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Notes on ants (Hymenoptera: Formicidae) from Gambia (Western Africa)

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Abstract: A list of 35 ant species or morphospecies collected in Gambia is presented, 9 of them are recorded for the first time from the country: *Camponotus* cf. *vividus*, *Crematogaster* cf. *aegyptiaca*, *Dorylus nigricans burmeisteri* SHUCKARD, 1840, *Lepisiota canescens* (EMERY, 1897), *Monomorium* cf. *opacum*, *Monomorium* cf. *salomonis*, *Nylanderia jaegerskioeldi* (MAYR, 1904), *Technomyrmex pallipes* (SMITH, 1876), and *Trichomyrmex abyssinicus* (FOREL, 1894). A checklist of 82 ant species recorded from Gambia is given.

Key words: ants, faunistics, Gambia, new country records.

INTRODUCTION

Ants fauna of Gambia (West Africa) is poorly known. Literature data, AntWeb and other Internet resources recorded only 59 species from this country. For comparison from Senegal, which surrounds three sides of Gambia, 89 species have been recorded so far. Both of these records seem poor when compared with 654 species known from the whole western Africa (SHUCKARD 1840, ANDRÉ 1889, EMERY 1892, MENOZZI 1926, SANTSCHI 1939, LUSH 2007, ANT WIKI 2017, ANTWEB 2017, DIAMÉ *et al.* 2017, TAYLOR 2018). Most records from Gambia come from general web checklists of species. Unfortunately, they lack locality data, date of sampling, collector name, coordinates of the locality and notes on habitats. Due to the poor knowledge of taxonomy of several ant genera from West Africa many of past identifications should be taken with care.

The Gambia is a country in West Africa situated on either side of the Gambia River and is entirely surrounded by Senegal except for its coastline on the Atlantic Ocean at its western end. It is the smallest country on mainland Africa and lies between latitudes 13 and 14°N, and longitudes 13 and 17°W. Gambia has a tropical climate with distinct dry and rainy seasons. A hot and rainy season normally lasts from June until November, but from

then until May, cooler temperatures predominate. The grassy flood plain of the Gambia river contains Guinean mangroves near the coast, and becomes West Sudanian savanna upriver inland (EMMS *et al.* 2006).

Recently, we received a small sample of ants collected in 2016 and 2017 in some tourist areas of Gambia. In the collected material we found some species that have not been recorded from this country before. Below we provide a list of species sampled by Grażyna & Piotr Kowalski with comments to their distribution and taxonomy.

MATERIAL AND METHODS

Ants were collected in the following localities:

Loc. 1: n. Lamin village, 13.38675 N/-16.62802 W, 10-12 m, 16-25 IX 2016, leg. G. & P. Kowalski.

Loc. 2: Kololi, Bamboo Garden Hotel, 13.447675 N/-16.720359 W, 7 m, 14-25 VI 2017, leg. G. & P. Kowalski.

Loc. 3: Bijilo Monkey Park, 13.43585 N/-16.71861 W, 8 m, 14-25 VI 2017, leg. G. & P. Kowalski.

Loc. 4: Tanji Bird Reserve, 13.37629 N/-16.77628 W, 12 m, 14-25 VI 2017, leg. G. & P. Kowalski.

Photographs were taken using a Nikon SMZ 1500 stereomicroscope, Nikon D5200 photo camera and Helicon Focus software. Examined specimens are housed in the Department of Biodiversity and Evolutionary Taxonomy, University of Wrocław, Poland. In the list of collected species taxa new to Gambia are marked with an asterisk. All photographs were taken from specimens recorded in this note. Five species have not been photographed due to poor condition of specimens.

Abbreviations: g – gyne, m – male, w – worker.

LIST OF COLLECTED SPECIES

Aenictinae

Aenictus rotundatus guineensis SANTSCHI, 1924

Loc. 4 – 1w; recorded from a few localities in Western Africa and Kenya.

Dolichoderinae

Tapinoma luteum (EMERY, 1895)

Loc. 3 – 1w; widely distributed in Africa, but most records are from its eastern and southern part.

**Technomyrmex pallipes* (SMITH, 1876)

Loc. 1 – 9w; Loc. 2 – 1w; Loc. 3 – 1w; widely distributed in Africa, incl. Madagascar. Known also as a tramp species from Europe, Hawaii, Macaronesia and New Zealand. New to Gambia (Fig. 22).

