae on the promesonotum reaching right to the anterior; and the fine but clear spiculate sculpture on the base of the gaster (which is contrary to Santschi's statement).

Myrmicine queen, genus unknown; tentatively will be placed in a new Genus; Gabon 173.

Oligomyrmex (*Aeneleus*) *menozzii* Ettershank, 1966; Gabon 124 & 151; no type images but long scapes seem to be diagnostic for minor workers. Note that there is a debateable placement of *Oligomyrmex* under *Carebara* by FERNÁNDEZ (2004).

Oligomyrmex (*Aeromyrma*) *debilis* Santschi, 1913; Gabon 179; minor, matches type minor CASENT0913502;

Oligomyrmex (*Oligomyrmex*) *angolensis* Santschi, 1914; Gabon 221; minor worker matches type CASENT0913495.

Oligomyrmex (*Oligomyrmex*) *erythraeus* Emery, 1915; Gabon 226 & 227; previously as *Oligomyrmex alluaudi* Santschi, 1913; minors, match type CASENT0904666.

Pheidole aurivilli Mayr, 1896; Gabon 220; previously as *Pheidole tenuinodis* Mayr, 1901; match the type minor CASENT0922188.

Pheidole bayeri Forel, 1916, stat. nov.; original name *Pheidole caffra* Em. r. *bayeri* n. stirps, Forel, 1916; Gabon 33, 69 & 81; match the type minor CASENT0907819; Gabon 33 previously as *P. costauriensis* (*Pheidole rotundata* For. stirps *costauriensis*); Gabon 69 previously as *P. albidula* Santschi, 1928. It is quite clear from the original description that true *Pheidole caffra* Emery, 1895, does not have the strongly marked sculpturation on the occiput of *bayeri*, and the frontal carinae reach the posterior quarter of the head; the colour also is given as ferruginous dull with the gaster piceous and shiny, see CASENT0904210. Therefore, we have raised the quite distinctive dark *bayeri* to full species status.

Pheidole concinna Santschi, 1910; Gabon 32; matches the type minor CASENT0913293 although paler.

Pheidole conigera Forel, 1910, stat. nov.; original name *Pheidole spinulosa* Forel, subsp. *conigera* n. subsp., Forel, 1910; new synonym *Pheidole spinulosa* Forel *nexa* Forel; Gabon 141; minor matches the *nexa* minor; the *P. conigera* minor is unknown; *P. conigera nexa* j. syn. minor CASENT0101611. The *P. conigera* major, CASENT0907797, is significantly smaller than the *P. spinulosa* major, CASENT0907795; its head shape different, being more elongated, the SI higher (SL = type for smaller head). The minors are near identical.

Pheidole corticicola Santschi, 1910; Gabon 84, 90 & 140; previously as *Pheidole mylognatha* Wheeler, 1922; minors match type minor CASENT0913295.

Pheidole decarinata Santschi, 1929; Gabon 34; major matches type major CASENT0913301.

Pheidole impressifrons Wasmann, 1905, stat. nov.; original name *P. megacephala* subsp. *impressifrons*, Wasmann, 1905; Gabon 23, 73 & 77; our minor specimens match the type minor CASENT0173310; Gabon 23 previously as *Pheidole squalida* Santschi, 1910; Gabon 73 previously as *Pheidole pusilla* Heer, 1852; Gabon 77 previously *Pheidole schoutedeni* Forel, 1913. Type major TL ca 4.7 mm, HL 1.47, HW 1.53, SL 0.70, PW 0.77; CI 104, SI 46; colour brown to testaceous; minor TL 2.43 mm, HL 0.68, HW 0.62, SL 0.72, PW 0.39; CI 81, SI 123; alitrunk almost all over spiculate, fainter on the dorsal and lateral pronotum red-brown, gaster darker but seemingly with distinctive pale patches (also on major), appendages lighter.

