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Male-based key to the subfamilies and genera of Malagasy ants (Hymenoptera, Formicidae)

Manoa Ramamonjisoa, Nicole Rasoamanana, Brian Lee Fisher

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Manoa M. Ramamonjisoa[1], Nicole Rasoamanana[1], Brian L. Fisher[2].

[1] Madagascar Biodiversity Center, BP 6257, Parc Botanique et Zoologique de Tsimbazaza, Antananarivo, Madagascar

[2] Entomology, California Academy of Sciences, 55 Music Concourse Drive, San Francisco, CA 94118, U.S.A.

ABSTRACT

The males of the family Formicidae in the Malagasy region, including the islands of the southwest Indian Ocean (Madagascar, Mauritius, Reunion, Comoros, and Seychelles) are reviewed. A male-based synopsis of each subfamily and genera are provided. A richly illustrated male-based key to the eight subfamilies and 71 genera for which males are known are provided. Terminologies for morphology and wing cells are also reviewed. The keys are a product of three decades of collecting across the region. Despite efforts to collect males for all genera, males from four genera (*Brachyponera, Chrysapace, Dicroaspis, Ochetellus*) were included in the keys based on males from species collected outside the region, and males from one genus (*Parvaponera*) are unknown globally and not included in the key.

Keywords: male ants, Malagasy region, Formicidae, morphology, identification.

INTRODUCTION

Most identification tools for ants are based on the worker female caste and neglect the male caste. Identifying males is important to understanding the life history, phenology, and reproductive biology of ants. In addition, some collecting methods like Malaise and light traps preferentially trap males and, without tools for their identification, limit these methods for gaining insights into ant community diversity and structure through time and space.

In the Malagasy region, (Madagascar, Mauritius, Reunion, Comoros, and Seychelles), there has been a pioneering effort to develop the taxonomic tools to identify male ants to genus: Ponerinae (Yoshimura and Fisher 2007), Amblyoponinae (Yoshimura and Fisher 2014), Dolichoderinae (Yoshimura and Fisher 2011), and Proceratinae (Yoshimura and Fisher 2009), and Myrmicinae tribes (Ramamonjisoa et al. 2023). This body of work has greatly enriched our understanding of the diversity of ants in the region. Borowiec (2016) also provided an identification key for male Dorylinae from the African and Malagasy regions. Here, we update this previous work, providing additional characaters and updated classification and provide keys to all genera, including the Myrmecinae for which males are known. The newly proposed key uses a combination of morphological characters to create a navigational tool to identify the diversity of ant genera in the Malagasy region. The effectiveness of the key is enhanced by the integration of photographic illustrations, which provide a visual portal to the subtle intricacies that distinguish each

genre. This study aims to increase the accessibility, accuracy, and applicability of ant genera identification in the Malagasy region.

MATERIALS AND METHODS

Morphological observations were carried out under Leica stereoscopic microscopes (MZ9.5). Digital color montage images were created using a JVC KY-F75 digital camera and Syncroscopy Auto-Montage software (ver. 5.0), or a Leica DFC 425 camera in combination with the Leica Application Suite software (ver. 3.8). These images are available online through AntWeb.org (2022) and are accessible using the unique specimen identifier code.

Terminology for general morphology follows Bolton (1994) and Boudinot (2013, 2015). The terminology of the wing venation follows Yoshimura and Fisher (2007). When referring to the presence or absence of veins in the descriptions, a vein is considered present regardless of whether it is tubular, nebulous, or spectral (Mason 1986).

Subfamilies and genera in the Malagasy Region

The specimens used in this study are the product of a long-term effort to document the diversity of ants in the Malagasy region (Fisher 2005; Fisher and Peeters 2019). Males were collected by hand as part of colony series but also in light and Malaise traps. Despite the effort, not all genera had representative males collected in the Malagay region. Four genera (*Brachyponera*, *Chrysapace*, *Dicroaspis*, *Ochetellus*) have males known from outside the region but collection efforts failed to locate males from the Malagasy region. Males of *Brachyponera* (known from Mauritius), *Dicroapsis*, (from Anjouan), and *Ochetellus*, (from Reunion) are most likely absent because of the limited effort spent collecting on those islands. *Chrysapace*, wich is a large Doryline and present in northern Madagascar is suprising that males have never been collected in the region despite the numerous malaise and light traps throughout the range of the genus. Even more puzzling is the complete global absence of males of *Parvaponera*. *Parvaponera* queens are regulary collected at black lights (Fig. 1). For a period of 7 years, the Madagascar ant team directed efforts to collect males at sites where queens were present at lights. Searching at one site (Nosy Faly in NW Madagascar) we located the first ground nest including workers for the genus in Madagascar. We set a series of yellow pan traps and Malaise traps during the period queens were present at black lights (Fig. 2) but no males were located. Males of the genus remain unknown in Madagascar and globally. *Parvaponera* is the only genus in the Malagasy region absent from the key.

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Figure 1. Black light. Photographer Brian Fisher

Figure 2. Yellow pan and Malaise trap. Photographer Brian Fisher

Synoptic list of genera

For genera absent from Madagascar, the distribution is indicated in parentheses.

* Males unkown for the genus within the Malagasy region but included in keys based on males from outside the region.
+ Males unkown for genus globally and not included in key.

AMBLYOPONINAE Forel, 1893

1. *Adetomyrma* Ward, 1994
2. *Mystrium* Roger, 1862
3. *Prionopelta* Mayr, 1866
4. *Stigmatomma* Roger, 1859
5. *Xymmer* Santschi, 1914

DOLICHODERINAE Forel, 1878

1. *Aptinoma* Fisher, 2009
2. *Ochetellus** Shattuck, 1992 (Mauritus, Reunion)
3. *Ravavy* Fisher, 2009
4. *Tapinoma* Foerster, 1850
5. *Technomyrmex* Mayr, 1872

DORYLINAE Leach, 1815

1. *Eburopone* Borowiec, 2016
2. *Chrysapace** Crawley, 1924
3. *Lioponera* Mayr, 1879
4. *Lividopone* Bolton and Fisher, 2016
5. *Ooceraea* Roger, 1862
6. *Parasyscia* Emery, 1882
7. *Simopone* Forel, 1891
8. *Tanipone* Bolton and Fisher, 2012

FORMICINAE Latreille, 1809

1. *Anoplolepis* Santschi, 1914 (Seychelles)
2. *Brachymyrmex* Mayr, 1868
3. *Camponotus* Mayr, 1861
4. *Lepisiota* Santschi, 1926
5. *Nylanderia* Emery, 1906
6. *Paraparatrechina* Donithorpe, 1947
7. *Paratrechina* Motschoulsky, 1863
8. *Plagiolepis* Mayr, 1861
9. *Tapinolepis* Emery, 1925

MYRMICINAE *Lepeletier de Saint-Fargeau, 1835*

1. *Adelomyrmex* Emery, 1897 (Seychelles)
2. *Aphaenogaster* Mayr, 1853
3. *Calyptomyrmex* Emery, 1887 (Comoros)
4. *Cardiocondyla* Emery, 1869
5. *Carebara* Westwood, 1840
6. *Cataulacus* Smith, 1853
7. *Crematogaster* Lund, 1831
8. *Cyphomyrmex* Mayr, 1862 (Reunion)
9. *Dicroaspis** Emery, 1908 (Comoros)
10. *Erromyrma* Bolton and Fisher, 2016
11. *Eurhopalothrix* Brown and Kempf, 1961 (Comoros)
12. *Eutetramorium* Emery, 1899
13. *Malagidris* Bolton and Fisher, 2014
14. *Melissotarsus* Emery, 1877
15. *Meranoplus* Smith, 1853
16. *Metapone* Forel, 1911
17. *Monomorium* Mayr, 1855
18. *Nesomyrmex* Wheeler, 1910
19. *Pheidole* Westwood, 1839
20. *Pilotrochus* Brown, 1978
21. *Pristomyrmex* Mayr, 1866 (Mauritus)
22. *Royidris* Bolton and Fisher, 2014
23. *Solenopsis* Westwood, 1840
24. *Strumigenys* Smith, 1860
25. *Syllophopsis* Santschi, 1915
26. *Terataner* Emery, 1912
27. *Tetramorium* Mayr, 1855
28. *Trichomyrmex* Mayr, 1865
29. *Vitsika* Bolton and Fisher, 2014
30. *Vollenhovia* Mayr, 1865 (Seychelles)

PONERINAE Lepeletier de Saint-Fargeau, 1835

1. *Bothroponera* Mayr, 1862
2. *Brachyponera** Emery, 1900 (Mauritus)
3. *Euponera* Forel, 1891
4. *Hypoponera* Santschi, 1938
5. *Leptogenys* Roger, 1861
6. *Mesoponera* Emery, 1900
7. *Odontomachus* Latreille, 1804
8. *Parvaponera*+ Schmidt and Shattuck, 2014
9. *Platythyrea* Roger, 1863
10. *Ponera* Latreille, 1804

147 PROCERATIINAE Emery, 1895

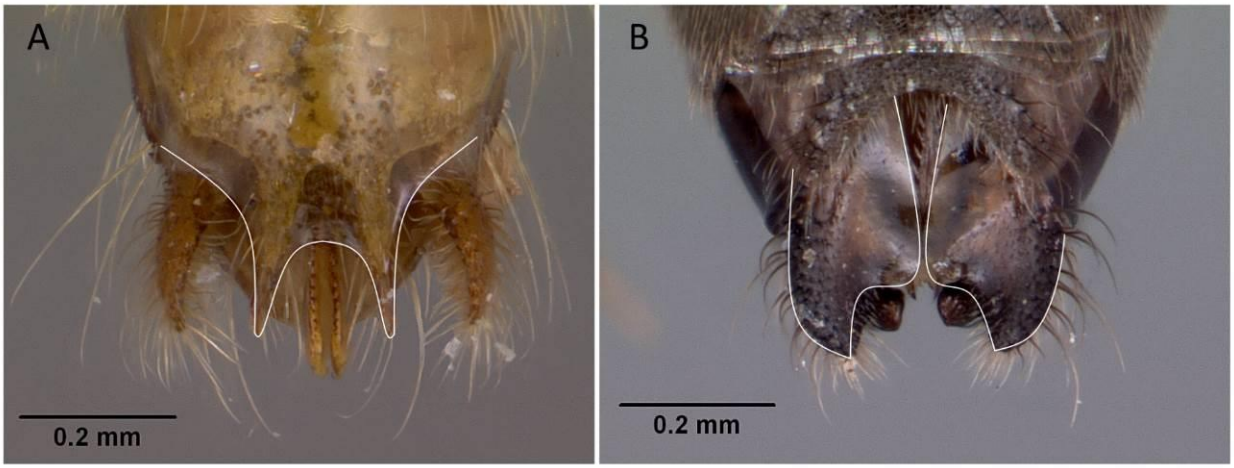
148 1. *Discothyrea* Roger, 1863
149 2. *Probolomyrmex* Mayr, 1901
150 3. *Proceratium* Roger, 1863

151 PSEUDOMYRMICINAE Smith, 1952

152 1. *Tetraponera* Smith, 1852

153

154 **Key to Subfamilies alate male ants from the Malagasy region.**
155 1 Two distinct, long, narrow spines or lobes present on the apical portion of abdominal sternum IX
156 (Fig. 3A) or, if absent, then mandibles extremely elongated, distinctly longer than head, and volsella
157 massive, claw-shaped, directed dorsally. Pygostyles absent ……Dorylinae
158 – Spines or lobes absent on apical portion of abdominal sternum IX or the apical portion bilobed,
159 with each lobe very wide (Fig. 3B). Mandibles not elongated, distinctly shorter than head. Volsella
160 moderate, not claw-shaped, not directed dorsally. Pygostyles present or absent ……2



161
162 **Figure 3.** Portion of abdominal sternum IX. **A** *Lioponera* indet (CASENT0001042) **B** *Technomyrmex* mg08 (CASENT0049527).
163 Photographer Masashi Yoshimura.

164 2 Abdominal segment II nearly as long as segment III in lateral view (Fig. 4A) ……3
165 – Abdominal segment II much shorter than segment III in lateral view (Fig. 4B) ……4

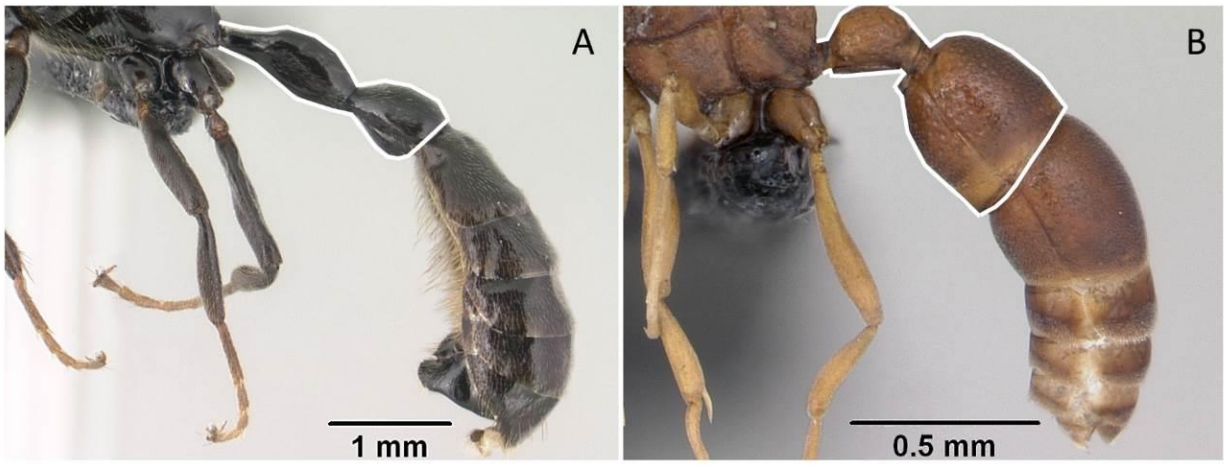


Figure 4. Abdominal segment II and III in lateral view. **A** *Tetraponera longula* (CASENT0138661) **B** *Probolomyrmex curculiformis* (CASENT0050214). Photographers Dimby Raharinjanahary (4A), April Nobile (4B).

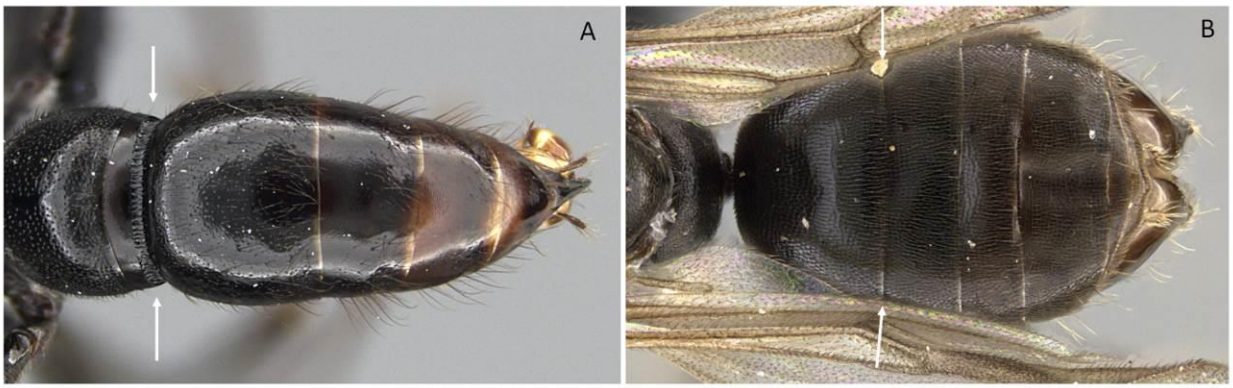
3 Ventral apex of meso- and metatibia, when viewed from the front with the femur at right angle to the body, with two spurs consisting of a large pectinate spur and a small simple spur (Fig. 5A) ……Pseudomyrmecinae

– Ventral apex of metatibia, when viewed from the front with the femur at right angle to the body, with single, large pectinate spur (Fig. 5B) ……Myrmicinae

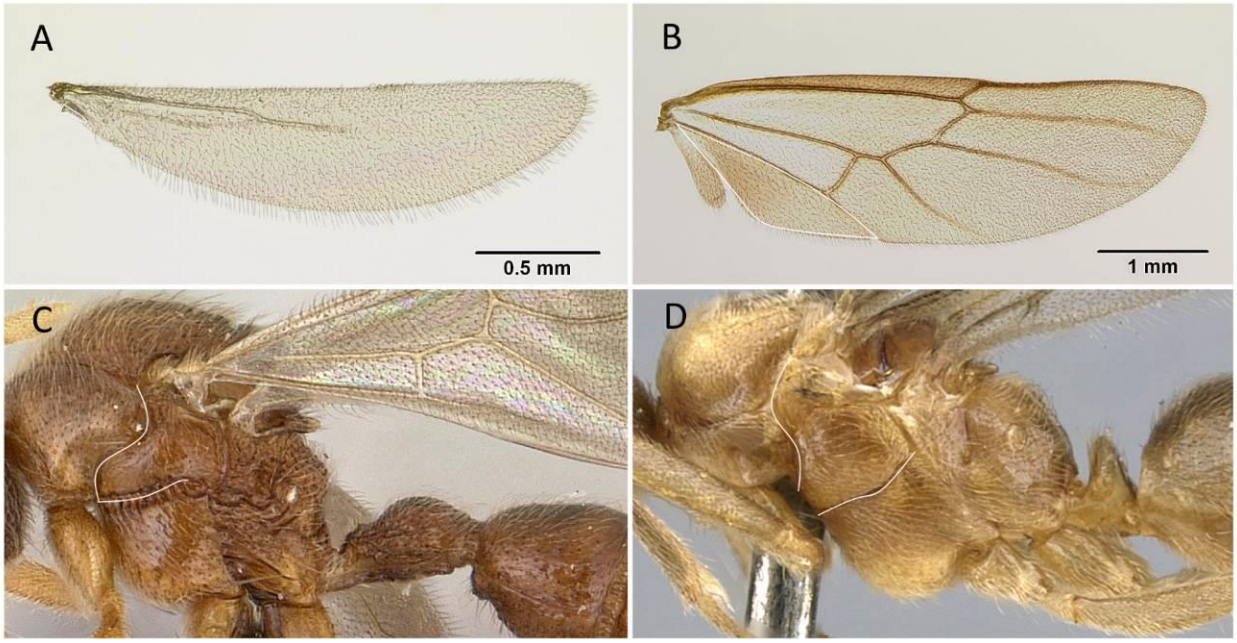
Figure 5. Metatibial spur. **A** *Tetraponera* psw094 (CASENT0053316) **B** *Aphaenogaster swammerdami* (CASENT0000990). Photographers April Nobile (5A), Masashi Yoshimura (5B).

4 Metatibia with one or two ventroapical spurs; if only one spur present then cinctus present between abdominal segment III and abdominal segment IV (Fig. 6A) ……5

180 − Metatibia always with single ventroapical spur, cinctus absent between abdominal segment III
181 and abdominal segment IV (Fig. 6B) ……7



182
183 **Figure 6.** Gaster in dorsal view, the cinctus at abdominal segment IV level. **A** *Euponera sikorae* (CASENT0065480) **B**
184 *Technomyrmex albipes* (CASENT0055727). Photographer Michele Esposito.
185
186 5 Anal region of hind wing vestigial (Fig. 7A) and with the mesosoma in lateral view, oblique
187 mesopleural furrow reaching pronotum close to pronotal posteroventral margin (Fig. 7C)
188 ……Proceratiinae
189 − Anal region of hind wing well developed (Fig. 7B); if vestigial, oblique mesopleural furrow
190 always reaching pronotum far away from pronotal posteroventral margin or oblique mesopleural furrow
191 absent (Fig. 7D) ……6



192
193 **Figure 7.** Hindwings of male ants. **A** *Discothyrea* mgm01 (CASENT0083649) **B** *Odontomachus coquereli* (CASENT0049797).
194 Mesosoma in lateral view, showing the oblique mesopleural furrow **C** *Proceratium* dr01 (CASENT0145100) **D** *Acropyga goeldii*
195 (CASENT0903184). Photographers Erin Prado (7A, 7B), Dimby Raharinjanahary (7C), Z. Lieberman (7D).
196
197 6 Abdominal segment II broadly and dorsally attached to abdominal segment III; mandible long,
198 falcate, curved inward and closed (Fig. 8A) ……Amblyoponinae
199 − Abdominal segment II narrowly and ventrally attached to abdominal segment III; mandible short,
200 linear, mostly subtriangular, never closed (Fig. 8B)

……Ponerinae

Figure 8. Attachment of petiole (abdominal segment II) to abdominal segment III. **A** *Stigmatomma* mgm04 (CASENT0063981) **B** *Bothroponera perroti* (CASENT0135783). Photographers Erin Prado (8A), Dimby Raharinjanahary (8B).