Dorylinae

**Dorylus nigricans burmeisteri* SHUCKARD, 1840

Loc. 1 – 2w; widely distributed in West, Central and East Africa. First record from Gambia (Fig. 9).

Formicinae

Camponotus sericeus (FABRICIUS, 1798)

Loc. 2 – 1w; Loc. 3 – 2w; Loc. 4 – 1w; widely distributed in tropical and subtropical Africa and Asia (Fig. 1).

Camponotus flavomarginatus MAYR, 1862

Loc. 1 – 1w; Loc. 2 – 15w; Loc. 3 – 2w; widely distributed in Africa and Arabian Peninsula (Fig. 2).

Camponotus cf. *maculatus*

Loc. 1 – 14w, 1m; Loc. 2 – 1g, 20w, 2m; Loc. 3 – 1g; *Camponotus maculatus* (FABRICIUS, 1782) is probably a complex of several related species widely distributed in Ethiopian and Oriental Regions, recorded also from Arabian Peninsula and Algeria. Introduced to Antilles. Very variable taxon, with more than a hundred synonyms. Status of many of these forms needs revision (Fig. 4).

Camponotus rufoglaucus controversus SANTSCHI, 1916

Loc. 2 – 1g; *Camponotus rufoglaucus* JERDON, 1851 is probably a complex of species. It was recorded from almost whole Africa, Canary Islands and tropical Asia. Seven subspecies were proposed in this taxon but status of some of them needs revision. Populations from Gambia have been included in *Camponotus rufoglaucus controversus* SANTSCHI, 1916.

Camponotus cf. *vestitus*

Loc. 2 – 3w; *Camponotus vestitus* (SMITH, 19158) and its 8 subspecies is probably a complex of several species. A status of the Gambian sample will be clear after a revision of all proposed taxa within the complex.

Camponotus vividus (SMITH, 1858)

Loc. 2 – 1g, 11w; recorded from several countries located south of Sahara (Fig. 6).

**Camponotus* cf. *vividus*

Loc. 3 – 12w; the sample from loc. 3 differs from typical *Camponotus vividus* (SMITH, 1858) in having a very shallow impression between the mesonotum and propodeum. Its morphology matches the *Camponotus vividus meinerti* FOREL, 1886 described from Angola and noted from Ivory Coast and *C. vividus cato* FOREL, 1930 recorded from Democratic Republic of Congo and Uganda. Both taxa are treated as subspecies of *C. vividus* but probably represents independent species (Fig. 7).

Cataglyphis cf. *oasium* MENOZZI, 1932

Loc. 2 – 4w; sample from Gambia well agree with samples of true *Cataglyphis oasium* MENOZZI, 1932 from Tunisia in our collection but this group of species is very difficult to

identify based only on workers; *C. oasis* complex comprises probably several cryptic desert species, distributed in northern and subsaharan parts of tropical Africa (Fig. 30).

****Lepisiota canescens* (EMERY, 1897)**

Loc. 1 – 1w; Loc. 2 – 10w; Loc. 3 – 1w; recorded from arid parts of subsaharan, eastern and southern Africa, Madagascar, Arabian Peninsula and Israel. New to Gambia (Fig. 14).

****Nylanderia jaegerskioeldi* (MAYR, 1904)**

Loc. 1 – 1w; widely distributed in subsaharian and central Africa and Arabian Peninsula. As a tramp species recorded also from Mediterranean Subregion and Macaronesia. New to Gambia (Fig. 15).

***Oecophylla longinoda* (LATREILLE, 1802)**

Loc. 1 – 4w; Loc. 2 – 2g, 6w; all African taxa of the genus *Oecophylla* were reduced to a single species *O. longinoda*. They are widely distributed on the whole tropical Africa (Fig. 25).

***Paratrechina longicornis* (LATREILLE, 1802)**

Loc. 1 – 19w; Loc. 2 – 66w; Loc. 3 – 34w; Loc. 4 – 13w; tramp species, known from the whole tropical, subtropical, and warm, arid areas of the world (Fig. 5).