Pheidole megacephala (Fabricius, 1793); no type images but a neotype major identical to ours is at CASENT0104990; Gabon 22, 25, 29, 30, 31, 67, 83, 89 & 208; Gabon 31 previously as *Pheidole caffra* Emery, 1895; Gabon 67 previously as *Pheidole concinna* Santschi, 1910. Major TL 3.5-4.5 mm variable, HL 1.50, HW 1.50, SL 0.80, PW 0.60; CI 100, SI 54; promesonotum profile quite a high dome; propodeal spines acute and sharp but distinct; postpetiole profile with distinct angular ventral process. Minor TL ca 2.5 mm, HL 0.67, HW 0.58, SL 0.68, PW 0.39; CI 86, SI 120; shiny, with only sculpturation on mesonotum, propodeum and petiole, all of which are densely spiculate; red-brown, gaster darker, appendages lighter.

Pheidole neutralis Santschi, 1914, stat. nov., originally described as *Pheidole occipitalis* André stirps *neutralis*, Santschi, 1914; Gabon 21, 68, 142; minors match the type CASENT0913379; Gabon 21 & 68 previously as *P. occipitalis* André, 1890; Gabon 142 previously as *Pheidole andrieui* Santschi, 1930. Separable from *P. occipitalis* (major CASENT0907825, minor CASENT0907826) by the darker colour and on the major the spiculate sculpture on the postpetiole and base of the gaster. Major TL (type) ca 6.3 mm, HL 2.72, HW 2.54, SL 1.31, PW 0.95; CI 92, SI 52; sides of head feebly arcuate; sparse erect hairs, no pubescence; head and alitrunk brownish-red, rest darker blackish-brown; separable by the spiculate sculpture on the postpetiole and base of the gaster. Minor TL ca 3.6 mm, HL 0.92, HW 0.75, SL 1.22, PW 1.00; CI 82, SI 162; blackish brown, appendages paler; more strongly sculptured than the *P. occipitalis* minor, pronotum dorsum almost entirely sculptured.

Pheidole probable new species; Gabon 143; previously as *Pheidole variolosa* Emery, 1892.

Pheidole nkomoana Forel, 1916, stat. nov.; originally described as *Pheidole megacephala* F. r *nkomoana* n. stirps, Forel, 1916; Gabon 86' our minor matches the type minor, CASENT0904195; major is CASENT0904194. Type major TL 3.5 mm, HL 0.95, HW 1.00, SL 0.65, PW 0.43; CI 105, SI 64; frontal carinae reaching posterior quarter of head; eyes more obviously convex; pronotum with more pronounced lateral tubercles; propodeum with sharp lateral margination; abundant long fine pilosity; colour a little darker than *P. megacephala*; hypostoma with

pronounced median tooth and paired lateral teeth. Type minor TL 1.8-2.2 mm, HL 0.65, HW 0.59, SL 0.90, PW 0.37; CI 92, SI 150; head narrowed and convex behind with indistinct posterior border; eyes very convex; scape surpasses occiput by about one-third its length; promesonotum weakly convex, with an indistinct promesonotal suture; propodeum dorsum twice as long as declivity; petiole elongated relative to *P. megacephala*.

Pheidole pullata Santschi, 1914, stat. nov., originally described as *Pheidole mentita* var. *pullata*, Santschi, 1914; Gabon 35 & 36, majors, Gabon 82 & 87; 35 & 36 majors and 87 minor previously as *Pheidole melancholica* Santschi, 1912; major type CASENT0913350; minor CASENT0913351; Gabon 82 previously as *Pheidole saxicola* Wheeler, 1922. Major TL ca 4.7 mm, HL 1.48, HW 1.45, SL 0.81, PW 0.60; CI 96, SI 56; very deep red-brown; propodeum, pedicel and base of gaster distinctly spiculate. Minor TL ca 2.8 mm, HL 0.65, HW 0.50, SL 0.75, PW 0.52; CI 73, SI 182. The yellow-brown *Pheidole mentita* Santschi, 1914, type major is CASENT0913348, minor CASENT0913349.

Pheidole probable new species to be described elsewhere; Gabon 71 & 72; minors previously as *Pheidole* species E.

Pheidole tenuinodis Mayr, 1901; Gabon 26, 74, 75 & 78; previously as *Pheidole concinna* Santschi, 1910; match the type minor CASENT0922203; note the colour seems quite variable from light to dark brown.

Pheidole termitophila Forel, 1904; minor type CASENT0907854, diagnosis uncertain as our specimens belong to a dark coloured group; Gabon 70, 76 & 91.