7 With the head in full face view, masticatory margin of mandible edentate or with many minute, serrate teeth (Fig. 9A), if teeth absent, then scape short not reaching posterior margin of head ……Dolichoderinae

– With the head in full face view, masticatory margin of mandible with several larger teeth (Fig. 9B); scape long, distinctly exceeding posterior margin of head ……Formicinae

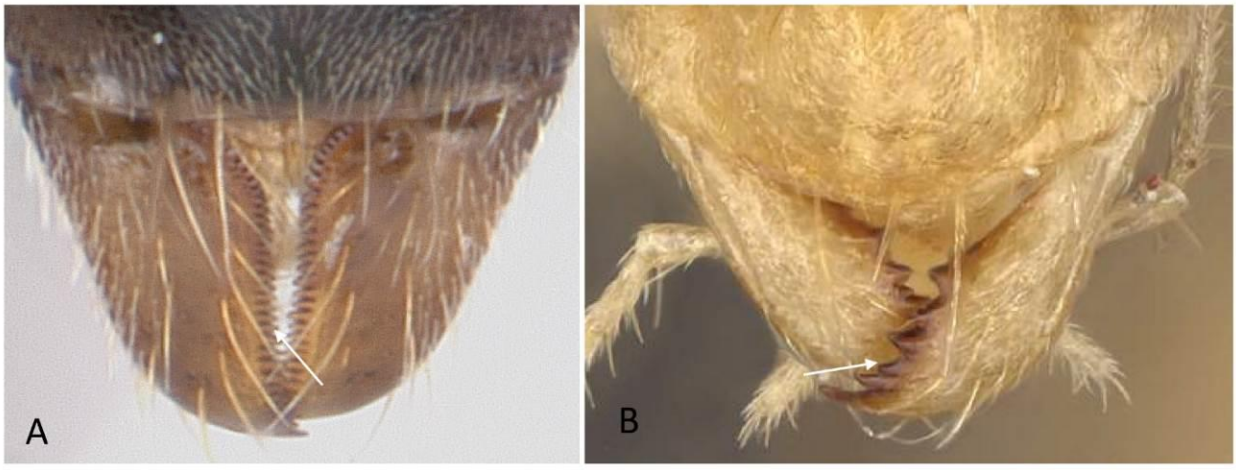


Figure 9. Mandible in full face view. **A** *Technomyrmex albipes* (CASENT0055727) **B** *Anoplolepis gracilipes* (CASENT0158950). Photographers April Nobile (9A), Michele Esposito (9B).

AMBLYOPONINAE Forel, 1893

Diagnosis of male ants of the subfamily Amblyoponinae in the Malagasy region

– Antenna filiform, consisting of 13 segments.

– Scape not reaching posterior margin of head.

– Mesopleural oblique furrow usually vestigial, and when present, reaching pronotum far away from pronotal posteroventral margin.
– Petiole (abdominal segment II) broadly and dorsally attached to abdominal segment III.
– Abdominal segment II much smaller than segment III in lateral view.
– Metatibia with one or two spurs.

Remarks. Our key includes five Amblyoponinae genera recorded from the Malagasy region. Key modified from Yoshimura and Fisher (2014).

Male−based key to genera of the subfamily Amblyoponinae

1 A single tibial spur present on metatibia (Fig. 10A). Mandible with apical and pre-apical teeth. Pterostigma reduced in size ……*Prionopelta*
– Two tibial spurs present on metatibia (Fig. 10B). Mandible with a single apical tooth. Pterostigma well developed
……2

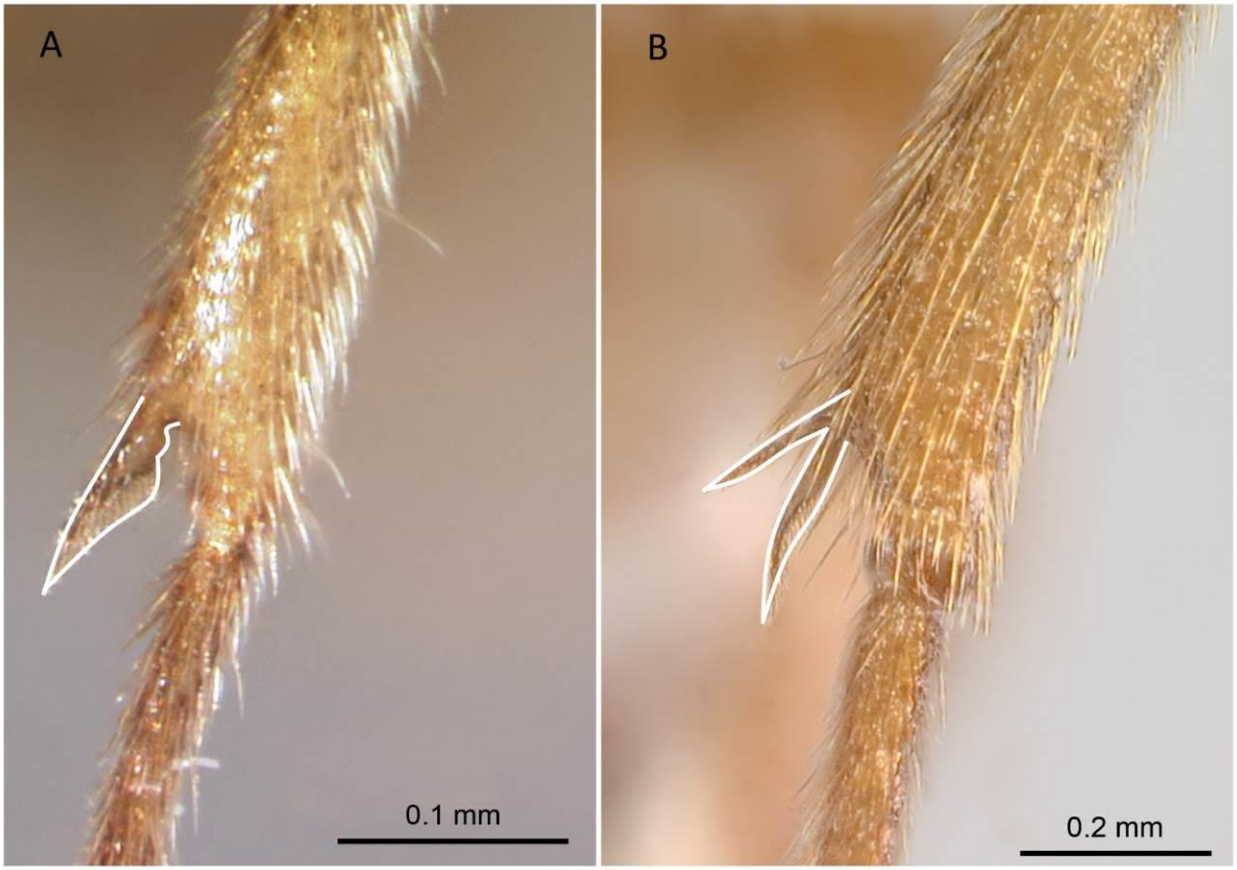


Figure 10. Tibial spur on metatibia. **A** *Prionopelta subtilis* (CASENT0049809) **B** *Mystrium* mirror (CASENT0492154). Photographer Masashi Yoshimura

2 Constriction between petiole and abdominal segment III indistinct in dorsal view. Pretergite of abdominal segment IV not divided from post-tergite by transverse furrow. On forewing, radial sector fails to reach costal margin and is disconnected from radius (Fig. 11A) ……*Adetomyrma*
– Constriction between petiole and abdominal segment III distinct in dorsal view. Pretergite of

abdominal segment IV distinctly divided from post-tergite by transverse furrow. On forewing, radial sector reaches costal margin and is connected with radius (Fig. 11B) ……3

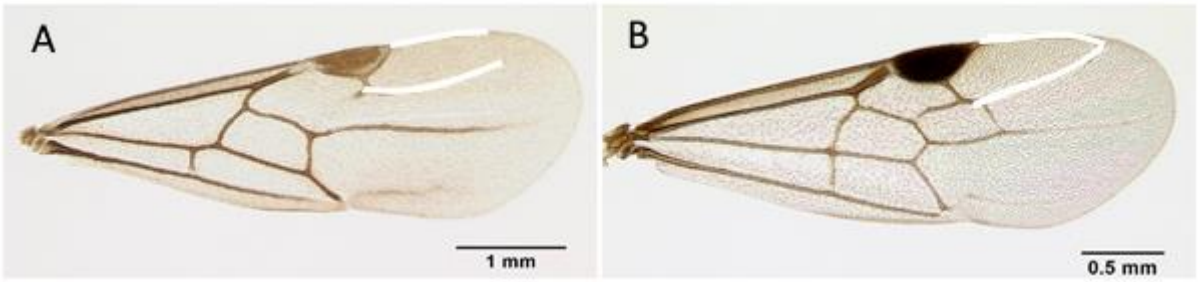


Figure 11. Venation of forewing. **A** *Adetomyrma* mgm01 (CASENT0218013) **B** *Stigmatomma* mg01 (CASENT0083104). Photographer Masashi Yoshimura.

3 Pygostyles present (Fig. 12A) ……*Stigmatomma*

– Pygostyles absent (Fig. 12B) ……4

Figure 12. Posterior portion of the abdomen in oblique view. **A** *Stigmatomma* mgm01 (CASENT0007139) **B** *Xymmer* drm01 (CASENT0135825). Photographers April Nobile (10A), Dimby Raharinjanahary (10B).

4 Anterior margin of clypeus with dent-like projections. Radial sector on forewing fully complete (Fig. 13A). Radius vein ……*Mystrium*

– Anterior margin of clypeus without dent-like projections. Radial sector on forewing wholly or partially absent between M+Rs and 2r-rs, (Fig. 13B). Radius vein on hindwing absent ……*Xymmer*

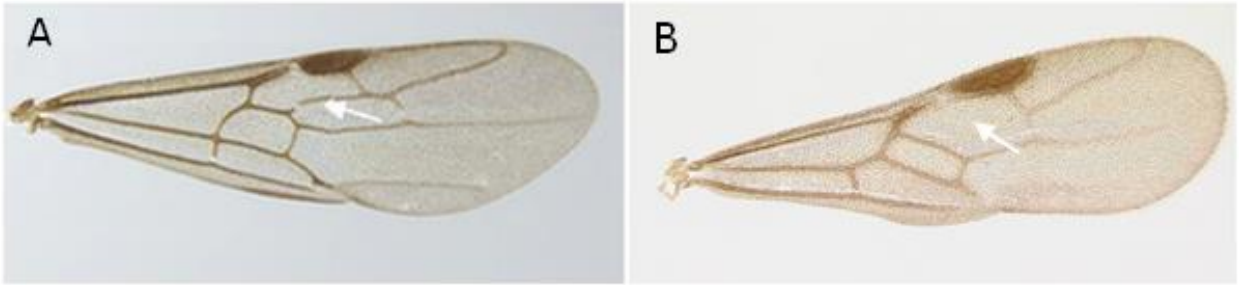


Figure 13. Venation of forewing. **A** *Mystrium barrybressleri* (CASENT0078803) **B** *Xymmer* mgm04 (CASENT0113147). Photographer Masashi Yoshimura.

Adetomyrma Ward, 1994

Antenna consisting of 13 segments. Frontal carinae absent. Anterior margin of clypeus with dent-like projections. Mandible falcate with single apical tooth. Palpal formula 3,3/2,3/2,2. Notauli absent. Mesepimeron with or without epimeral lobe. Protibial spur simple. Mesotibia with two spurs. Metatibia with two spurs. In dorsal view, constriction between abdominal segment III and abdominal segment IV absent. Pygostyles present. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) between M+Rs and 2r-rs wholly or partially absent and fails to reach costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from the junction between media and cubitus. Media (M) fused with Rs+M. On the hindwing, radius (R) absent. Rs present. 1rs-m absent. Media (M) usually present. M+Cu present. 1rs-m+M absent. Free section of the cubitus present. Cross-vein cu-a present.

Mystrium Roger, 1862

Antenna consisting of 13 segments. Frontal carinae present. Anterior margin of clypeus with dent-like projections. Mandible falcate with single apical tooth. Palpal formula 4,3. Notauli absent. Mesepimeron with epimeral lobe. Protibial spur simple. Mesotibia with single or two spurs. Metatibia with two spurs. In dorsal view, constriction between abdominal segment III and abdominal segment IV distinct. Pygostyles absent. On the forewing; pterostigma well developed; costal vein (C) present, cross-vein: 1m-cu present. Radial sector (Rs) fully present. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a position variable located close to or far from junction between media and cubitus. Media (M) between Rs+M and 2rs-m completely present and after 2rs-m completely present. On the hindwing, Radius (R) present. Rs present. 1rs-m present. Media (M) present apical to 1rs-m. M+Cu present. 1rs-m+M present. Free section of the cubitus present. Cross-vein cu-a present.

Prionopelta Mayr, 1866

Antenna consisting of 13 segments. Frontal carinae present. Anterior margin of clypeus with dent-like projections. Mandible falcate with two sharp apical teeth. Palpal formula 2,2. Notauli present. Mesepimeron without epimeral lobe. Pro-, meso and metatibia with single simple spur. In dorsal view, constriction between abdominal segment III and abdominal segment IV distinctly present. Pygostyles present. On the forewing, pterostigma reduced in size. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector distal to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media (M) between Rs+M and 2rs-m completely present and after 2rs-m at least partially present. On the hindwing, radius (R) present but absent in one species. Rs present. 1rs-m present. Media (M) present apical to 1rs-m. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Stigmatomma Roger, 1859

Antenna consisting of 13 segments. Frontal carinae absent. Anterior margin of clypeus with dent-like projections. Antenna consisting of 13 segments. Mandible falcate with single apical tooth. Palpal formula 4,3/4,2/3,2. Notauli present. Mesepimeron with epimeral lobe. Protibia with single simple spur. Mesotibia with single or two spurs. Metatibia with two spurs. In dorsal view, constriction between abdominal segment III and abdominal segment IV distinctly present. Pygostyles present. On the forewing,

pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully present. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located close to or far from the junction between media and cubitus. Media (M) between Rs+M and 2rs-m completely present and after 2rs-m at least partially present. On the hindwing, radius (R) present or absent. Rs present. 1rs-m present. Media (M) present apical to 1rs-m. M+Cu present. 1rs-m+M present. Free section of the cubitus present. Cross-vein cu-a present.

Xymmer Santschi, 1914

Antenna consisting of 13 segments. Frontal carinae absent. Anterior margin of clypeus straight, without dent-like projections. Mandible falcate with single apical tooth. Palpal formula 3,3 /3,2/4,3. Notauli present. Mesepimeron with epimeral lobe. Protibia with single simple spur. Mesotibia with or without single spur. Metatibia with two spurs. In dorsal view, constriction between abdominal segment III and abdominal segment IV distinctly present. Pygostyles absent. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media (M) between Rs+M and 2rs-m completely present and after 2rs-m at least partially present. On the hindwing, radius (R) absent. Rs present. 1rs-m absent. Media (M) absent apical to 1rs-m. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a present.

DOLICHODERINAE Forel, 1878

Diagnosis of male ants of the subfamily Dolichoderinae in the Malagasy region

- Antenna filiform, consisting of 12 to 13 segments.
- Scape short, not reaching the posterior margin of head.
- Mesopleural oblique furrow reaching pronotum far away from pronotal posteroventral margin.
- Notauli absent.
- Scuto-scutellar suture simple.
- Single, well-developed spur presents on pro-, meso-, and metatibia.
- Abdominal segment II much smaller than segment III in lateral view.
- Petiole (abdominal segment II) narrowly or broadly attached to abdominal segment III.
- No constriction present between abdominal segments III and IV.
- Jugal lobe absent.
- Pygostyles present.
- Wing venation: Venation on forewing varies. Radius (R), Sc+R+Rs, radial sector (Rs), cubitus (Cu), anal (A), 2r-rs, and cu-a present in all genera. Media (M) often vestigial between Rs+M and 2rs-m. 2rs-m often vestigial or continuous with media. On hindwing, R+Rs and anal present. Radius and media apical to rs-m absent. M+Cu, cubitus, 1rs-m, and cu-a variable. Clavus moderate in size, and jugum absent.

Remarks. Our key includes five dolichoderine genera recorded from the Malagasy region. Key modified from Yoshimura and Fisher (2011). It is important to note that while the males of Ochetellus are currently

unknown in Malagasy region, they have been included in this key based on examination of Japan specimens. This decision was taken to ensure a global approach to the classification and identification of Dolichoderinae ants in the Malagasy region.

Male−based key to genera of the subfamily Dolichoderinae

1 Masticatory margin of mandible with many serrate denticles (Fig.14A) ……2
− Masticatory margin of mandible with one to several large teeth (Fig.14B) ……4

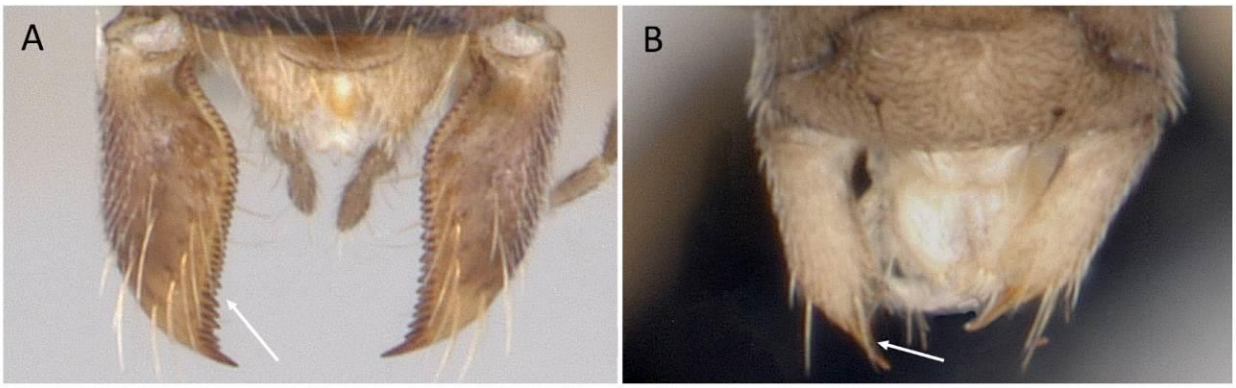


Figure 14. Mandible in full face view. **A** *Technomyrmex difficilis* (CASENT0049968) **B** *Ravavy miafina* (CASENT0474633). Photographer April Nobile.

2 On the hindwing, M+Cu absent. In ventral view, Apical portion of abdominal sternum IX greatly expanded mesally, forming a distinct and more or less flat ventral face (Fig. 15A) ……*Technomyrmex*
− On the hindwing, M+Cu present. In ventral view, Apical portion of abdominal sternum IX narrow, without a distinct ventral face (Fig. 15B) ……3

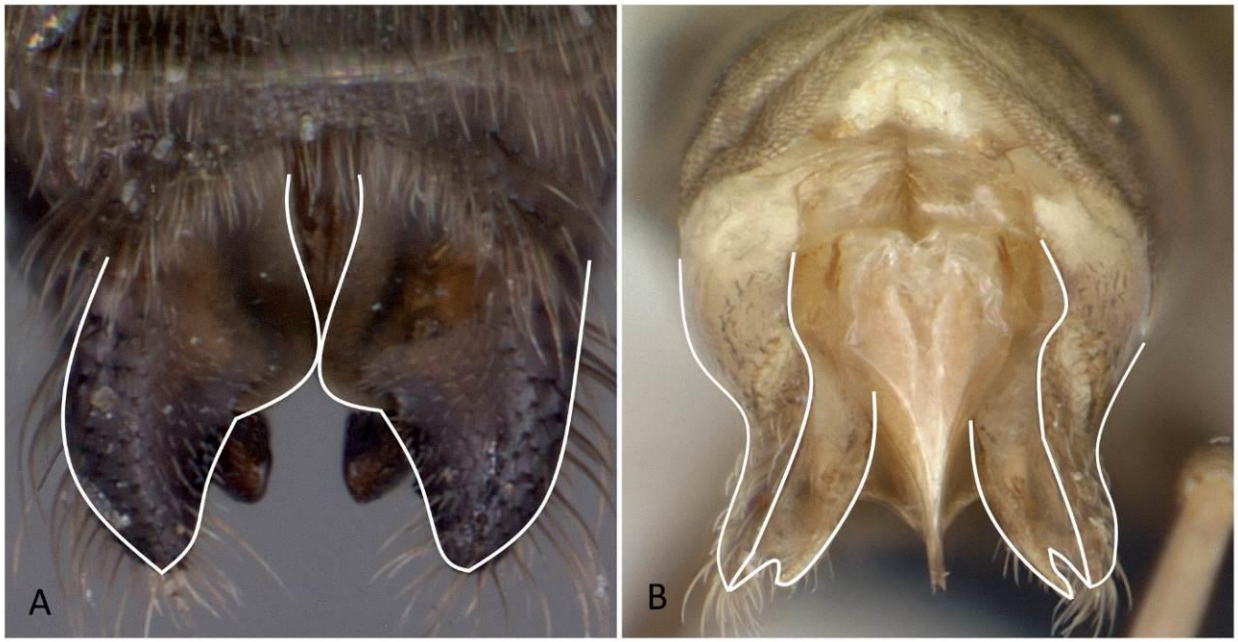


Figure 15. Apical portion of abdominal sternum IX **A** *Technomyrmex* mg08 (CASENT0049527) **B** *Tapinoma* mg07 (CASENT0137327). Photographers Masashi Yoshimura (15A), Erin Prado (15B).