Myrmicinae

***Cardiocondyla emeryi* FOREL, 1881**

Loc. 1 – 1g; Loc. 2 – 1w; a tramp species, recorded from almost the whole Africa, central and southern part of North America, Oriental Region, Arabian Peninsula, Oceania, Hawaii, Macaronesia, Spain and Switzerland (Fig. 8).

Crematogaster* cf. *excisa

Loc. 1 – 4w; a sample from Gambia is characterized by very long propodeal spines. This feature was noted for, described from Central Africa, *C. excisa bomaella* SANTSCHI, 1935. Unless there is a revision of this complex of species the status of the Gambian population is unclear (Fig. 11).

****Crematogaster* cf. *aegyptiaca***

Loc. 2 – 4w; Loc. 3 – 1w; samples from Gambia, with propodeal spines reduced to a small triangular denticle, well agree with populations of *Crematogaster aegyptiaca* MAYR, 1862 from eastern Africa. Unless there is a revision of this complex of species the status of the Gambian population is unclear (Fig. 10).

Crematogaster* cf. *gambiensis

Loc. 3 – 2w; two specimens from loc. 3 belong to *Crematogaster gambiensis* and are characterized by completely reduced dorsal setae. This complex of species needs revision and the status of the Gambian population is unclear (Fig. 12).

***Crematogaster senegalensis* ROGER, 1863**

Loc. 2 – 5w; Loc. 3 – 24w; Loc. 4 – 27w; known from subsaharian regions of western Africa and Arabian Peninsula (Fig. 13).

***Monomorium afrum* ANDRÉ, 1884**

Loc. 2 – 5w; widely distributed in subsaharan Africa and the Arabian Peninsula (Fig. 16).

***Monomorium bicolor* EMERY, 1877**

Loc. 1 – 11w; Loc. 2 – 2g, 13w; Loc. 3 – 20w; Loc. 4 – 1w; known from subsaharan regions of western and central Africa, Arabian Peninsula, Macaronesia and some islands of eastern part of Mediterranean basin. As an invasive species recorded also from Canary Islands, northern Africa, Iran, Israel and some Greek Islands (Fig. 17).

****Monomorium* cf. *opacum***

Loc. 4 – 63w; without doubts the sample from loc. 4 belongs to the *Monomorium opacum* complex. But it slightly differs from a typical *Monomorium opacum* FOREL, 1913 in its completely black body colouration and, in most of specimens, the first gastral tergite having a pair of erect setae. It may represent one of infraspecific valid names proposed within a group of African *Monomorium* taxa characterised by a strong body microsculpture. Because some of these names have an unclear status a proper determination of the Gambian population will be possible only after a revision of this group (Fig. 19).

***Monomorium rosae* SANTSCHI, 1920**

Loc. 2 – 1w; known from Western, Central and Eastern Africa (Fig. 21).

****Monomorium* cf. *salomonis***

Loc. 2 – 23w; sample from loc. 2 belongs to *Monomorium salomonis* complex but differs from a typical *M. salomonis* (LINNAEUS, 1758) in more distinct body sculpture and pale mesosoma whether it looks more like *M. bicolor* than *M. salomonis*. There are several infraspecific valid names proposed within subsaharian *M. salomonis* complex but status of most of them is unclear. The status of Gambian population needs further study based on the modern revision of this group (Fig. 18).

***Pheidole punctulata* MAYR, 1866**

Loc. 1 – 31w; widely distributed in tropical Africa, including Madagascar.

***Pheidole rugaticeps* EMERY, 1877**

Loc. 2 – 136w; Loc. 4 – 2w; widely distributed in tropical Africa and Arabian Peninsula (Fig. 24).

***Pheidole welgelegenensis* FOREL, 1913**

Loc. 4 – 12w; widely distributed in tropical Africa and Arabian Peninsula. Samples from Gambia by strongly sculptured body are similar to a typical *P. welgelegenensis* described from Central Africa. Nevertheless, they differ in shorter propodeal spines. This taxon was usually terated as subspecies of *Pheidole sculpturata* MAYR, 1866 but recently DIAMÉ *et al.* (2017) raised it to a species rank (Fig. 26).

***Tetramorium sericeiventris* EMERY, 1877**

Loc. 2 – 3w; Loc. 3 – 2w; Loc. 4 – 3w; an invasive species, widely distributed in tropical Africa and Asia, Madagascar and Arabian Peninsula (Fig. 27).