Strumigenys belial (Bolton, 2000); Gabon 134; previously as *Pyramica ravidura* (Bolton, 1983); exact match for type CASENT0102556; holotype only known, type location Gabon, Minvoul. Placed in *Strumigenys* by BARONI URBANI & DE ANDRADE (2007).

Strumigenys bernardi Brown, 1960; Gabon 61, 144, 145, 146, 154, 176, 202 & 234; no type images (see CASENT0217946 det. B L Fisher); Gabon 144 previously as *Strumigenys totyla* Bolton, 1983; Gabon 145 previously as *Strumigenys vazerka* Bolton, 1983.

Strumigenys bitheria Bolton, 1983; Gabon 174; previously as *Strumigenys korahyla* Bolton, 1983; exact match for type CASENT0900635; type location Cameroun, holotype only; first Gabon record.

Strumigenys dotaja (Bolton, 1983); Gabon 225; previously as *Pyramica* (*Serrastruma*) *dotaja* (Bolton, 1983); exact match for type CASENT0102387. In *Strumigenys* by BARONI URBANI & DE ANDRADE (2007).

Strumigenys ludovici Forel, 1904; Gabon 224; previously as *Pyramica* (*Serrastruma*) *ludovici* (Forel, 1904); exact match for type CASENT0101645. In *Strumigenys* by BARONI URBANI & DE ANDRADE (2007).

Strumigenys rogeri Emery, 1895; Gabon 175 & 233; exact match for type CASENT0102080.

Strumigenys tacta (Bolton, 1983); Gabon 184; previously as *Pyramica* (*Smithistruma*) *tacta* (Bolton, 1983); exact match for type CASENT900057. In *Strumigenys* by BARONI URBANI & DE ANDRADE (2007).

Strumigenys tetraphanes Brown, 1954; Gabon 153 & 196; no type images (see CASENT0178327, det. R R Snelling).

Tetramorium (*Triglyphothrix*) *muscorum* Arnold, 1926; Gabon 185 & 232; exact match for type CASENT0901145.

Tetramorium anxium Santschi, 1914; Gabon 159; close to but smaller than type CASENT0906134.

Tetramorium furtivum (Arnold,1956); Gabon 136 & 137; previously as *Tetramorium minimum* (Bolton, 1976); match paratype CASENT0911250.

Tetramorium geminatum Bolton, 1980; Gabon 155, 158, 190 & 199; match type CASENT0901196.

Tetramorium in *angulinode* group; Gabon 187; previously as *Tetramorium* (*Xiphomyrmex*) *angulinode* Santschi, 1910. Note - the Santschi *angulinode* type worker, ZFMKHYM20096255, is an exact match for the type of *Tetramorium zapyrum* as defined by BOLTON (1980). The illustration by Bolton of "*T. angulinode*" appears to be of another species.

Tetramorium lucayanum Wheeler, 1905; Gabon 156; queen but no images and no description so a speculative determination.

Tetramorium sericeiventre Emery, 1877; Gabon 17, 18 & 19; Gabon 19 is an exact match for type CASENT0102073; Gabon 17 & 18 are a darker form.

Tetramorium simillimum (F Smith, 1858) var. *exoleta* Santschi, 1914; Gabon 97 (somewhat more contrasting in gaster colour and erect hairs); Gabon 125, 169, 189 & 231; match *exoleta* type CASENT0906138;

Tetramorium zambezium Santschi, 1939; Gabon 20, 133, 157 & 180; previously as *Tetramorium minisculum* (Santschi, 1914); match type CASENT0906142.

PONERINAE

Anochetus katonae, Forel, 1907 (j.syn. *Anochetus siphneus* Brown, 1978, syn.nov.); Gabon 65, 135, 138, 166 & 197 the type images of *Anochetus katonae*, CASENT0907401, and *siphneus*, CASENT0902457, appear identical in all aspects; *katonae occidentalis*, CASENT0915161 (*Anochetus punctatus* Santschi var. *occidentalis* n. v., Santschi, 1914) is morphologically very similar but the specimens are consistently darker brown rather than golden yellow and this seems to have fine pubescence that is sparse if not lacking in the other two. The workers Gabon 135 (previously as *Anochetus siphneus*), 138 & 166 are exact matches for the castaneous *occidentalis* type loc. Cameroun. Gabon 65 and 197 are queens; both are a near exact match for the queen of *Anochetus parvus* Santschi var. *longiceps* Santschi, 1914, CASENT0915159 (note that the scales on the Antweb originals are wrong by x2).