3 With the head in full-face view, scape short, not reaching the lower edge of lateral ocelli (Fig. 16A) ……*Aptinoma*

– With the head in full-face view, scape long, reaching the lower edge of lateral ocelli (Fig. 16B) ……*Tapinoma*

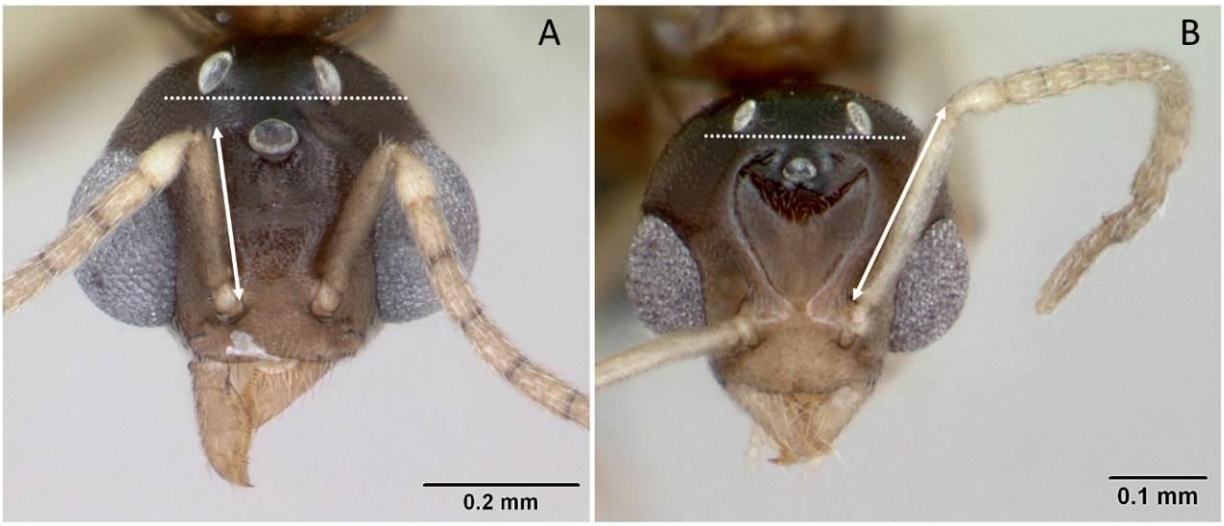


Figure 16. Head in full face view showing the comparison of the scape length. **A** *Aptinoma mangabe* (CASENT0173594). **B** *Tapinoma* mg12 (CASENT0115678). Photographer April Nobile.

4 Mandible broadly spatulate, with a single long, acute tooth on its distal apex (Fig. 17A). Petiole narrowly attached to abdominal segment III ……*Ravavy*

– Mandible triangular, with several stout teeth on its distal apex (Fig. 17B). Petiole broadly attached to abdominal segment III ……*Ochetellus*

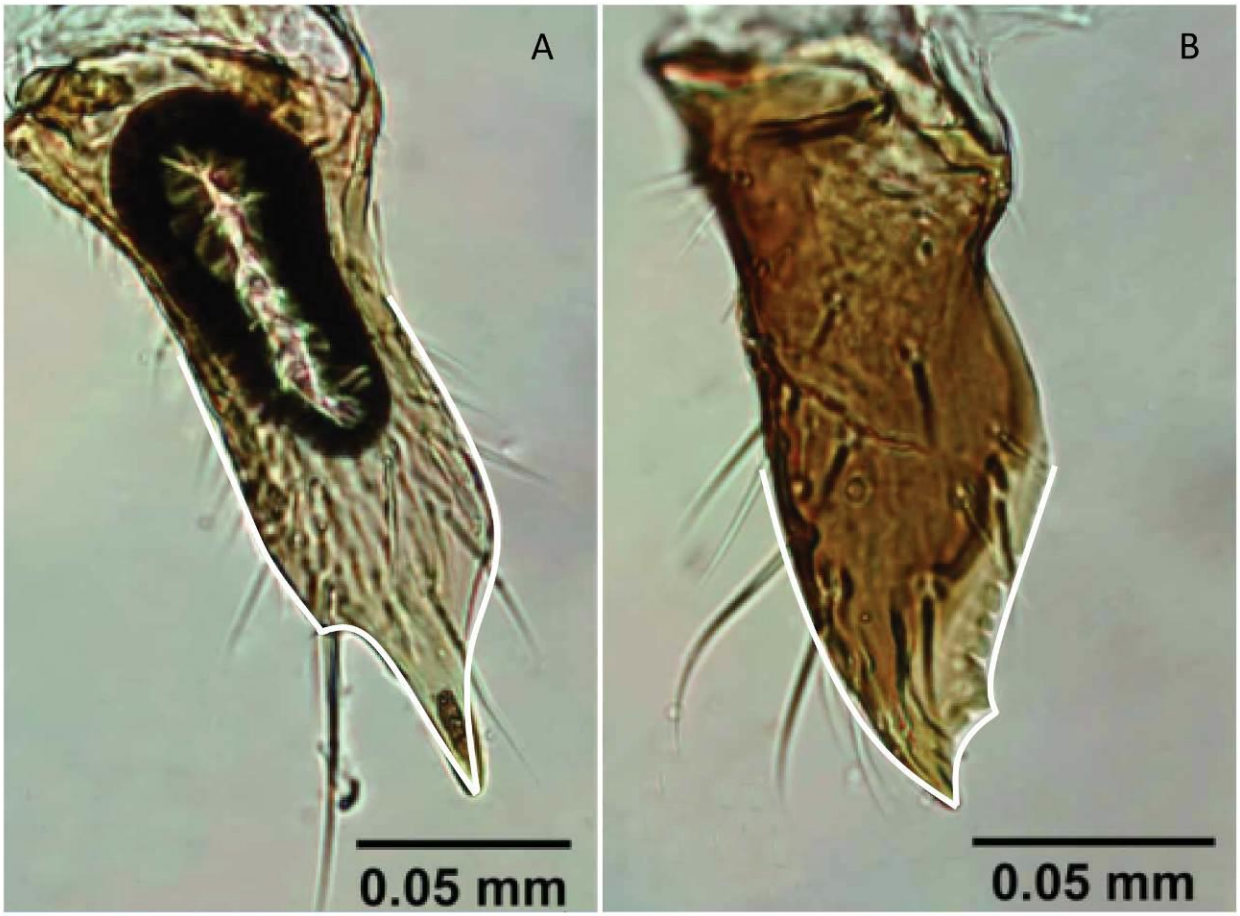


Figure 17. Mandible. **A** *Ravavy miafina* (CASENT0179530). **B** *Ochetellus glaber* (CASENT0179489). Photographer Masashi Yoshimura.

Aptinoma Fisher, 2009

Antenna consisting of 13 segments, pedicel conical, first basal flagellar segment straight. Medial hypostoma present. Mandible triangular, its masticatory margin with serrate denticles. Palpal formula 6,3. Scape shorter than flagellar segments 1+2. Propodeal spiracle oval. Petiole not unusually expanded, narrowly attached to abdominal segment III. Abdominal segment III with a groove or indentation on its anterior face. Pygostyles present. On the forewing, pterostigma well-developed; Costal vein (C) and 1m-cu present. Radial sector (Rs) partially absent between M+Rs and 2r-rs and reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m vestigial. Cu-a located far from the junction between media and cubitus. Media between Rs+M and 2rs-m vestigial. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m absent. Media (M) absent. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Ochetellus Shattuck, 1992

Antenna consisting of 12 segments. Pedicel barrel-shaped. First basal flagellar segment straight. Medial hypostoma present. Mandible triangular, edentate. Palpal formula 6,4. Scape shorter than flagellar segments 1+3. Propodeal spiracle circular. Petiole expanded laterally and widened dorsally, broadly attached to abdominal segment III. Abdominal segment III without a groove. Pygostyles present. On the

forewing, pterostigma well-developed. Costal vein (C) and 1m-cu present. Radial sector (Rs) between M+Rs and 2r-rs complete and reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m vestigial. Cu-a located far from the junction between media and cubitus. Media between Rs+M and 2rs-m completely absent. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m absent. Media (M) absent. M+Cu usually present. 1rs-m+M present. Free section of the cubitus present. Cross-vein cu-a present.

Ravavy Fisher, 2009

Antenna consisting of 12 segments. Pedicel conical. First basal flagellar segment bent laterally. Medial hypostoma absent. Mandible broadly spatulate, edentate. Palpal formula 6,3. Scape shorter than flagellar segments 1+4. Propodeal spiracle circular. Petiole not unusually expanded and narrowly attached to abdominal segment III. Abdominal segment III with a groove or indentation on its anterior face. Pygostyles present. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs and fails to reach costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media before the junction Rs vestigial. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m absent. Media (M) absent. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Tapinoma Foerster, 1850

Antenna consisting of 13 segments. Pedicel conical. First flagellar segment straight. Medial hypostoma present. Mandible triangular, masticatory margin with or without serrate teeth. Palpal formula usually 6,4 but sometimes 6,3. Scape longer than flagellar segments 1+2 but not exceeding the posterior margin of head. Propodeal spiracle circular. Petiole not unusually expanded and narrowly attached to abdominal segment III. Abdominal segment III with a groove or indentation on its anterior face. Pygostyles present. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely absent. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m absent. Media (M) absent. M+Cu vestigial. 1rs-m+M absent. Free section of the cubitus present. Cross-vein cu-a absent.

Technomyrmex Mayr, 1872

Antenna consisting of 13 segments. Pedicel conical. First basal flagellar segment straight. Medial hypostoma present. Mandible triangular, masticatory margin of the mandible wholly covered with serrate denticles. Palpal formula 6,4. Scape shorter than flagellar segments 1+4. Propodeal spiracle circular. Petiole not unusually expanded and narrowly attached to abdominal segment III. Abdominal segment III with a groove or indentation on its anterior face. Pygostyles present. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m at least partially present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-

m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a absent.

DORYLINAE Leach, 1815

Diagnosis of male ants of the subfamily Dorylinae in the Malagasy region

- Antenna filiform, consisting of 10-13 segments.
- Scape not reaching posterior margin of head.
- Scuto-scutellar suture usually longitudinally sculptured.
- Petiole attached to abdominal segment III ventrally, dorsal constriction between the two segments distinct and deep.
- Abdominal segment II much smaller than segment III in lateral view.
- Two distinct, long, narrow spines or lobes present on apical portion of abdominal sternum IX.
- Pygostyles absent.
- Protibia with one spur.
- Girdling constriction between pre- and postsclerites of abdominal segments V and VI absent.

Remarks. Our key includes eight Dorylinae genera recorded from the Malagasy region. Key modified from Borowiec (2016). It is important to note that while the males of Chrysapace are currently unknown in Malagasy region, they have been included in this key based on examination of African specimens. This decision was taken to ensure a global approach to the classification and identification of Dorylinae ants in the Malagasy region.

Male−based key to genera of the subfamily Dorylinae

1 Antenna with 11 segments ……*Ooceraea*

− Antenna with 12 to13 segments ……2

2 Maxillary palps very long and reaching occipital foramen, 6-segmented and visible in mounted specimens (Fig. 18A) ……*Tanipone*

− Maxillary palps short never reaching occipital foramen, usually not visible without dissection and often with fewer than six segments (Fig. 18B) ……3

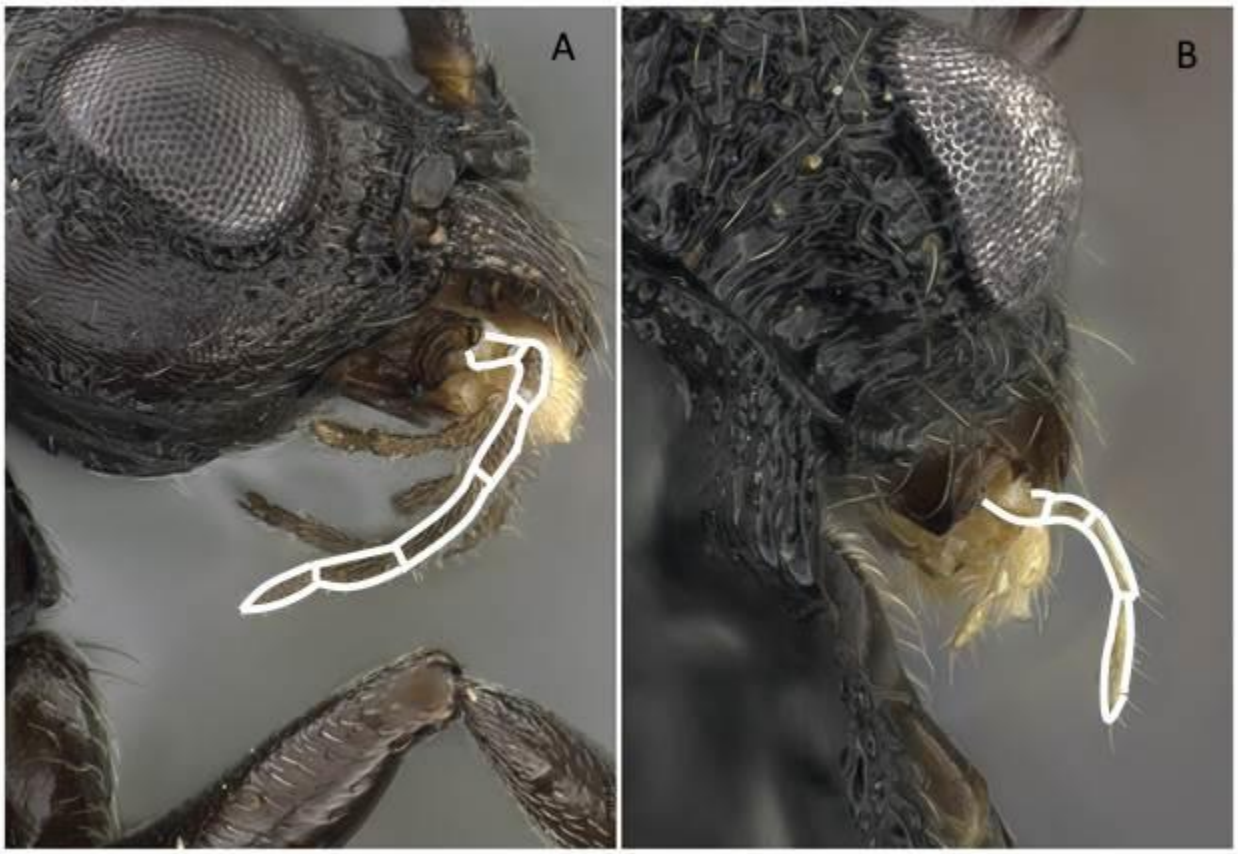


Figure 18. Maxillary palps. **A** *Tanipone zona* (CASENT0168822) **B** *Lividopone* mg10 (CASENT0027622). Photographer Michele Esposito.

3 Cross vein 2rs-m present, partial or complete in forewing (Fig. 19A). Prora forming a V-shaped protrusion ……*Chrysapace*

– Cross vein 2rs-m absent or at most stub-like in forewing (Fig. 19B). Prora forming a simple U-shaped margin or U-shaped protrusion ……4

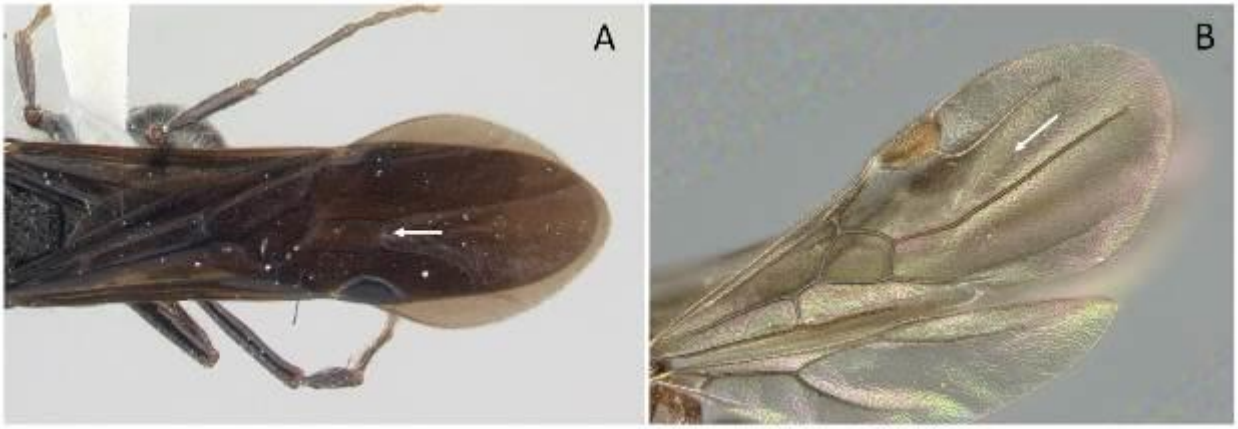


Figure 19. Forewing showing the cross vein 2rs-m. **A** *Chrysapace sauteri* (CASENT0179567) **B** *Eburopone* dr03 (CASENT0138666). Photographer Erin Prado (19A) Michele Esposito (19B).

4 Antenna with 12 segments. Mesotibiae without spurs (Fig. 20A) ……*Simopone*

– Antenna with 13 segments. Mesotibiae with a single spur, which may be simple and inconspicuous (Fig. 20B) ……5

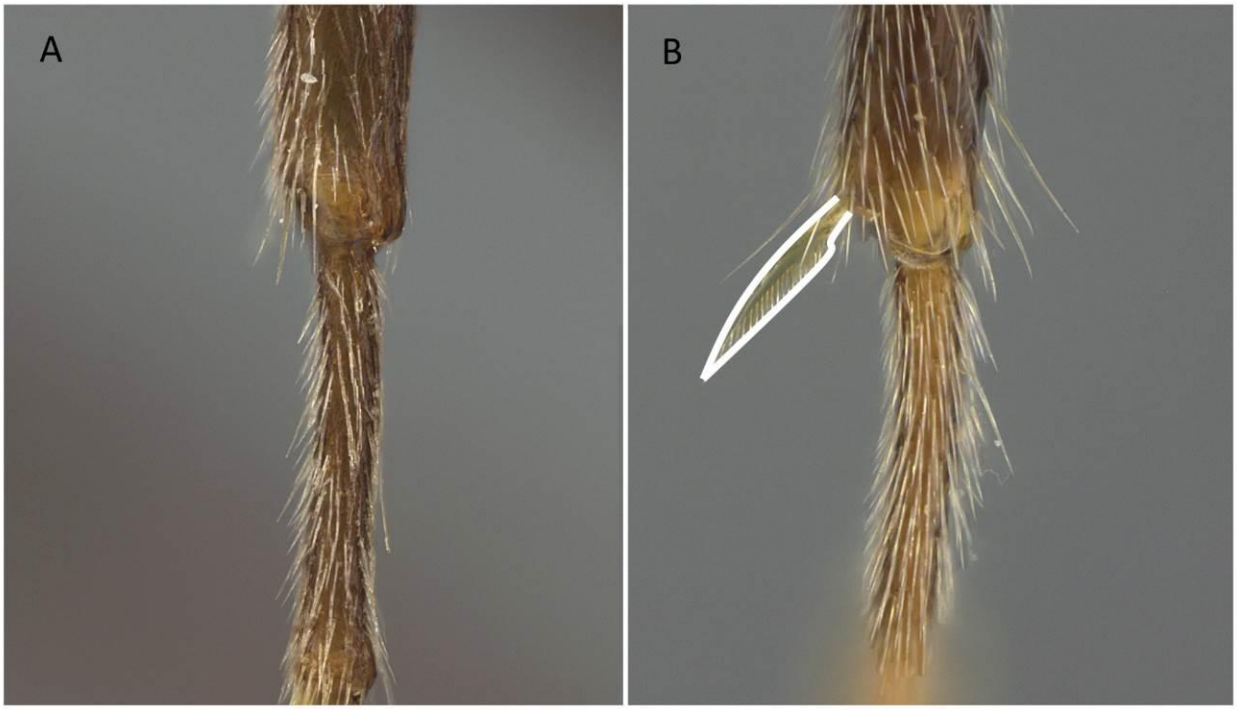


Figure 20. Tibial spurs on the middle leg. **A** *Simopone silens* (CASENT0740895) **B** *Lividopone* mg10 (CASENT0496142). Photographer Michele Esposito.