****Trichomyrmex abyssinicus*** (FOREL, 1894)

Loc. 3 – 5w; distributed in subsaharian and eastern Africa (south to Tanzania) and Arabian Peninsula (Fig. 29).

Ponerinae

Brachyponera sennaarensis (MAYR, 1862)

Loc. 1 – 3w; Loc. 2 – 27w; Loc. 3 – 9w; Loc. 4 – 10w; species known from subsaharian and eastern Africa and Arabian Peninsula (Fig. 3).

Mesoponera escherichi (FOREL, 1910)

Loc. 1 – 2w; widely distributed in Ethiopian Region (Fig. 28).

Odontomachus troglodytes SANTSCHI, 1914

Loc. 1 – 8w; – Loc. 2 – 4g, 5w, 6m; widely distributed in Ethiopian Region (Fig. 20).

Paltothyreus tarsatus (FABRICIUS, 1798)

Loc. 2 – 1g; Loc. 4 – 1g; widely distributed in paleotropics, east to New Guinea. Recorded also from North Africa (Fig. 23).

CHECK LIST OF ANTS OF GAMBIA

(the checklist based on sources noted in Introduction chapter; it was not critically verified and may contain misidentifications so it should be treated only as a preliminary introduction to the biodiversity of Gambia ants)

Aenictinae

1. *Aenictus rotundatus* subsp. *guineensis* SANTSCHI, 1924

Dolichoderinae

2. *Tapinoma luridum* EMERY, 1908
3. *Tapinoma luteum* (EMERY, 1895)
4. *Tapinoma melanocephalum* (FABRICIUS, 1793)
5. *Tapinoma modestum* SANTSCHI, 1932
6. *Technomyrmex pallipes* (SMITH, 1876)

Dorylinae

7. *Dorylus atriceps* SHUCKARD, 1840
8. *Dorylus attenuatus* SHUCKARD, 1840
9. *Dorylus rufescens* SANTSCHI, 1915
10. *Dorylus affinis* SHUCKARD, 1840
11. *Dorylus fimbriatus* (SHUCKARD, 1840)
12. *Dorylus fulvus* subsp. *glabratus* SHUCKARD, 1840
13. *Dorylus nigricans nigricans* ILLIGER, 1802
14. *Dorylus nigricans burmeisteri* SHUCKARD, 1840

Formicinae

15. *Camponotus cosmicus* (SMITH, 1858)
16. *Camponotus flavomarginatus* MAYR, 1862
17. *Camponotus furvus* SANTSCHI, 1911
18. *Camponotus* cf. *maculatus*
19. *Camponotus maynei* FOREL, 1916
20. *Camponotus olivieri* subsp. *delagoensis* FOREL, 1894
21. *Camponotus olivieri* subsp. *lemma* FOREL, 1886
22. *Camponotus rufoglaucus* subsp. *controversus* SANTSCHI, 1916
23. *Camponotus sericeus* (FABRICIUS, 1798)
24. *Camponotus solon* FOREL, 1886
25. *Camponotus* cf. *vestitus*
26. *Camponotus vividus* (SMITH, 1858)
27. *Camponotus* cf. *vividus*
28. *Cataglyphis livida* (ANDRÉ, 1881)
29. *Cataglyphis* cf. *oasium*
30. *Lepisiota canescens* (EMERY, 1897)
31. *Lepisiota capensis* subsp. *guineensis* (MAYR, 1902)
32. *Lepisiota capensis* subsp. *laevis* (SANTSCHI, 1913)
33. *Nylanderia jaegerskioeldi* (MAYR, 1904)
34. *Oecophylla longinoda* (LATREILLE, 1802)
35. *Paratrechina longicornis* (LATREILLE, 1802)
36. *Plagiolepis mediorufa* (FOREL, 1916)
37. *Polyrhachis militaris* (FABRICIUS, 1781)

Myrmicinae

38. *Cardiocondyla emeryi* FOREL, 1881
39. *Cataulacus guineensis* SMITH, 1853
40. *Cataulacus traegaordhi* SANTSCHI, 1914
41. *Crematogaster* cf. *aegyptiaca*
42. *Crematogaster chiarinii* subsp. *taediosa* FOREL, 1894
43. *Crematogaster* cf. *excisa*
44. *Crematogaster gambiensis* ANDRÉ, 1889
45. *Crematogaster* cf. *gambiensis*
46. *Crematogaster impressa* EMERY, 1889
47. *Crematogaster impressa* subsp. *brazzai* SANTSCHI, 1910
48. *Crematogaster juvena* SANTSCHI, 1926
49. *Crematogaster* cf. *margaritae*