Bothroponera new species; Gabon 215; previously as *Pachycondyla* (*Bothroponera*) new species; smaller than any known *Bothroponera.*

Bothroponera silvestrii (Santschi, 1914); Gabon 99; previously as *Pachycondyla* (*Bothroponera*) *silvestrii* Santschi, 1914; matches type CASENT0922264, but darker.

Bothroponera soror (Emery, 1899); Gabon 50, 172 & 217; previously as *Pachycondyla* (*Bothroponera*) *soror* (Emery, 1899); match type RMCAENT000017726.

Brachyponera decolor (Santschi, 1921) stat. nov., originally described as *Euponera* (*Brachyponera*) *sennaarensis* Mayr var. *decolor* nov. var., Santschi, 1921; Gabon 113; previously as *Pachycondyla* (*Brachyponera*) *decolor* (Santschi, 1921); matches type CASENT0915275; TL 4-4.5 mm; overall more slender than the type *Brachyponera sennaarensis* (see below); in full face view this has the head with more convex sides and a deeper occipital impression; the mandibles are unsculptured apart from sparse setal insertions; the pronotal dorsum is flat and more obviously bordered; the pubescence is finer and denser; variable brown to brown-orange.

Brachyponera sennaarensis (Mayr, 1862); Gabon 53, 93 & 111; match type CASENT0902474; Gabon 111 previously as *Pachycondyla* (*Brachyponera*) *ruginota* (Stitz, 1916).

Euponera brunoi (Forel, 1913); Gabon 177 & 178; previously as *Pachycondyla* (*Trachymesopus*) *brunoi* Forel, 1913; match type CASENT0907269.

Hypoponera cammerunensis (Santschi, 1914); Gabon 148; matches type CASENT2017335).

Hypoponera dulcis (Forel, 1907); Gabon 37, 152, 182, 195, 200 & 228; male 206; these structurally match the yellow-brown type, CASENT0922436 but the colour matches the dark form CASENT0270530 (Bolton determined, see BOLTON & FISHER, 2011). Gabon 182 & 195 previously as *Hypoponera rothkirchi* (Wasmann, 1918). Identification of the male is uncertain.

Hypoponera inaudax (Santschi, 1919); Gabon 147 & 193; match the type RMCAENT000017729; Gabon 193 previously as *Ponera coarctata* (Latreille, 1802).

Hypoponera myrmicariae (Wasmann, 1918); Gabon 192 & 193; exact match for type CASENT0915190, TL 1.6-1.8. Note reverted back here from the synonymy under *Hypoponera coeca* (Santschi, 1914) by BOLTON & FISHER (2011) as that is much larger, TL 2.0-2.3 mm, part CASENT0915189, and BT has a fresh specimen from Cameroun (the type location).

Hypoponera punctatissima (Roger, 1859); Gabon 194 & 229; previously as *Hypoponera lea* (Santschi, 1937); match paralectotype CASENT0915400.

Mesoponera picea (Bernard, 1952); Gabon 149; previously as *Pachycondyla* (*Xiphopelta*) *picea* (Bernard, 1952); matches type CASENT0913744.

Mesoponera senegalensis (Santschi, 1914); Gabon 198; previously as *Pachycondyla* (*Xiphopelta*) *senegalensis* (Santschi, 1914); matches type CASENT0915273.

Odontomachus troglodytes Santschi, 1914; Gabon 51, 132, 160 & 212; match type CASENT0101134.

Paltothyreus tarsatus (Fabricius, 1798); Gabon 52; previously as *Pachycondyla* (*Paltothyreus*) *tarsata* (Fabricius, 1798); no type images but well known.

Phrynoponera bequaerti Wheeler, 1922; Gabon 130; no type images of described queen; this keys out according to BOLTON & FISHER (2008); see CASENT0711279.