5 Costal vein (C) present in forewing (Fig. 21A) ……6

– Costal vein (C) absent in forewing (Fig. 21B) ……7

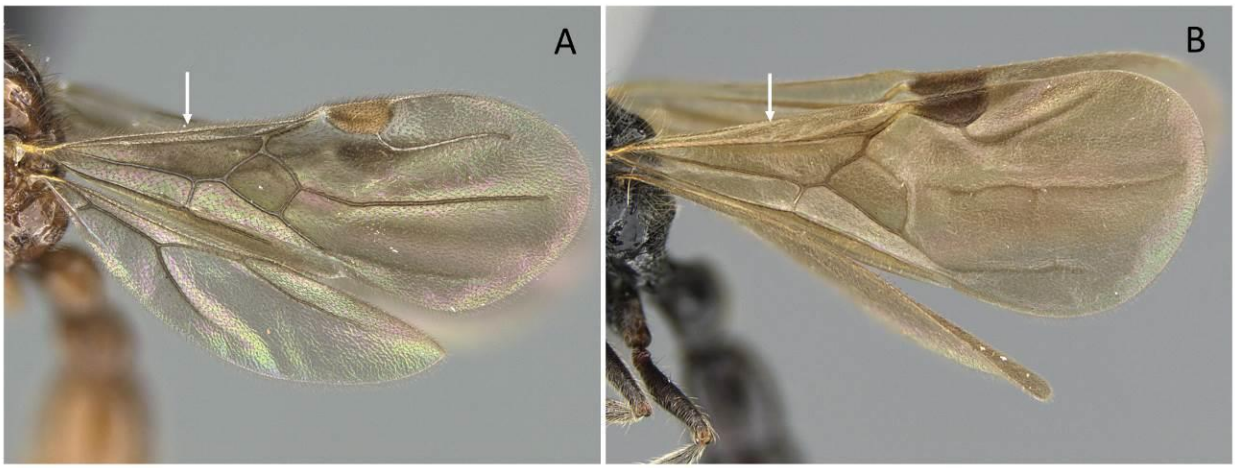


Figure 21. Forewing in lateral view showing the costal vein (C). **A** *Eburopone* dr03 (CASENT0138666) **B** *Lioponera* mg06 (CASENT0138558). Photographer Michele Esposito.

6 Helcium circumference large and in profile the dorsal surface of the helicium arises from immediately below the anterior dorsal angle of abdominal segment III (Fig. 22A). On forewing, radius (R) past pterostigma absent ……*Lividopone*

– Helcium circumference small and in profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III (Fig. 22B). On forewing, radius (R) past pterostigma present ……*Eburopone*

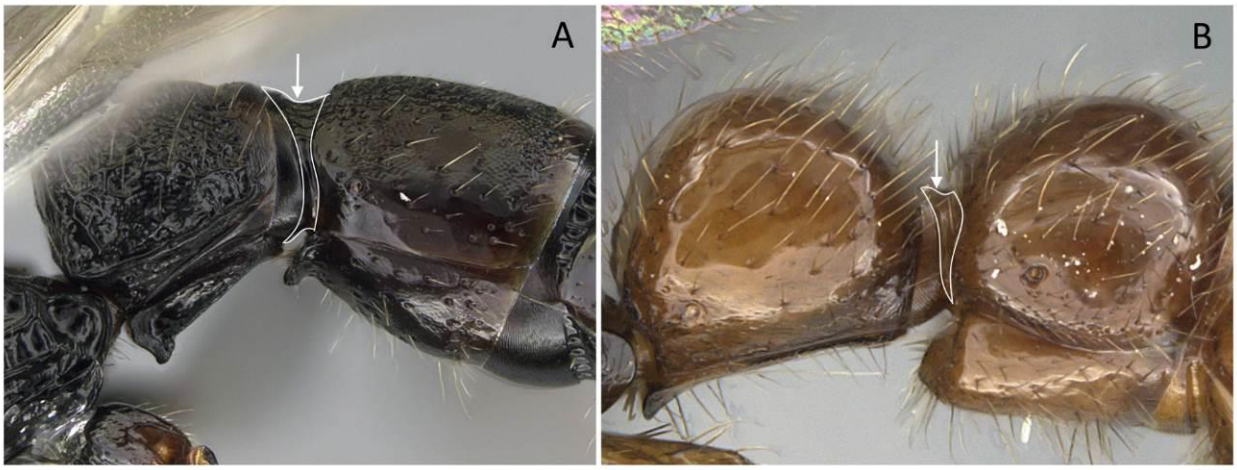


Figure 22. Abdominal segment II and III in lateral view showing the helcium circumference. **A** *Lividopone* dr02 (CASENT0135633) **B** *Eburopone* dr03 (CASENT0138666). Photographer Michele Esposito.

7 On forewing, radial sector partially absent between M+Rs and 2r-rs and not reaching costal margin; radius (R) absent on the costal margin (Fig. 23A). Parafrontal ridges absent ……*Lioponera*

– On forewing, radial sector complete and not reaching costal margin; radius (R) absent on the costal margin (Fig. 23B). Parafrontal ridges present ……*Parasyscia*

Figure 23. Forewing showing the Rs vein. **A** *Lioponera* dr02 (CASENT0144823) **B** *Parasyscia imerinensis* (CASENT0117837). Photographer Michele Esposito.

Chrysapace Crawley, 1924

Antenna consisting of 13 segments. Clypeus without cuticular apron. Parafrontal ridges present. Torulo-posttorular complex vertical. Maxillary palps unknown. Labial palps unknown. Mandibles triangular, masticatory margin edentate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen unknown. Pronotal flange separated from collar by distinct ridge. Notauli present. Transverse groove dividing mesopleuron present. Propodeal declivity with distinct dorsal edge or margin. Metapleural gland opening present. Propodeal spiracle present. Petiole anterodorsally marginate, dorsolaterally immarginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora forming a V-shaped protrusion. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with two pectinate spurs. Metatibia with two pectinate spurs. Metatibial gland absent. Hind pretarsal claws with a tooth. On the forewing, pterostigma broad. Costal vein (C) present. Radius (R) present. Radial sector (Rs) fully present between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs present and connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Media (M) present, reaches wing margin. Cross-vein 1m-cu present. Cross-vein cu-a located far from junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R present. Rs present, not reaching wing margin. Cross-vein 1rs-m fused with M. Vein M+Cu present. Abscissa M present. Cross-vein cu-a present. Free section of the cubitus present.

Eburopone Borowiec, 2016

Antenna consisting of 13 segments. Clypeus with or without cuticular apron. Parafrontal ridges absent. Torulo-posttorular complex vertical. Maxillary palps 3- or 4-segmented. Labial palps 2- or 3-segmented. Mandibles triangular. Masticatory margin with teeth or falcate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally absent or present. Pronotal flange not separated from collar by distinct ridge. Notauli present at least anteriorly, very rarely absent. Transverse groove dividing mesopleuron absent or present. Propodeal declivity reduced, without distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally immarginate or marginate, dorsolaterally immarginate, and laterally above spiracle immarginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora simple, not delimited by carina. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with single pectinate spur. Metatibia with single pectinate spur. Metatibial gland present as oval patch of whitish cuticle. Hind pretarsal claws simple. On the forewing, pterostigma broad. Costal vein (C) present. Radius (R) present. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs present, forming base of ‘free stigmal vein. Cross-vein 2rs-m absent. Media (M) reaches wing margin or not, rarely entirely absent. Cross-vein 1m-cu present or rarely absent. Cross-vein cu-a located far from junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) present, extending past Sc+R but not reaching distal wing margin. Vein Sc+R absent or present. Rs absent or present, not reaching wing margin. Cross-vein 1rs-m fused with M or absent. Vein M+Cu absent or present. Abscissa M absent. Cross-vein cu-a absent or present. Free section of the cubitus absent or present.

Lioponera Mayr, 1879

Antenna consisting of 13 segments. Clypeus with cuticular apron. Parafrontal ridges absent. Torulo-posttorular complex vertical. Maxillary palps 3-segmented. Labial palps 2 segmented. Mandibles triangular. Masticatory margin edentate. Ventrolateral margins of head with or without cuticular ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally absent. Pronotal flange not separated from collar by distinct ridge. Notauli absent or present. Transverse groove dividing mesopleuron present. Propodeal declivity with distinct dorsal edge or margin. Metapleural gland opening present. Propodeal spiracle present. Petiole anterodorsally immarginate or marginate, dorsolaterally marginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora forming a simple U-shaped margin or U-shaped protrusion. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with single pectinate spur. Metatibia with single pectinate spur. Metatibial gland absent. Hind pretarsal claws simple. On the forewing, pterostigma broad. Costal vein (C) absent. Radius (R) absent. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs most often present and forming base of ‘free stigmal vein. Cross-vein 2rs-m absent. Media (M) fails to reach wing margin. Cross-vein 1m-cu present or more rarely absent. Cross-vein cu-a located close to junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R present. Rs absent or present, not reaching wing margin. Cross-vein 1rs-m absent or present, about as long as M. Vein M+Cu absent or present. Abscissa M absent. Cross-vein cu-a absent or present. Free section of the cubitus absent or present.

Lividopone Bolton and Fisher, 2016

Antenna consisting of 13 segments. Clypeus with cuticular apron. Parafrontal ridges present. Torulo-posttorular complex vertical. Maxillary palps unknown. Labial palps unknown. Mandibles triangular. Masticatory margin edentate. Ventrolateral margins of head with cuticular ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen unknown. Pronotal flange separated from collar by distinct ridge. Notauli present. Transverse groove dividing mesopleuron present. Propodeal declivity with distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally marginate, dorsolaterally immarginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises from immediadiately below the anterior dorsal angle of abdominal segment III Prora forming a U-shaped protrusion. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with single pectinate spur. Metatibia with single pectinate spur. Metatibial gland absent. Hind pretarsal claws simple. On the forewing, pterostigma broad. Costal vein (C) absent. Radius (R) absent. Radial sector (Rs) fully present between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs absent or present, forming base of ‘free stigmal vein. Cross-vein 2rs-m absent. Media (M) absent or a stub. Cross-vein 1m-cu absent or present. Cross-vein cu-a located far from junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R absent. Rs absent or stub present. Cross-vein 1rs-m absent or present, about as long as M. Vein M+Cu absent or present. Abscissa M absent or present. Cross-vein cu-a absent. Free section of the cubitus absent or present.

Ooceraea Roger, 1862

Antenna consisting of 11–12 segments. Clypeus with cuticular apron. Parafrontal ridges absent. Torulo-posttorular complex vertical. Maxillary palps 5-segmented. Labial palps 3-segmented. Mandibles

triangular. Masticatory margin edentate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally absent. Pronotal flange not separated from collar by distinct ridge, occasionally ridge marked on sides. Notauli present. Transverse groove dividing mesopleuron present. Propodeal declivity reduced, with or without distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally immarginate, dorsolaterally immarginate, and laterally above spiracle marginate, inconspicuously in small species. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III Prora forming a simple U-shaped margin or a U-shaped margin with median ridge. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with single pectinate spur. Metatibia with single pectinate spur. Metatibial gland present as oval patch of whitish cuticle. Hind pretarsal claws simple. On the forewing, pterostigma broad. Costal vein (C) present or absent. Radius (R) absent. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs present, forming base of ‘free stigma vein. Cross-vein 2rs-m absent. Media (M) fails to reach wing margin. Cross-vein 1m-cu absent or present. Cross-vein cu-a located far from junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent or present, extending past Sc+R but not reaching distal wing margin. Vein Sc+R absent, Vein Sc+R present. Rs absent or present, not reaching wing margin. Cross-vein 1rs-m absent. Vein M+Cu absent or present. Abscissa M absent. Cross-vein cu-a absent or present. Free section of the cubitus absent.

Parasyscia Emery, 1882

Antenna consisting of 13 segments. Clypeus with cuticular apron. Parafrontal ridges present. Torulo-posttorular complex vertical. Maxillary palps 2-segmented. Labial palps 2-segmented. Mandibles triangular. Masticatory margin edentate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally absent. Pronotal flange separated from collar by distinct ridge mostly on sides or not separated. Notauli absent or present. Transverse groove dividing mesopleuron present. Propodeal declivity reduced, with or without distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally immarginate or marginate, dorsolaterally immarginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora forming a U-shaped margin with median ridge. Spiracle openings of abdominal segments IV–VI circular. Mesotibia with single pectinate spur. Metatibia with single pectinate spur. Metatibial gland absent. Hind pretarsal claws simple. On the forewing, pterostigma broad. Costal vein (C) absent. Radius (R) absent. Radial sector (Rs) partially absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs present and connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Media (M) fails to reach wing margin. Cross-vein 1m-cu absent or present. Cross-vein cu-a located close to junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R absent. Rs present, not reaching wing margin. Cross-vein 1rs-m present, about as long as M. Vein M+Cu present. Abscissa M absent or present. Cross-vein cu-a present. Free section of the cubitus present.

Simopone Forel, 1891

Antenna consisting of 12 segments. Clypeus without cuticular apron. Parafrontal ridges present. Torulo-posttorular complex horizontal. Maxillary palps 5- or 6-segmented. Labial palps 3- or 4-segmented. Mandibles triangular. Masticatory margin edentate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally absent. Pronotal flange separated from collar by distinct ridge. Notauli present. Transverse groove dividing mesopleuron absent. Propodeal declivity with distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally marginate, dorsolaterally immarginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora forming a U-shaped protrusion. Spiracle openings of abdominal segments IV–VI circular. Mesotibia without spurs. Metatibia with single pectinate spur. Metatibial gland absent. Hind pretarsal claws with a tooth. On the forewing, pterostigma broad. Costal vein (C) absent. Radius (R) absent. Radial sector (Rs) fully present between M+Rs and 2r-rs. Radial sector (Rs) fails to reach costal margin. Cross-vein 2r-rs present and connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Media (M) reaches to wing margin. Cross-vein 1m-cu present or absent. Cross-vein cu-a located far from junction between media and cubitus. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R present. Rs absent. Cross-vein 1rs-m present, about as long as M, never tubular. Vein M+Cu present. Abscissa M present. Cross-vein cu-a present. Free section of the cubitus present.

Tanipone Bolton and Fisher, 2012

Antenna consisting of 13 segments. Clypeus without cuticular apron. Parafrontal ridges absent. Torulo-posttorular complex vertical. Maxillary palps 6-segmented. Labial palps 4-segmented. Mandibles triangular. Masticatory margin edentate. Ventrolateral margins of head without lamella or ridge extending towards mandibles and beyond carina surrounding occipital foramen. Carina surrounding occipital foramen ventrally present. Pronotal flange separated from collar by distinct ridge or not. Notauli absent. Transverse groove dividing mesopleuron present. Propodeal declivity with distinct dorsal edge or margin. Metapleural gland opening absent. Propodeal spiracle present. Petiole anterodorsally immarginate, dorsolaterally immarginate, and laterally above spiracle marginate. In profile the dorsal surface of the helicium arises some distance below the anterodorsal angle of abdominal segment III. Prora forming a simple U-shaped margin or U-shaped protrusion. Spiracle openings of abdominal segments IV–VI circular. Mesotibia without spurs. Metatibia with single pectinate spur. Metatibial gland absent. Hind pretarsal claws with a tooth. On the forewing, pterostigma broad. Costal vein (C) absent. Radius (R) absent. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach to costal margin. Cross-vein 2r-rs absent or present and forming base of ‘free stigmal vein. Cross-vein 2rs-m absent. Media (M) absent or present, reaches to wing margin. Cross-vein 1m-cu absent or present. Cross-vein cu-a located far from junction media. On the hindwing, vein (C) absent. Vein (R) absent. Vein Sc+R present. Rs absent or present, reaching wing margin. Cross-vein 1rs-m absent or present, about as long as M. Vein M+Cu present. Abscissa M absent. Crossvein cu-a absent or present. Free section of the cubitus present.

FORMICINAE Latreille, 1809

Diagnosis of male ants of the subfamily Formicinae in the Malagasy region

- Antenna filiform, consisting of 10–13 segments.
- Scape reaching posterior margin of head.
- Mesopleural oblique furrow reaching pronotum far away from pronotal posteroventral margin.
- Scuto-scutellar suture simple.
- Petiole attached to abdominal segment III ventrally, so that dorsal constriction between the two segments is distinct and deep.
- Abdominal segment II much smaller than segment III in lateral view.
- Apical portion of abdominal sternum IX not bi-spinose.
- Pygostyles well developed.
- Metatibia with one spur.

Remarks. Our article provides a guide highlighting nine genera of male formicinae ants found in the Malagasy region. Moreover, we have recently recorded the presence of *Brachymyrmex aphidicola* in Reunion.

Male−based key to genera of the subfamily Formicinae

1 Antenna with 10 segments, maxillary palp formula always 5,3 (Fig. 24A) ……*Brachymyrmex*
– Antenna with 12 to13 segments, maxillary palp formula 6,4 (Fig. 24B) ……2

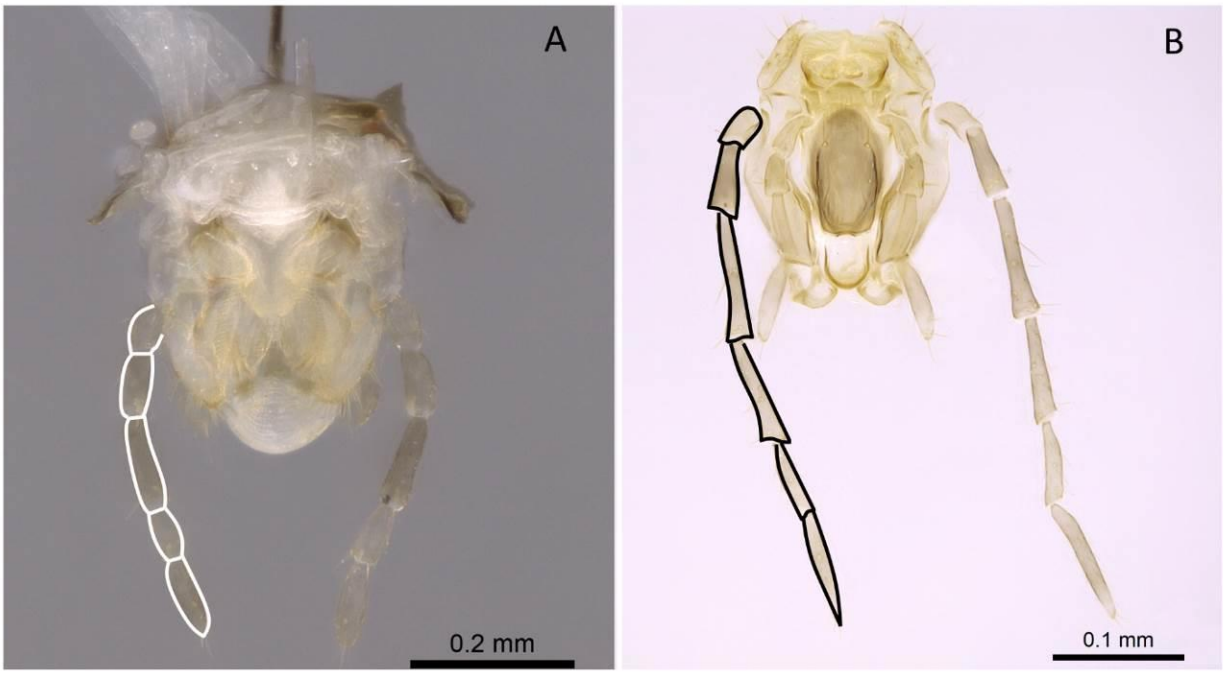


Figure 24. Maxillary palp **A** *Brachymyrmex cordemoyi* (CASENT0740909) **B** *Tapinolepis* mg01(CASENT0763590). Photographer Veronica M. Sinotte.