50. *Crematogaster senegalensis* ROGER, 1863
51. *Crematogaster wellmani* FOREL, 1909
52. *Monomorium afrum* ANDRÉ, 1884
53. *Monomorium bicolor* EMERY, 1877
54. *Monomorium* cf. *dolatu*
55. *Monomorium egens* FOREL, 1910
56. *Monomorium exiguum* FOREL, 1894
57. *Monomorium mictilis* FOREL, 1910
58. *Monomorium* cf. *opacum*
59. *Monomorium* cf. *osiridis*
60. *Monomorium rosae* SANTSCHI, 1920
61. *Monomorium* cf. *salomonis*
62. *Monomorium vonatu* BOLTON, 1987
63. *Myrmecaria fumata* SANTSCHI, 1916
64. *Nesomyrmex angulatus* (MAYR, 1862)
65. *Pheidole andrieui* SANTSCHI, 1930
66. *Pheidole megacephala* (FABRICIUS, 1793)
67. *Pheidole punctulata* MAYR, 1866
68. *Pheidole rugaticeps* EMERY, 1877
69. *Pheidole welgelegenensis* FOREL, 1913
70. *Strumigenys maynei* FOREL, 1916
71. *Tetramorium lucayanum* WHEELER, 1905
72. *Tetramorium sericeiventris* EMERY, 1877
73. *Trichomyrmex abyssinicus* (FOREL, 1894)

Ponerinae

74. *Brachyponera sennaarensis* (MAYR, 1862)
75. *Euponera brunoii* (FOREL, 1913)
76. *Leptogenys sterops* BOLTON, 1975
77. *Mesoponera escherichi* (FOREL, 1910)
78. *Odontomachus troglodytes* SANTSCHI, 1914
79. *Paltothyreus tarsatus* (FABRICIUS, 1798)

Pseudomyrmecinae

80. *Tetraodon ambigua* (EMERY, 1895)
81. *Tetraodon claveai* (SANTSCHI, 1913)
82. *Tetraodon continua* (FOREL, 1907)

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Figs 1–7. Major worker of *Camponotus sericeus* (1); Minor worker of *Camponotus flavomarginatus* (2); Worker of *Brachyponera sennaarensis* (3); Major worker of *Camponotus cf. maculatus* (4); Worker of *Paratrechina longicornis* (5); Major worker of *Camponotus vividus* (6); Major worker of *Camponotus cf. vividus* (7) (scale bar = 1 mm) (photo L. Borowiec).



Figs 8–15. Gyne of *Cardiocondyla emeryi* (8); Medium worker of *Dorylus nigricans burmeisteri* (9); Worker of *Crematogaster* cf. *aegyptiaca* (10); Worker of *Crematogaster* cf. *excisa* (11); Worker of *Crematogaster* cf. *gambiensis* (12); Worker of *Crematogaster senegalensis* (13); Worker of *Lepisiota canescens* (14); Worker of *Nylanderia jaegerskioeldi* (15) (scale bar = 1 mm) (photo L. Borowiec).



Figs 16–22. Worker of *Monomorium afrum* (16); Worker of *Monomorium bicolor* (17); Worker of *Monomorium* cf. *salomonis* (18); Worker of *Monomorium* cf. *opacum* (19); Worker of *Odontomachus troglodytes* (20); Worker of *Monomorium rosae* (21); Worker of *Technomyrmex pallipes* (22) (scale bar = 1 mm) (photo L. Borowiec).



Figs 23–30. Gyne of *Paltothyreus tarsatus* (23); 24. Major worker of *Pheidole rugaticeps* (24); Major worker of *Oecophylla longinoda* (25); Minor worker of *Pheidole welgelegenensis* (26); Worker of *Tetramorium sericeiventris* (27); 28. Worker of *Mesoponera escherichi* (28); Medium worker of *Trichomyrmex abyssinicus* (29); Worker of *Cataglyphis* cf. *oasium* (30) (scale bar = 1 mm) (photo L. Borowiec).

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