Phrynoponera gabonensis (André, 1892); Gabon 216; no type images but matches syntype CASENT0178601.

PSEUDOMYRMICINAE

Tetraponera angolensis Santschi, 1930, stat. nov.; Gabon 62; matches type CASENT0915536, similar to but smaller than *Tetraponera ambigua* (Emery, 1895), CASENT0904033; *T. angolensis* has the darkened posterior to the gaster mentioned by Santschi, plus the narrow frontal area shown by Santschi. There appear to be five distinct teeth on the mandible as opposed to four for the WARD (2006) re-description of *T. ambigua*.

Tetraponera mocquerysi (André, 1890); Gabon 64; matches type CASENT0904032.

Tetraponera unidens Santschi, 1928, stat. nov.; original description as *Tetraponera ophthalmica* Em. stirps *unidens* n.stirps, Santschi, 1928; Gabon 63; queen, identical to type queen RMCAENT000017747.

General taxonomic notes

The *Pachycondyla* revision by SCHMIDT & SHATTUCK (2014) has redressed the blanket lumping of genera and subgenera under *Pachycondyla* and we follow this, e.g. *Bothroponera silvestrii*.

We list four species of *Paratrechina*, adhering to the MOTSCHOULSKY (1863) original genus definition and type species. The second author believes that the redefinition of *Paratrechina* by LAPOLLA, BRADY & SHATTUCK (2010) as a monotypic genus was wrong. In the Motschoulsky paper on insects from Ceylon (Sri Lanka) the only detailed and illustrated description was of *Paratrechina vagabunda.* Further down the page was a cursory mention of a second ant. This translates as "a second smaller species, more slender and of a lighter colour on the alitrunk and legs is not rare (uncommon) on the plants in our hot houses [he lived in St Petersburg] and I have named this *P. currens*." Under ICZN rules *P. vagabunda* was the type by virtue of being the *a priori* species. MOTSCHOULKY (1868) subsequently listed all the insect species he had described. On page 65 the entry is as follows: *Paratrechina* B. 1863, III, p. 13. *vagabunda*. Ceylan. B. 1863, III, p.13. *currens*. Ind. or. B. 1863, III, p.14. A clear precedent can be found in the works of BOLTON (1973) and RIGATO (2016). In unravelling the confusing status of *Polyrhachis volkarti* Forel, 1916 and *Polyrhachis kohli* Forel, 1916, Rigato raised the latter to species status. He noted that Bolton's description of *P. volkarti* had to be referred to *P. kohli*, adding that the latter is a valid species and not a synonym of *P. volkarti*. In his synonymy, Bolton had given the name *volkarti* priority over *kohli* because *volkarti* had been listed first by Forel (as *Polyrhachis* (*Myrma*) *revoili* Andre r. *volkarti* n.st., FOREL, 1916: 453 and *Polyrhachis* (*Cyrtomyrma*) *kohli*, sp. n. FOREL, 1916: 454).

The speciose genus *Pheidole* Westwood, 1839, in Africa has had very little in the way of taxonomic analysis and revision at any time.

Conclusions

We now recognise 111 described and six possible undescribed forms for the Country. These come from eight subfamilies, the most speciose of which are Formicines (30) and Myrmicines (64). From studying original descriptions, type specimens images and fresh specimens, we have assigned species status to the following: *Oecophylla annectens* Wheeler, 1922; *Crematogaster* (*Atopogyne*) *tibialis* Santschi, 1922; *Crematogaster* (*Sphaerocrema*) *nigrans* Forel, 1915; *Pheidole bayeri* Forel, 1916; *Pheidole conigera* Forel, 1910; *Pheidole impressifrons* Wasmann, 1905. *Pheidole neutralis* Santschi, 1914; *Pheidole nkomoana* Forel, 1916. *Pheidole pullata* Santschi, 1914; *Brachyponera decolor* (Santschi, 1921); *Tetraponera angolensis* Santschi, 1930; and, *Tetraponera unidens* Santschi, 1928. We also propose one new synonymy - *Anochetus katonae*, Forel, 1907, j. syn. *Anochetus siphneus* Brown, 1978.

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