2 Antenna consists of 12 segments ……3
– Antenna consists of 13 segments ……6

3 Masticatory margin of mandible with 8–9 denticles (Fig. 25A) ……*Anoplolepis*
– Masticatory margin of mandible with < 5 denticles (Fig. 25B) ……4

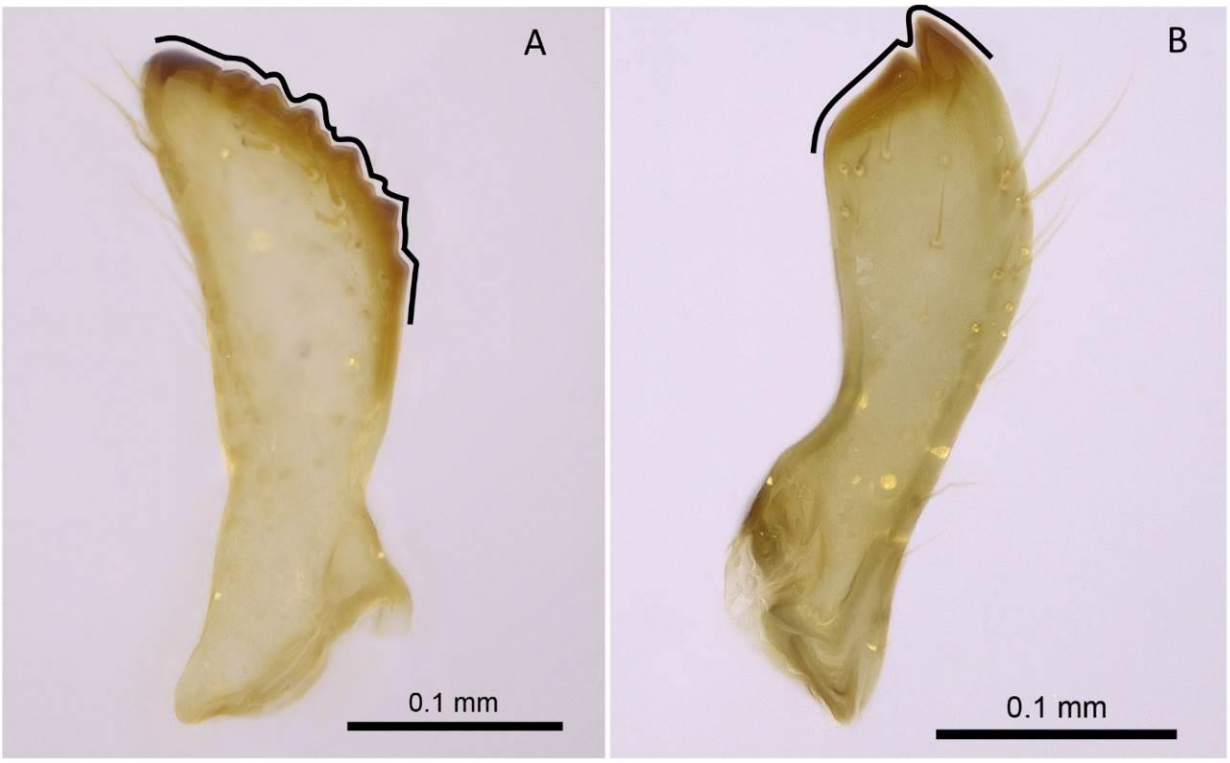


Figure 25. Mandible, showing the number of teeth on the masticatory margin of mandible **A** *Anoplolepis gracilipes* (CASENT0158950) **B** *Nylanderia amblyops* (CASENT0740913). Photographer Veronica M. Sinotte.

4 Flagellum longer than mesosoma length (Fig. 26A)……*Tapinolepis*

– Flagellum shorter than mesosoma length (Fig. 26B)……5

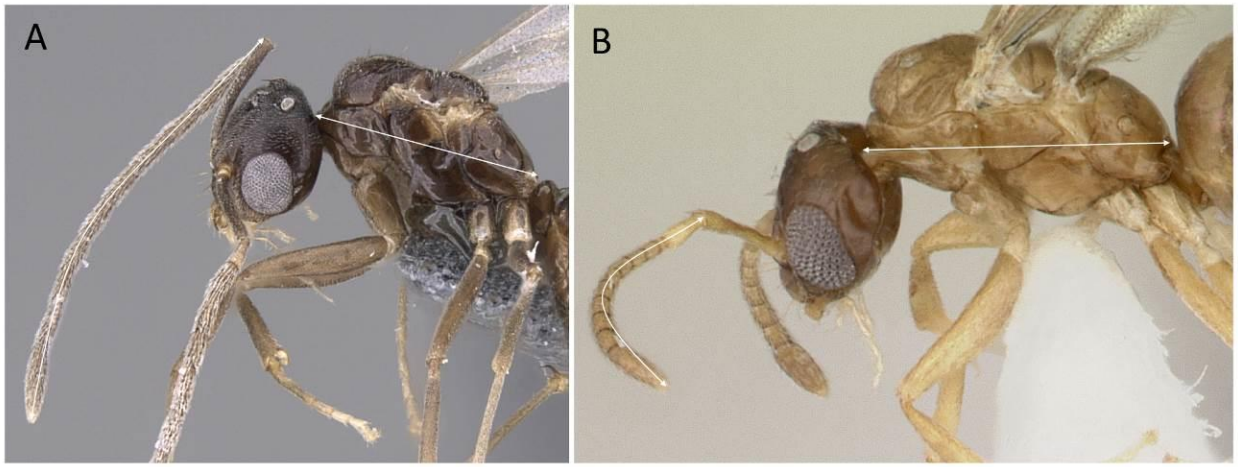


Figure 26. Body in lateral view, showing the comparaison between flagellum and mesosoma length. **A** *Tapinolepis* mg01 (CASENT0763590) **B** *Plagiolepis* mg02 (CASENT0179486). Photographers Veronica M. Sinotte (26A), Erin Prado (26B).

5 Pedicel length only slightly greater than that of antennomere 3 in medial view. Malar space well developed, about as wide as scape width (Fig. 27A). Maxillary palp longer than maximum eye length ……*Lepisiota*

– Pedicel length about three times that of antennomere 3 in medial view. Malar space extremely reduced, much narrower than scape width (Fig. 27B). Maxillary palp shorter than maximum eye length ……*Plagiolepis*

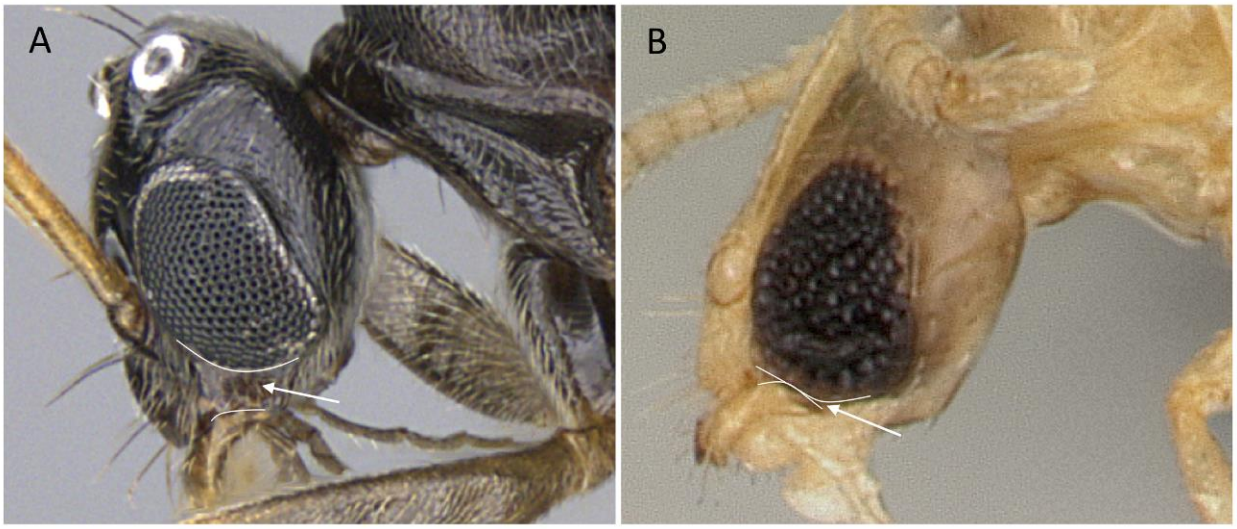


Figure 27. Head in lateral view, showing the size of the malar space **A** *Lepisiota capensis* (CASENT0861517) **B** *Plagiolepis alluaudi* (CASENT0495472). Photographers Michele Esposito (27A), Erin Prado (27B).

6 Paired coarse setae absent from frons (Fig. 28A). Aroliae hypertrophied, conspicuous. Flagellum shorter than mesosomal length ……*Camponotus*

– Paired coarse setae present on frons (Fig. 28B). Aroliae small, inconspicuous. Flagellum longer than mesosoma length ……7

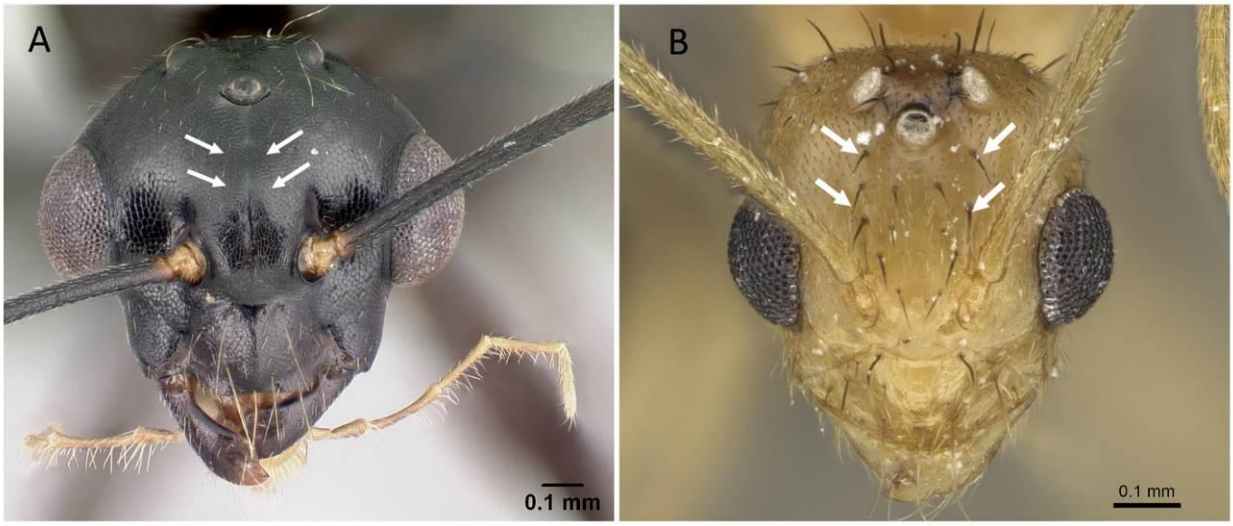


Figure 28. Head in full-face view, showing the setae disposition of the frons **A** *Camponotus alamaina* (CASENT0481800) **B** *Nylanderia amblyops* (CASENT0066704). Photographers Erin Prado (28A), Michele Esposito (28B).

7 Scape with standing macrosetae (Fig. 29A) ……8

– Scape lacking standing macrosetae (Fig. 29B) ……9

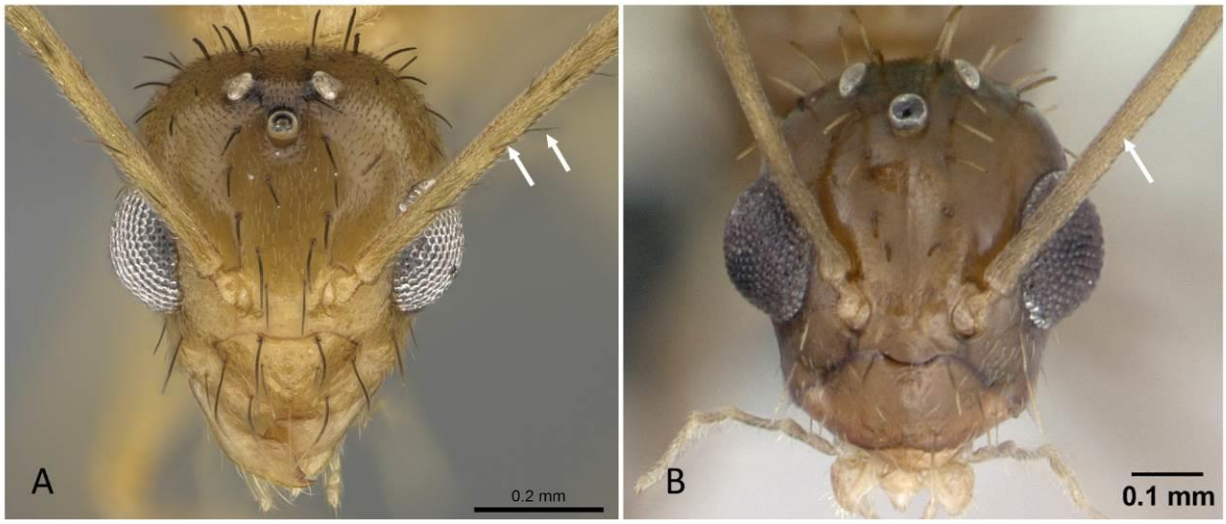


Figure 29. In full-face view, scape **A** *Nylanderia* jsl-galo (CASENT0370667) **B** *Paratrechina longicornis* (CASENT0137341). Photographers Michele Esposito (29A), April Nobile (29B).

8 Pedicel distinctly longer than first basal funiculus in lateral view (Fig. 30A) ……*Nylanderia*

– Pedicel shorter than or equal to first basal funiculus in lateral view (Fig. 30B) ……*Paratrechina*

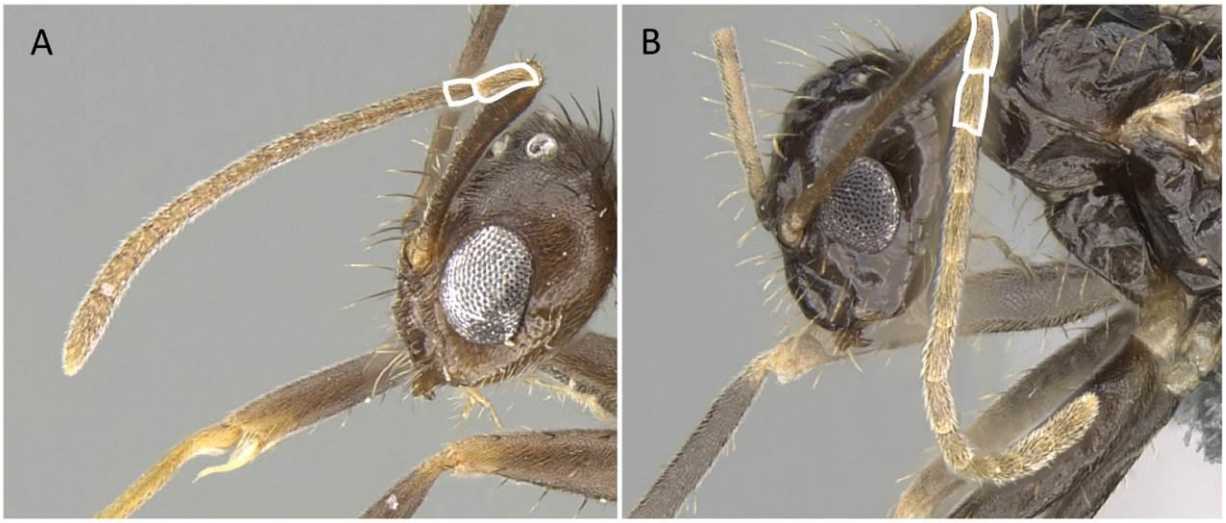


Figure 30. Antennae in lateral view showing the comparaison between the length of the pedicel and first basal funiculus. **A** *Nylanderia bourbonica* (CASENT0160276) **B** *Paratrechina ankarana* (CASENT0701215). Photographer Michele Esposito.

9 Scape slightly shorter than head length (Fig. 31A). Maxillary palp longer than head length ……*Paraparatrechina*

– Scape much longer than head length (Fig. 31B). Maxillary palp about as long as head length ……*Paratrechina longicornis*

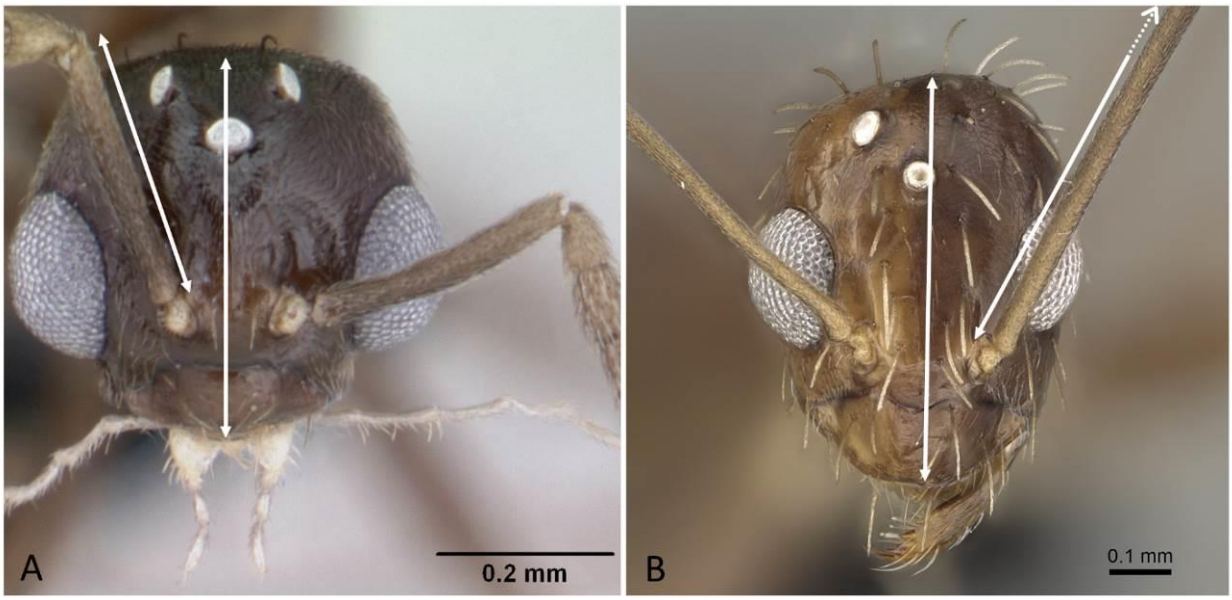


Figure 31. Head in full face view, showing the comparaison of scape and head length. **A** *Paraparatrechina glabra* (CASENT0497708) **B** *Paratrechina longicornis* (CASENT0244951). Photographers April Nobile (31A), Michele Esposito (31B).

Anoplolepis Santschi, 1914

Antenna with 12 segments. Scape distinctly longer than head length. Scape lacking standing setae. Pedicel slightly shorter in length than antennomere 3 in medial view from basal constriction. Flagellum subequal in length to mesosoma. Mandibles well-developed, masticatory margin of mandible with 8–9 denticles. Palpal formula 6,4; maxillary palp exceeding hypostomal margin, but not reaching occipital foramen. Frons lacking paired coarse setae. Malar space well-developed, broader than maximum scape width. Propodeal spiracle slit-shaped. Petiole lacking peduncle, node well-developed. On the forewing, pterostigma reduced in size. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) present. Rs present. 1rs-m absent. Media (M) present. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a absent. Aroliae small, inconspicuous.

Brachymyrmex Mayr, 1868

Antenna with 10 segments. Aroliae small, inconspicuous. Mandibles reduced, spatulate to spiniform. Masticatory margin of mandible uni- to bidentate. Palpal formula 5,3. Maxillary palp about as long as maximum eye diameter. Frons lacking paired coarse setae. Scape shorter than head length. Scape lacking standing macrosetae. Pedicel slightly longer than antennomere 3 in medial view from basal constriction. Flagellum shorter than mesosoma length. Malar space well-developed, about as long as scape width. Propodeal spiracle circular. Petiole lacking peduncle and node, very short anteroposteriorly. On the forewing, pterostigma well-developed. Costal vein (C) absent. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) fails to reach to costal margin. Cross-vein 2r-rs connected with

radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin.

Camponotus Mayr, 1861

Antenna with 13 segments. Aroliae hypertrophied, conspicuous. Mandibles well-developed, lobate. Masticatory margin of mandible with 0–1 denticles. Palpal formula 6,4. Maxillary palp exceeding hypostomal margin, exceeding or occipital foramen or not. Frons lacking paired coarse setae. Scape longer than to subequal with head length. Scape shaft with or without standing setae. Pedicel longer or shorter than antennomere 3 in medial view from basal constriction. Flagellum shorter than mesosomal length. Malar space well developed, much broader than maximum scape width. Propodeal spiracle slit-shaped. Petiole lacking long peduncle, node well developed. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) absent. Rs present. 1rs-m absent. Media (M) present. M+Cu present. 1rs-m+M absent. Free section of the cubitus present. Cross-vein cu-a present.

Lepisiota Santschi, 1926

Lepisiota capensis Mayr, 1862

Antenna with 12 segments. Aroliae small, inconspicuous. Ocelli placed close to occipital margin in front view. Anteromedian margin of clypeus straight. Mandibles well-developed. Masticatory margin of mandible with 4 denticles. Palpal formula 6,4. Maxillary palp about as long as head length. Frons lacking paired coarse setae. Scape slightly longer than head length. Scape lacking standing macrosetae. Pedicel subequal to or longer than antennomere 3 in medial view from basal constriction. Flagellum shorter than mesosoma length. Malar space well developed, about as long as scape width. Propodeal spiracle oval. Petiole lacking peduncle and node, anteroposteriorly short. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media (M) reaches wing margin. On the hindwing, radius (R) absent. Rs present. 1rs-m absent. Media (M) absent. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Lepisiota bipartita Smith, 1861 the species found in Réunion but the males of this species have not yet been collected.

Nylanderia Emery, 1906

Antenna with 13 segments. Aroliae small, inconspicuous. Mandibles well developed. Masticatory margin of mandible with 2 denticles. Palpal formula 6,4. Maxillary palp longer than compound eye diameter and shorter than head length. Frons with paired coarse setae. Scape longer than head length but much shorter than mesosoma length. Scape usually with standing macrosetae. Pedicel distinctly longer than antennomere 3 in medial view from basal constriction. Flagellum longer than mesosoma length. Malar space very broad, about as long as pedicel. Propodeal spiracle circular. Petiole squamiform, posteriorly pedunculate. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Cross-vein 1m-cu

absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. 1rs-m absent. Media (M) present. M+Cu present. 1rs-m+M absent. Free section of the cubitus vestigial. Cross-vein cu-a present.

Paraparatrechina Donithorpe, 1947

Antenna with 13 segments. Aroliae small, inconspicuous. Mandibles well developed, spatulate. Masticatory margin of mandible with single apical tooth. Palpal formula 6,4. Maxillary palp longer than head length. Frons with paired coarse setae. Scape slightly shorter than head length. Scape lacking standing macrosetae. Pedicel shorter than antennomere 3 in medial view from basal constriction. Flagellum longer than mesosoma length. Malar space broader than scape width. Propodeal spiracle circular. Petiole squamiform, posteriorly pedunculate. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) vestigial and fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Paratrechina Motschoulsky, 1863

Paratrechina longicornis Latreille, 1802

Antenna with 13 segments. Aroliae small, inconspicuous. Mandibles well developed, spatulate. Masticatory margin of mandible with single apical tooth. Palpal formula 6,4. Maxillary palp about as long as head length. Frons with paired coarse setae. Scape very long, longer than mesosoma length. Scape lacking standing macrosetae. Pedicel slightly shorter than antennomere 3 in medial view from basal constriction. Flagellum longer than mesosoma length. Malar space very broad, about as long as pedicel. Propodeal spiracle circular. Petiole squamiform, posteriorly pedunculate. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cu-a located far from junction between media and cubitus. Media (M) vestigial and fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Paratrechina ankarana LaPolla & Fisher, 2014

Antenna with 13 segments. Aroliae small, inconspicuous. Mandibles well developed, spatulate. Masticatory margin of mandible with single apical tooth. Palpal formula 6,4. Maxillary palp about as long as head length. Frons with paired coarse setae. Scape very long, longer than mesosoma length. Scape usually with standing macrosetae. Pedicel slightly shorter than antennomere 3 in medial view from basal constriction. Flagellum longer than mesosoma length. Malar space very broad, about as long as pedicel. Propodeal spiracle circular. Petiole squamiform, posteriorly pedunculate. On the forewing, pterostigma

reduced in size. Costal vein (C) absent. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Paratrechina antsingy LaPolla & Fisher, 2014 the male is not known.

Plagiolepis Mayr, 1861

Antenna with 12 segments. Aroliae small, inconspicuous. Mandibles well developed. Masticatory margin of mandible with 2–3 teeth. Palpal formula 6,4. Maxillary palp slightly longer than compound eye. Frons lacking paired coarse setae. Scape slightly longer than head length. Scape lacking standing macrosetae. Pedicel about twice the length of antennomere 3 in medial view from basal constriction. Flagellum shorter than mesosoma length. Malar space reduced, shorter than scape width. Propodeal spiracle circular. Petiole anteroposteriorly short, posteriorly pedunculate. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a vestigial.

Tapinolepis Emery, 1925

Antenna with 12 segments. Aroliae small, inconspicuous. Mandibles well developed. Masticatory margin of mandible with 4 denticles. Palpal formula 6,4. Maxillary palp slightly shorter than head length. Frons lacking paired coarse setae. Scape slightly shorter than head length. Scape lacking standing macrosetae. Pedicel shorter than antennomere 3 in medial view from basal constriction. Flagellum longer than mesosoma. Malar space well developed, about as long as scape width. Propodeal spiracle circular. Petiole squamiform, lacking peduncle and with short node. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media (M) fails to reach wing margin. On the hindwing, radius (R) absent. Rs vestigial. 1rs-m absent. Media (M) absent. M+Cu present. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a present.

MYRMICINAE Lepeletier de Saint-Fargeau, 1835

Diagnosis of male ants of the subfamily Myrmicinae in the Malagasy region

- Antenna filiform, consisting of 11 to 13 segments.
- Petiole attached to abdominal segment III ventrally, so that dorsal constriction between the two segments is distinct and deep.
- Mesopleural oblique furrow reaching pronotum far away from pronotal posteroventral margin.
- Abdominal segment II nearly as large as segment III in lateral view.

873 – Apical portion of abdominal sternum IX not bi-spinose.
874 – Pygostyles well developed.
875 – Front tibial with or without spur.
876 – Metatibia with one spur.

877 Remarks: This key to the Myrmicinae is based specifically on the taxonomic classification of the
878 Myrmicinae tribes of the Malagasy region. Our key includes thirty genera of male myrmicinae recorded
879 from the Malagasy region. Males for Dicroaspis are not yet known from the Malagasy region and the
880 diagnosis is based on males from the Afrotropical region specimens and images.

881 **Male−based key to genera of the subfamily Myrmicinae**
882 1 In profile, occipital carina strongly developed (Fig. 32A); mesoscutellum strongly elevated above
883 metanotum; in dorsal view, scutellum smooth and convex (Fig. 32C); petiole distinctly pedunculate. With
884 the head in full−face view, mandible always triangular ……*Aphaenogaster* (Tribe Stenammini)
885 – In profile, occipital carina not forming a sharp ridge (Fig. 32B); mesoscutellum slightly convex to
886 flat; in dorsal view, scutellum with or without sculptured (Fig. 32D); petiole sessile to shortly
887 pedunculate. With the head in full−face view, the mandible broadly triangular to reduced (spatulate or
888 linear) ……2

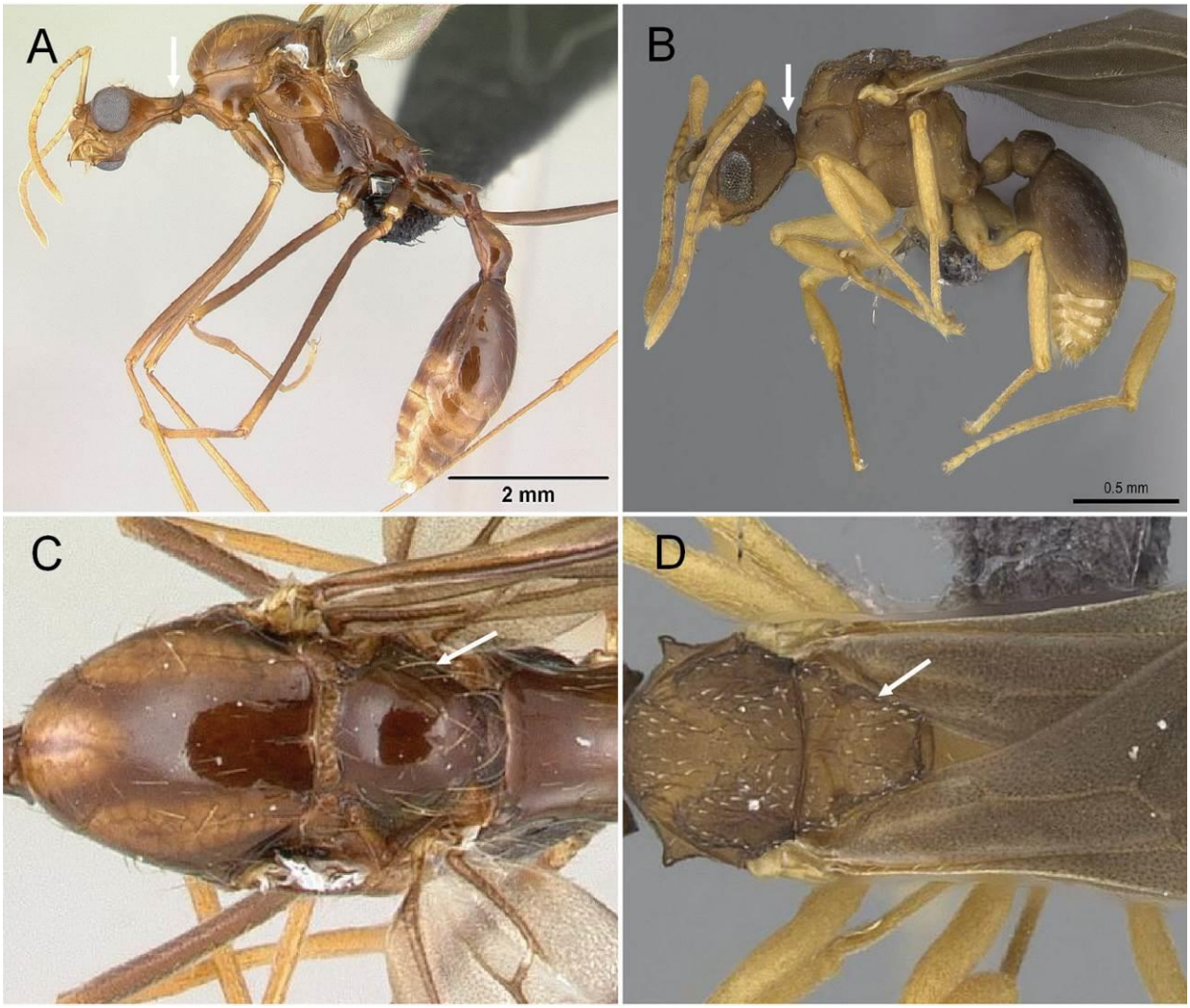


Figure 32. In profile view showing occipital carina **A, C** *Aphaenogaster bressleri* (CASENT0495103). In dorsal view form mesoscutellum **B, D** *Cyphomyrmex minitus* (CASENT0264488). Photographers April Nobile (32A, 32C), Michele Esposito (32B, 32D)

2 In profile, posterodorsal margin of head almost straight from the base of the lateral ocelli to the midpoint of the occipital carina. (Fig. 33A) ……3 (Tribe Attini, part1)

– In profile, posterodorsal margin of head gradually rounded from the base of the lateral ocelli to the midpoint of the occipital margin. (Fig. 33B) ……5 (Tribe Attini, part2)

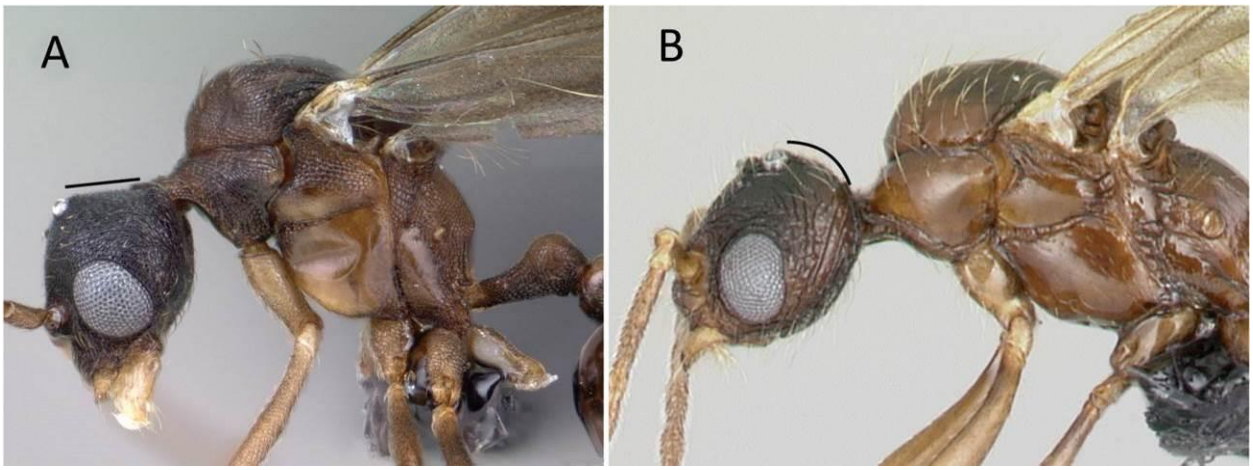


Figure 33. Head in profile view **A** *Strumigenys chilo* (CASENT0145240) **B** *Tetramorium silvicola* (CASENT0494732). Photographers Dimby Raharinjanahary (33A), Erin Prado (33B).

3 Mandible with 3 teeth. Scape long, distinctly exceeding posterior margin of head in full-face view (Fig. 34A) ……*Cyphomyrmex*

– Mandible edentate. Scape not reaching posterior margin of head in full-face view (Fig. 34B) ……4

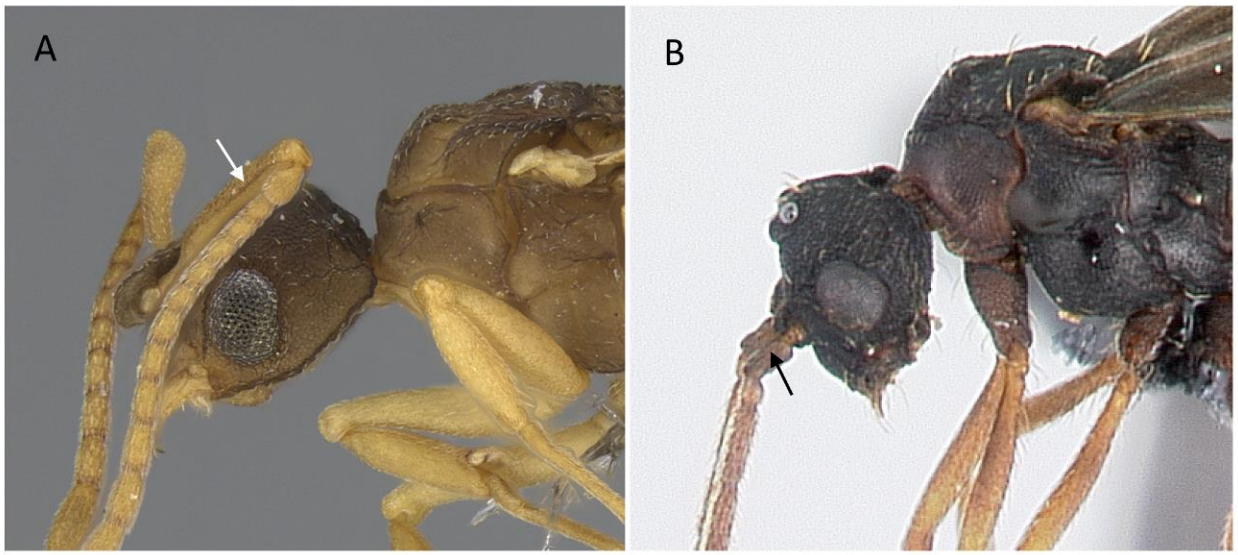


Figure 34. Scape length in profile view **A** *Cyphomyrmex minutus* (CASENT0264488) **B** *Eurhopalothrix* km01 (CASENT0146071). Photographers Michele Esposito (34A), Erin Prado (34B).

4 Radial sector on the forewing is curved toward the costal margin and reaches the costal margin (Fig. 35A) ……*Eurhopalothrix*

– Radial sector on the forewing is downcurved and never reaches the costal margin (Fig. 35A) ……*Strumigenys*

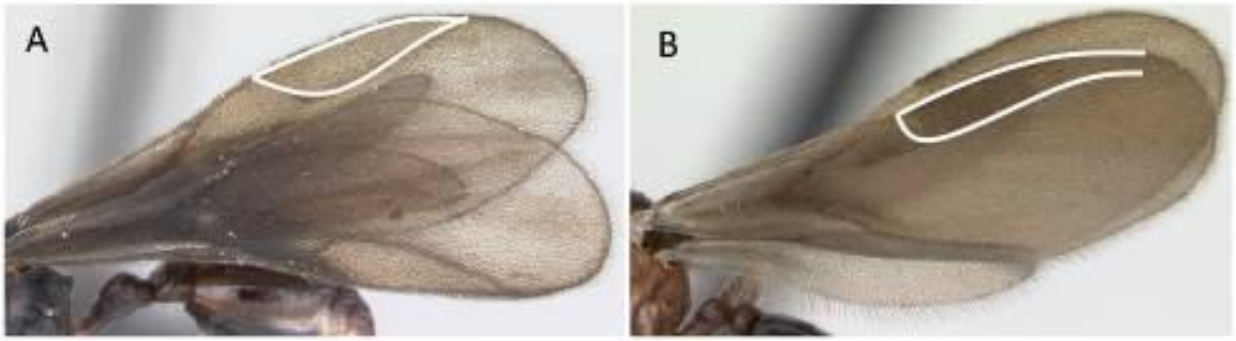


Figure 35. Forewing in lateral view showing the radial sector **A** *Eurhopalothrix* km01 (CASENT0146071) **B** *Strumigenys dicomas* (CASENT0135118). Photographer Erin Prado

5 Cross vein 2rs−m present on forewing (Fig. 36A) ……*Pheidole*

– Cross vein 2rs−m absent on forewing (Fig. 36B) ……6

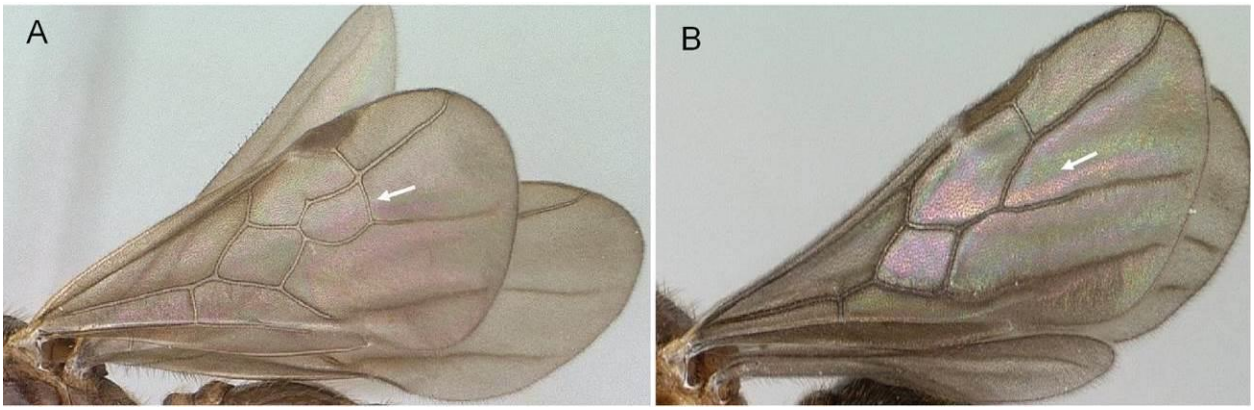


Figure 36. Forewing in lateral view showing the cross vein 2rs-m. **A** *Pheidole* mgs006 (CASENT0135889) **B** *Carebara* drm03 (CASENT0143975). Photographer Dimby Raharinjanahary.

6 Mandible strongly developed; masticatory margin with 7 large teeth which increase in size from apex to base; between each tooth is a minute denticle (Fig. 37A) ……*Pilotrochus*

– Mandible normal to reduced; masticatory margin edentate to multidentate with many acute teeth which decrease in size from apex to base; without denticle between the teeth (Fig. 37B) ……7

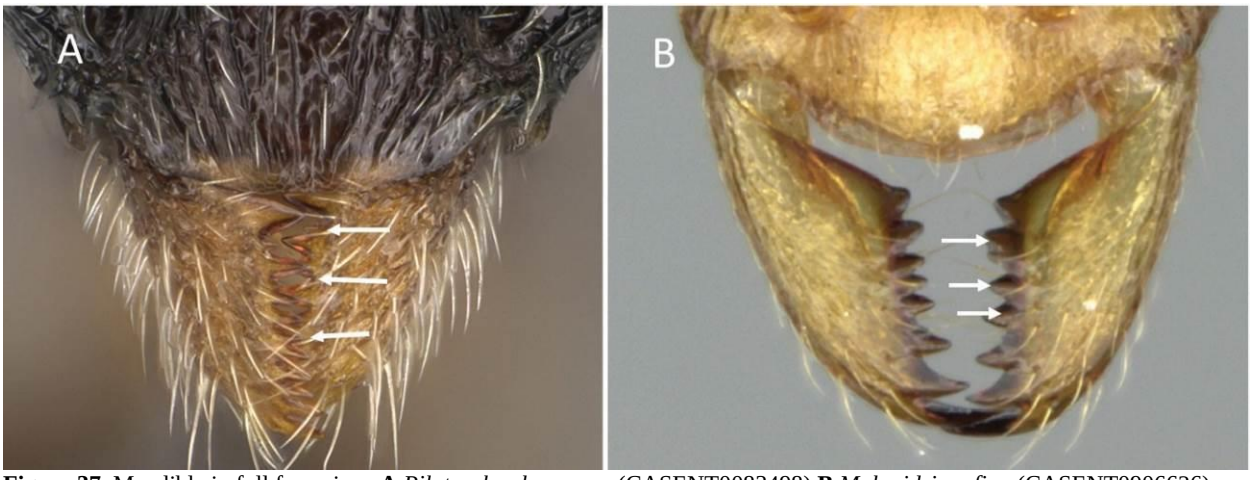


Figure 37. Mandible in full face view. **A** *Pilotrochus besmerus* (CASENT0083498) **B** *Malagidris sofina* (CASENT0906626). Photographers Michele Esposito (37A), Estella Ortega (37B).

7 In lateral view, anterior margin of promesonotum forms a continuous outline, pronotal furrow not breaking outline (Fig. 38A) ……8 (Tribe Solenopsidini)

– In lateral view, anterior margin of promesonotum interrupted by an impressed pronotal furrow that breaks the outline (Fig. 38B) or mesonotum strongly produced anterodorsally (Fig. 38C) ……12 (Tribe Crematogastrinii)

Figure 38. Head and mesosoma in profile view. **A** *Monomorium termitobium* (CASENT0460162) **B** *Meranoplus mayri* (CASENT0062813) C *Crematogaster hazolava* (CASENT0317643). Photographers Dimby Raharinjanahary (38A), April Nobile (38B), Estella Ortega (38C).

8 Antennae 12-segmented ……*Solenopsis*

– Antennae 13-segmented ……9

9 In full-face view, pedicel subglobular; posteromedian margin of clypeus effaced so that clypeus and frons form a continuous surface (Fig. 39A); mandible triangular with distinct basal angle, masticatory margin with exactly 4 teeth ……*Erromyrma*

– In full-face view, pedicel not globular, more cylindrical; posteromedian margin of clypeus visible (Fig. 39B); mandible spatulate to triangular, but its basal angle always indistinct, masticatory margin with 1 to 4 teeth ……10

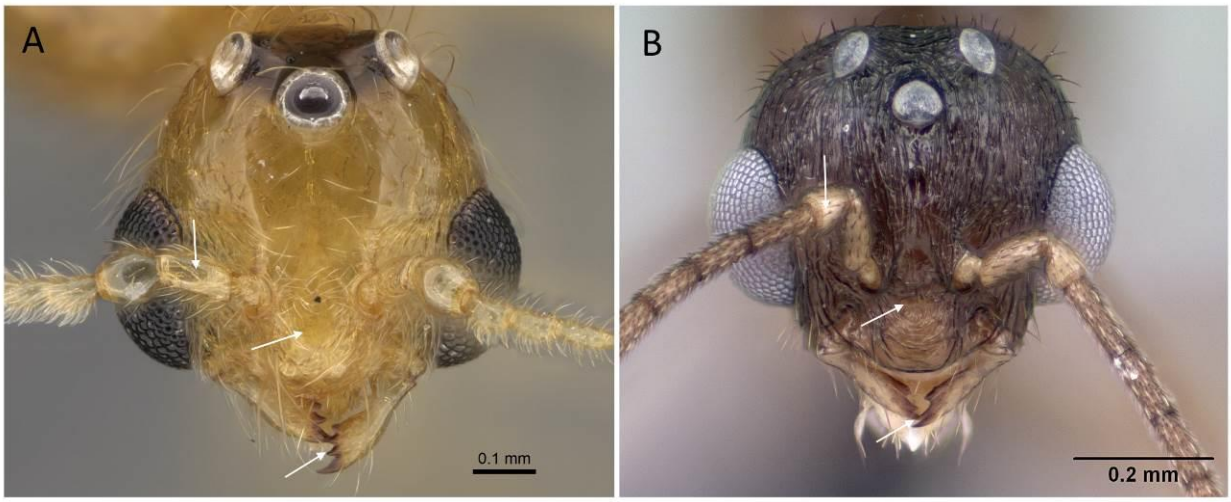


Figure 39. Head in full-face view showing the pedicel, mandible, postero-median margin of clypeus. **A** *Erromyrma latinodis* (CASENT0788835) **B** *Syllophopsis modesta* (CASENT0143818). Photographers Michele Esposito (39A), Dimby Raharinjanahary (39B).

10 Forewing with five closed cells, 1m–cu cross-vein present (Fig. 40A). In profile, petiolar peduncle longer than postpetiolar length (Fig. 40C) ……*Syllophopsis*

– Forewing with four closed cells, 1m–cu cross-vein absent (Fig. 40B). In profile, petiolar peduncle absent or shorter than postpetiolar length (Fig. 40D) ……11

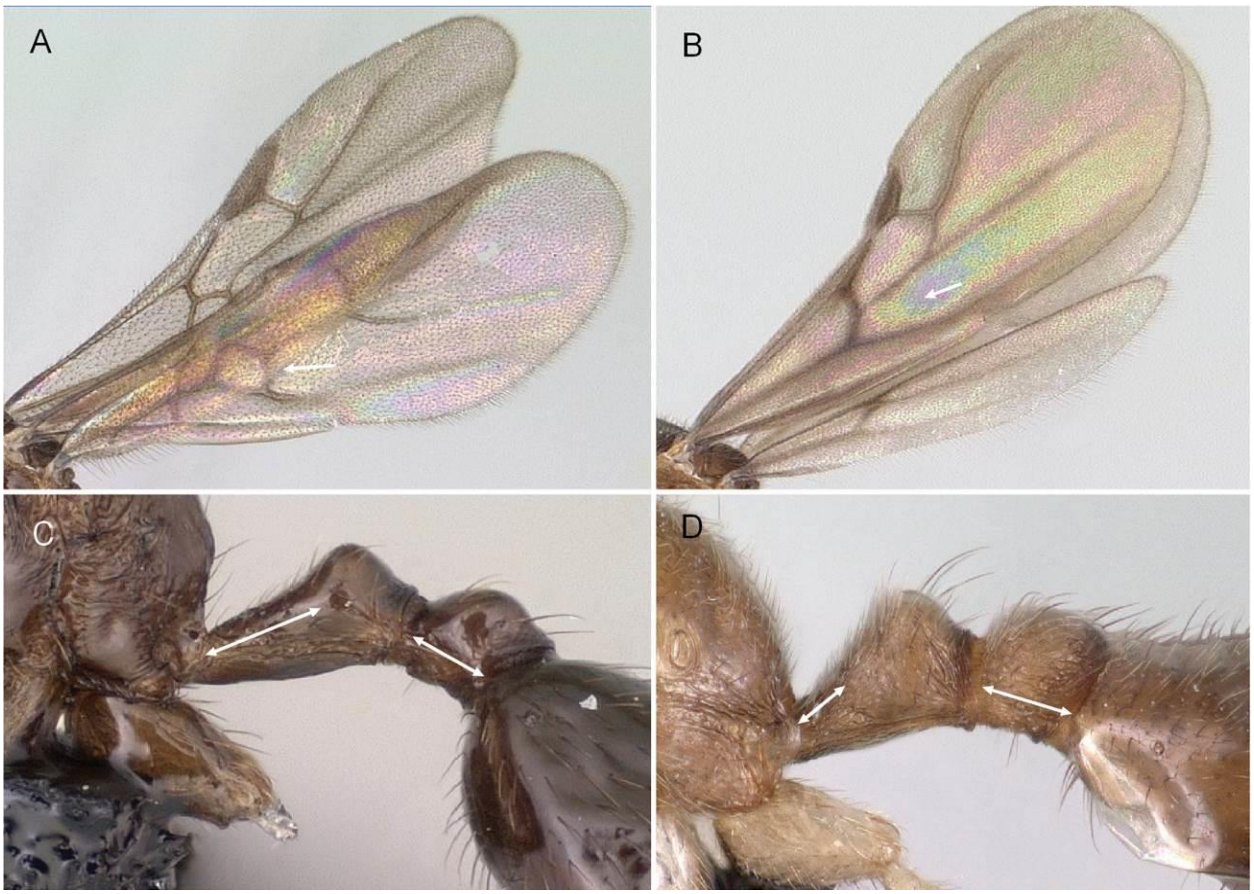


Figure 40. Forewing, petiole and post petiole in lateral view showing the 1m–cu cross-vein and the peduncular length. **A, C** *Syllophopsis modesta* (CASENT0135642) **B** *Monomorium termitobium* (CASENT0135673) **D** *Monomorium termitobium* (CASENT0135952). Photographer Dimby Raharinjanahary.

11 With the head in full-face view, antennal scape short, barely reaching the posterior ocular margin; mandible long, curved, masticatory margin with 3 to 4 teeth (Fig. 41A) ……*Monomorium*

– With the head in full-face view, antennal scape long reaching the occipital margin; mandible short, spatulate, basal margin linear, unidentate (Fig. 41B) ……*Adelomyrmex* (Seychelles)

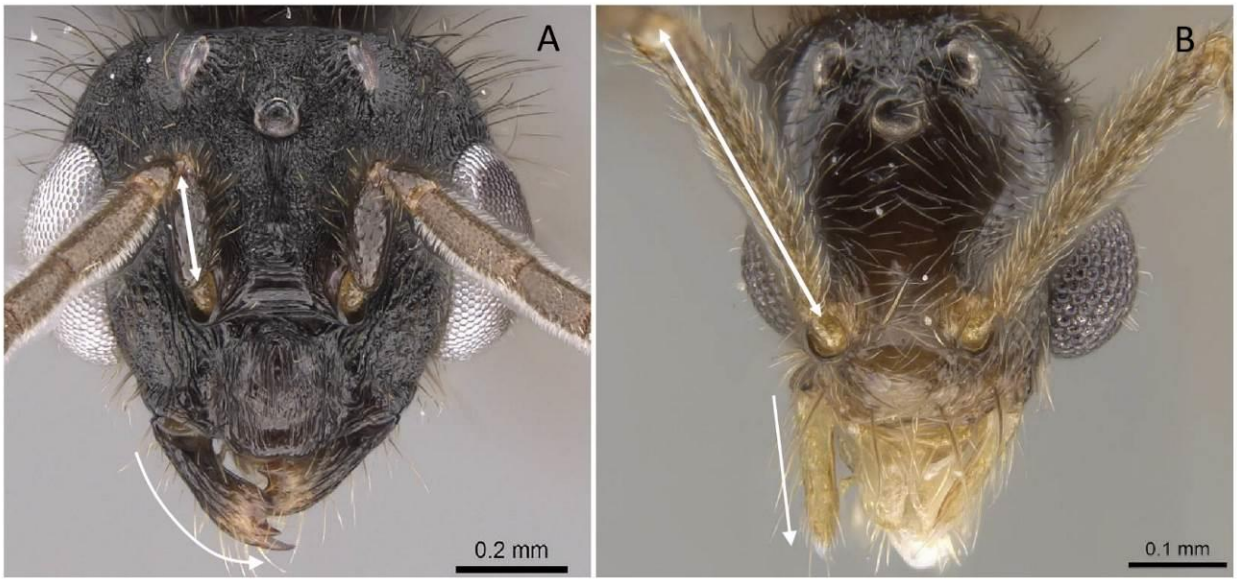


Figure 41. Head in full-face view showing the form of the mandible and scape length. **A** *Monomorium exiguum* (CASENT0209350) **B** *Adelomyrmex* sc01 (CASENT0160764). Photographers Dimby Raharinjanahary (41A), Michele Esposito (41B).

12 Antennal scrobe runs below the eyes (Fig. 42A) ……*Cataulacus*

– Antennal scrobe absent or runs above the eyes (Fig. 42B) ……13

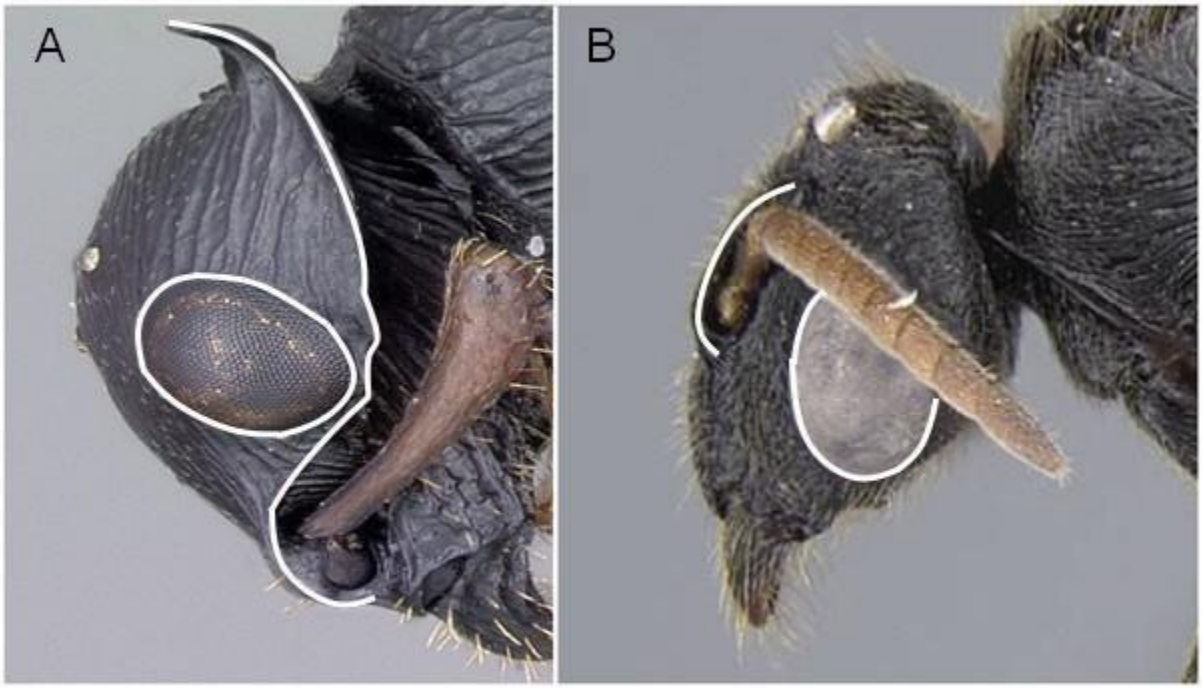


Figure 42. Head in lateral view showing the position of the antennal scrobe. **A** *Cataulacus oberthueri* (CASENT0435930) **B** *Metapone emersoni* (CASENT0113799). Photographers April Nobile (42A), Michele Esposito (42B).

13 Protibia without spur (Fig. 43A) ……*Melissotarsus*

– Protibia with single spur (Fig. 43B) ……14

Figure 43. Protibia in ventral view. **A** *Melissotarsus insularis* (CASENT0804569) **B** *Teratan*er fhg22 (CASENT0429745). Photographer Michele Esposito.

14 In lateral view, mesonotal suture extends downward from the transverse suture to the upper margin of the mesopleuron, ending higher than the highest point of the wing insertion (Fig. 44A) ……*Teratan*er

– In lateral view, mesonotal suture situated at the same level or lower than the highest point of the wing insertion (Fig. 44B) ……15

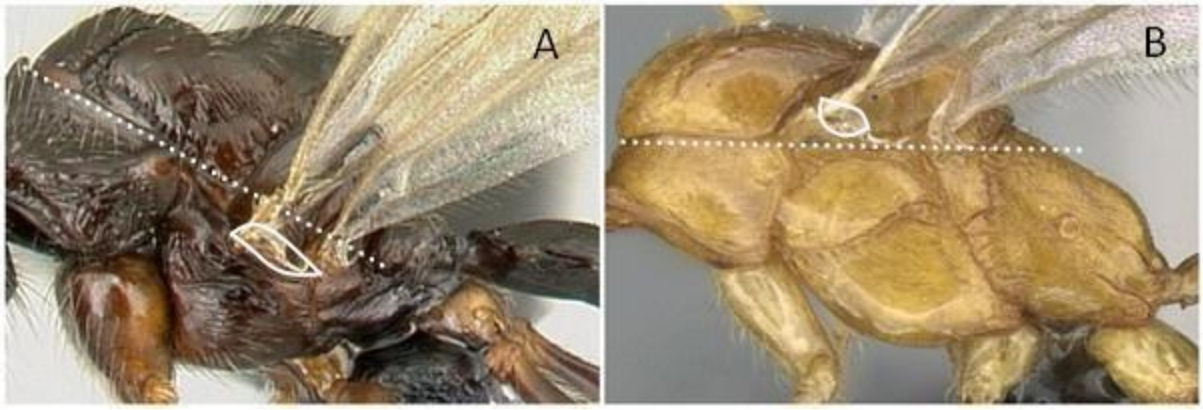


Figure 44. Mesosoma in lateral view showing the position of mesonotal suture relative to the point of the wing process. **A** *Teratan*er *alluaudi* (CASENT0496102) **B** *Malagidris dulcis* (CASENT0135071). Photographers Erin Prado (44A), Estella Ortega (44B).

15 Abdominal segment III attached dorsally to abdominal segment IV (Fig. 45A). Scape, pedicel, and flagellomeres same size (Fig. 45C) ……*Crematogaster*

– Abdominal segment III is broadly attaching to abdominal segment IV or abdominal segment III

anteriorly attached to abdominal segment IV (Fig. 43B). Scape, pedicel, and flagellomeres size different (Fig. 45D) ……16

Figure 45. Abdominal segment III attaches to abdominal segment IV. **A** Crematogaster maina (CASENT0132785) **B** *Pilotrochus besmerus* (CASENT0083498). **C** *Crematogaster agnetis* (CASENT0101760) **D** *Carebara jajoby* (CASENT0494540). Photographers Estella Ortega (45A), April Nobile (45B-45D).

16 Peduncle of abdominal segment III distinctly longer than that of abdominal segment II (Fig. 46A) ……*Eutetramorium*

– Peduncle of abdominal segment III absent or shorter than that of abdominal segment II (Fig. 46B)……17

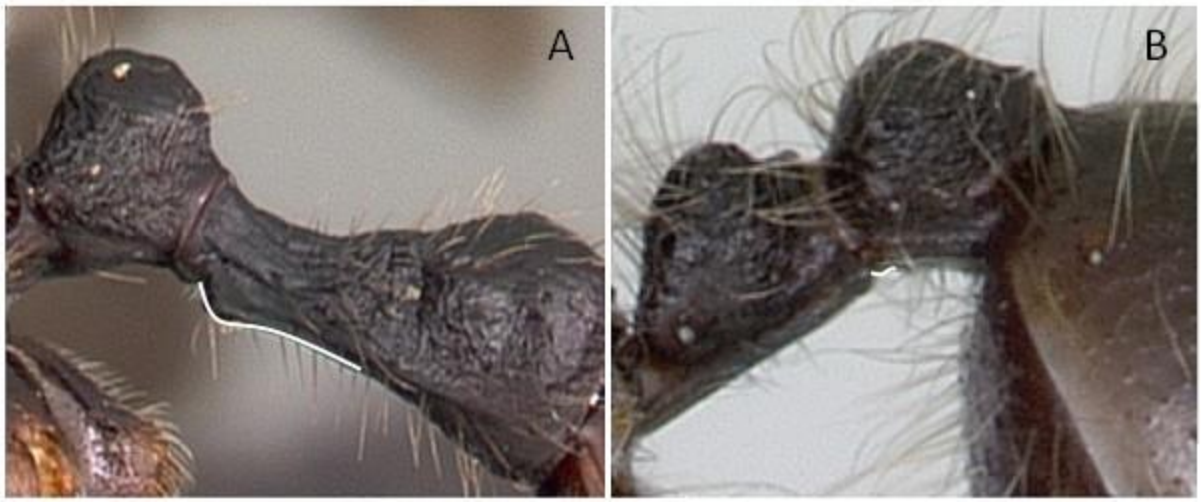


Figure 46. Abdominal segment II and III in lateral view showing the peduncular lenght. **A** *Eutetramorium mocquerysi* (CASENT0495192) **B** *Meranoplus mayri* (CASENT0062813). Photographer April Nobile.

17 First basal flagellar segment distinctly more elongated than the remaining segments: its length nearly or more than twice as long as that of the second flagellar segment (Fig. 47A) ……18

– First basal flagellar segment not elongated than the rest; even if it is elongated, its length distinctly less than twice as long as that of the second flagellar segment (Fig. 47B) ……19

Figure 47. Antennae in lateral view showing the first basal flagellar length. **A** *Tetramorium mars* (CASENT0134555) **B** *Pilotrochus besmerus* (CASENT0057183). Photographers Dimby Raharinjanahary (47A), Michele Esposito (47B).

18 Notauli present (Fig. 48A) ……*Tetramorium*

– Notauli absent (Fig. 48B) ……*Dicroaspis*

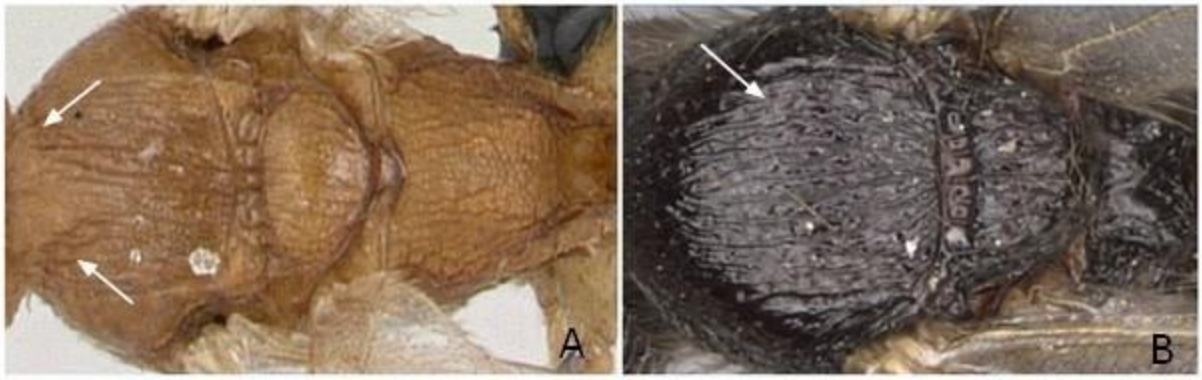


Figure 48. Promesonotum in dorsal view **A** *Tetramorium kelleri* (CASENT0133425). **B** *Dicroaspis* indet (CASENT0389458). Photographers Erin Prado (48A), Michele Esposito (48B).

19 With the head in full−face view, occipital carina visible (Fig. 49A) ……*Malagidris*

– With the head in full−face view, occipital carina not visible (Fig. 49B) ……20

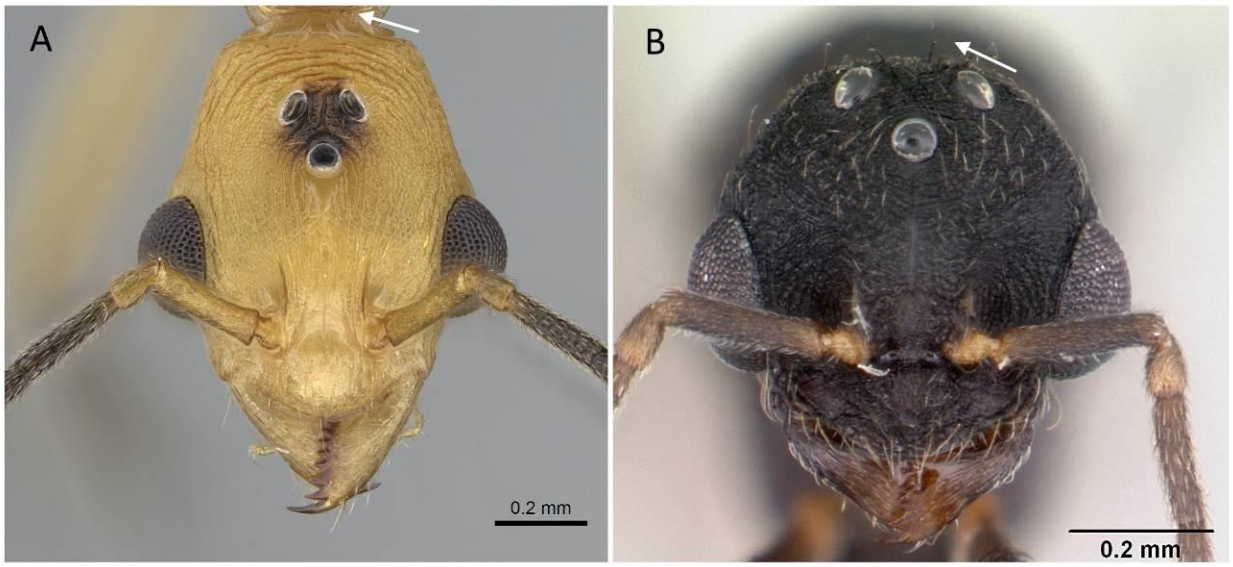


Figure 49. Head in full-face view, showing occipital carina **A** *Malagidris alperti* (CASENT0248385) **B** *Calyptomyrmex* km01 (CASENT0136409). Photographers Michele Esposito (49A), April Nobile (49B).

20 Antennal scrobe clearly present (Fig. 50A) ……*Metapone*

– Antennal scrobe reduced to absent (Fig. 50B) ……21

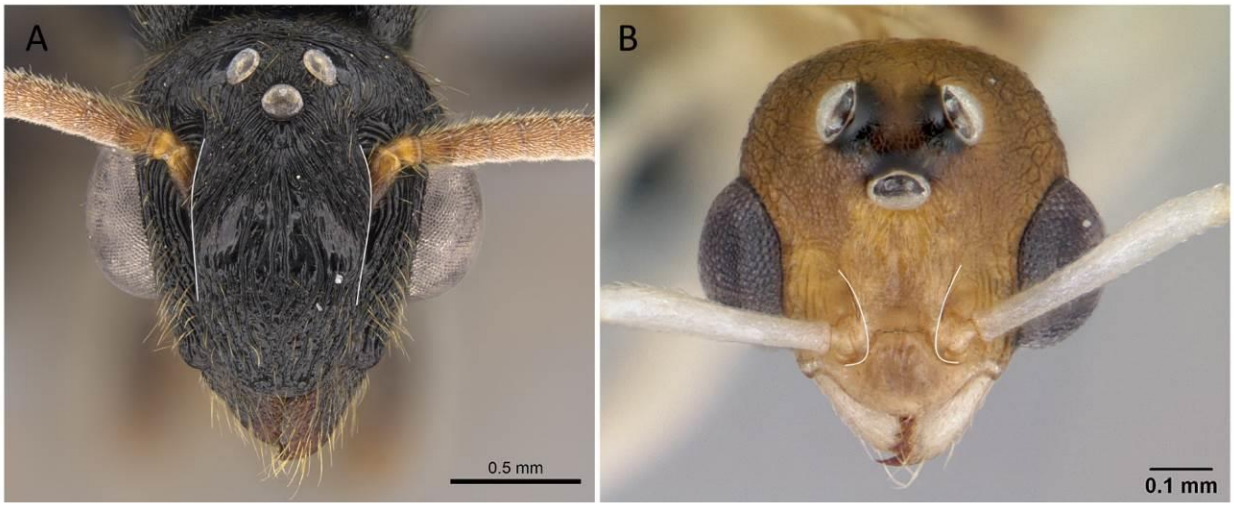


Figure 50. Head in full-face view showing antennal scrobe. **A** *Metapone emersoni* (CASENT0113799) **B** *Nesomyrmex angulatus* (CASENT0147245). Photographers Michele Esposito (50A), Erin Prado (50B).

21 Antennae 12-segmented ……22

– Antennae 13-segmented ……23

22 Vein 1m-Cu present. Propodeum armed with a weakly developed angular tooth (Fig. 51A) ……*Calyptomyrmex*

– Vein 1m-Cu absent. Propodeum unarmed and round (Fig. 51B) ……*Pristomyrmex*

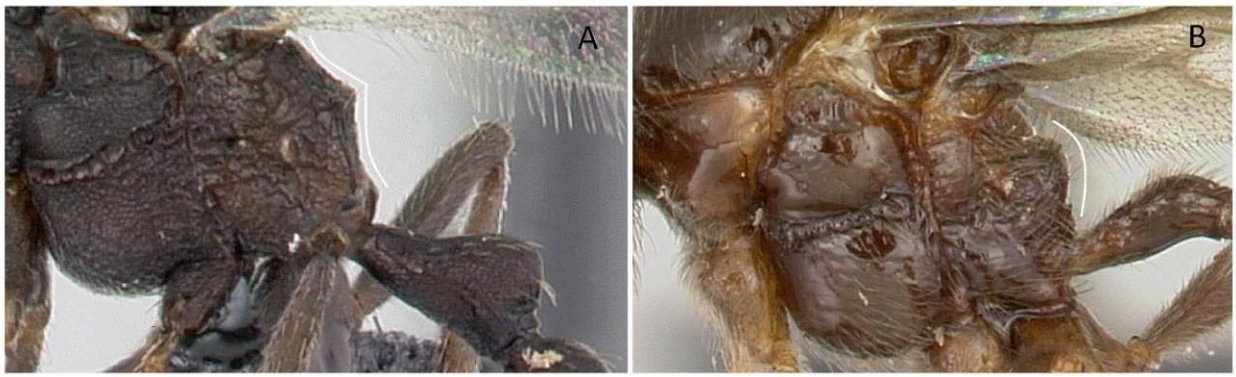


Figure 51. Mesopropodeum in lateral view. **A** *Calyptomyrmex* km01 (CASENT0136409) **B** *Pristomyrmex bispinosus* (CASENT0055726). Photographer April Nobile .

23 Propodeal spines are distinctly present (Fig. 52A) ……*Cardiocondyla*

– Propodeal spines are absent (Fig. 52B) ……24

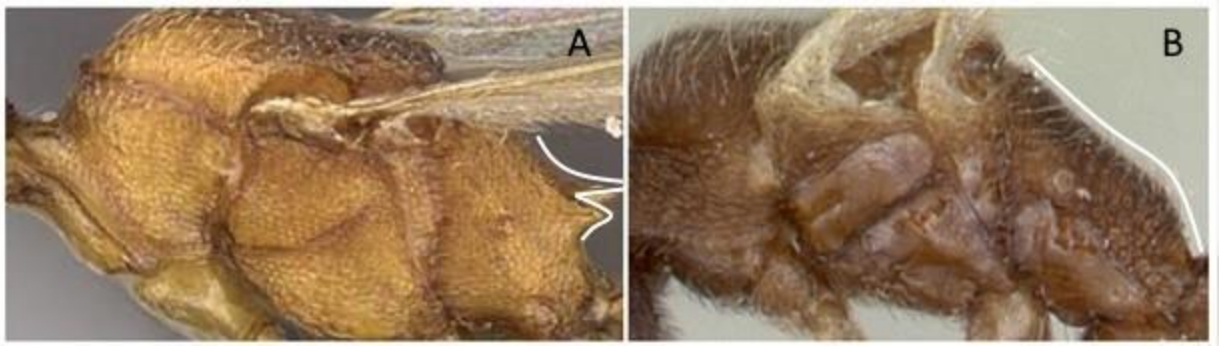


Figure 52. Propodeal spines in lateral view. **A** *Cardiocondyla emeryi* (CASENT0082706) **B** *Vollenhovia piroskae* (CASENT0101658). Photographers Michele Esposito (52A), April Nobile (52B).

24 Radial sector on the forewing is curved toward the costal margin distal to the wing stigma and often reaches the costal margin (Fig. 53A). Vertex is clearly divided from the occiput by the distinct occipital carina ……25

– Radial sector on the forewing is downcurved and never reaches the costal margin (Fig. 53B). Occipital carina is unclear or very weakly present, the vertex slopes to the occiput gently and gradually and not divided by a carina ……27

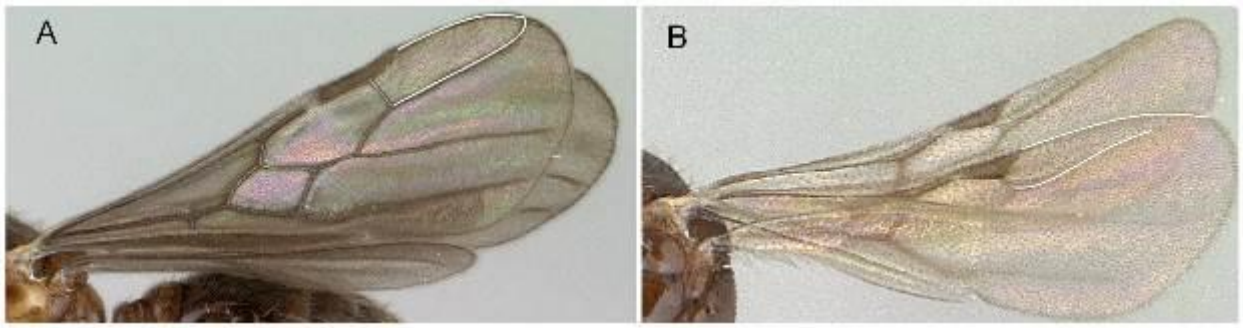


Figure 53. Forewing showing Rs reaching the costal margin. **A** *Carebara* drm03 (CASENT0143975) **B** *Monomorium exiguum* (CASENT0135614). Photographer Dimby Raharinjanahary.

25 Abdominal segment III broadly attaches to abdominal segment IV (Fig. 54A) ……*Carebara*

– Abdominal segment III narrowly attaches to abdominal segment IV (Fig. 54B) ……26

Figure 54. Abdomen in lateral view showing the attachment of abdominal segment III. **A** *Carebara jajoby* (CASENT0494540) **B** *Nesomyrmex hafahafa* (CASENT0053313). Photographer April Nobile.

26 Mandible edentate (Fig. 55A) ……*Meranoplus*

– Mandible with 3–5 teeth which decrease in size from apex to base (Fig. 55B) ……*Nesomyrmex*

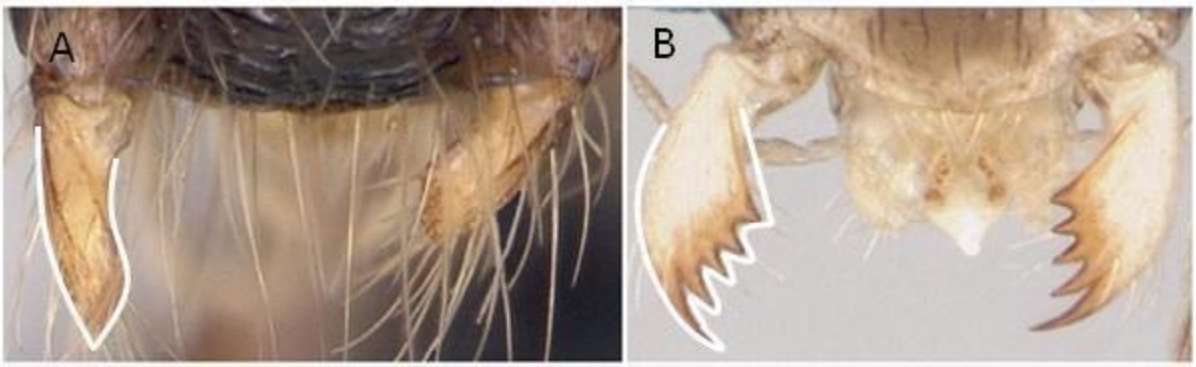


Figure 55. Mandible in full-face view. **A** *Meranoplus mayri* (CASENT0062813) **B** *Nesomyrmex tamatavensis* (CASENT0496295). Photographers April Nobile (55A), Erin Prado (55B).

27 Mandible edentate (Fig. 56A) ……*Vollenhovia*

– Mandible distinctly toothed (Fig. 56B) ……28

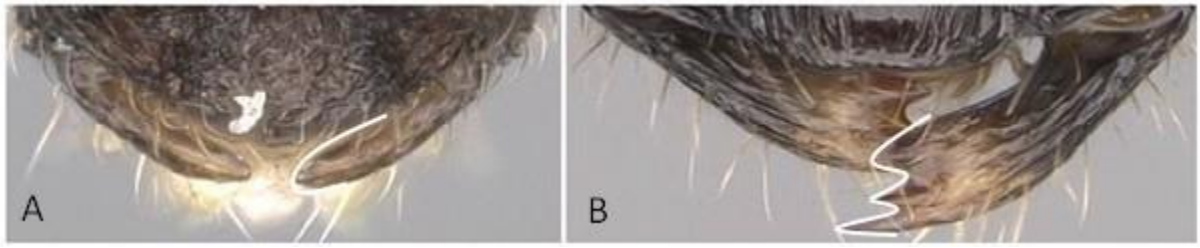


Figure 56. Mandible in full-face view. **A** *Vollenhovia piroskae* (CASENT0159914). **B** *Monomorium madecassum* (CASENT0209350). Photographer Michele Esposito.

28 Notauli absent (Fig. 57A) ……*Trichomyrmex*

– Notauli present (Fig. 57B) ……29

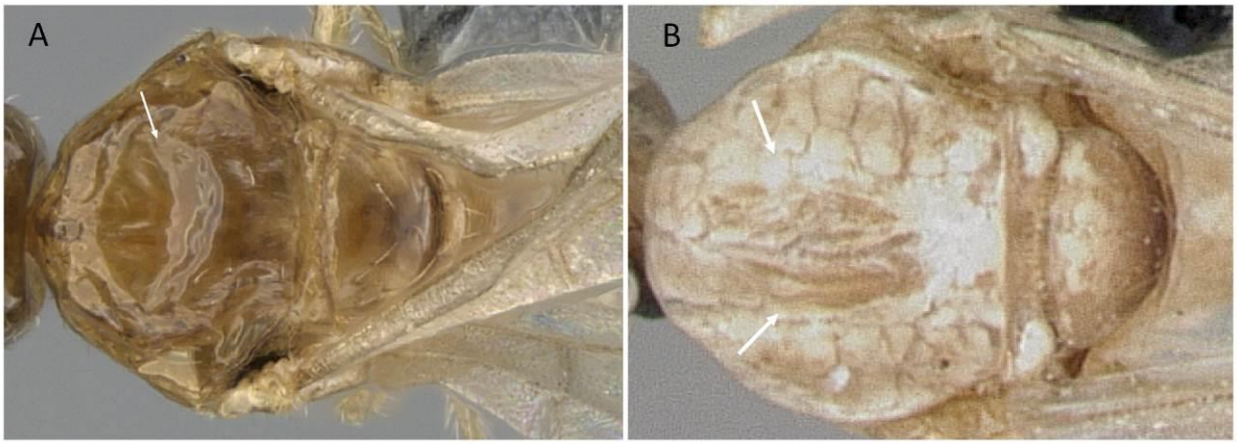


Figure 57. Promesonotum in dorsal view. **A** *Trichomyrmex destructor* (CASENT0787666) **B** *Royidris notorthotenes* (CASENT0002249) Photographers Michele Esposito (57A). April Nobile (57B).

29 Masticatory margin with 5–7 teeth (Fig. 58A), forewing with a dense fringe of long hairs along the margin (Fig. 58C) ……*Vitsika*

– Masticatory margin with 2–3 teeth (Fig. 58B), forewing lacking long hairs on the edges.(Fig. 58D) ……*Royidris*

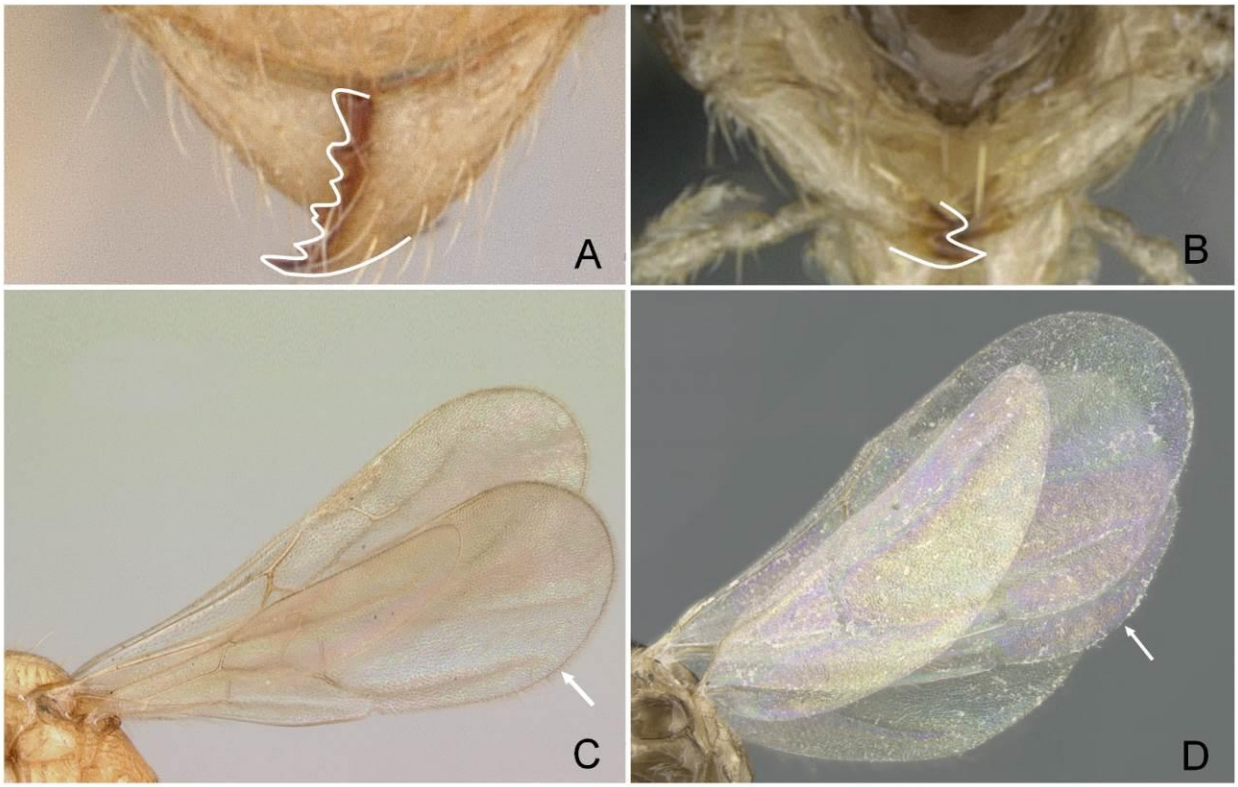


Figure 58. Mandible in full-face view and forewing in profile view **A, C** *Vitsika crebra* (CASENT0050262) **B, D** *Royidris peregrina* (CASENT0206165). Photographers April Nobile (58A, 58C), Estella Ortega (58B, 58D).

Adelomyrmex Emery, 1897

Mandible edentate. Palp formula unknown. Antennal scrobe absent. Antenna consisting of 13 segments. First funicular segment not globular, shorter than the scape. Scape very long, extending to margin of the head. Length of the first funicular segment is equal to the second segment. In full-face view, eye located above of base of clypeus. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed and round. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle absent. Pubescence short, dense over most of body. On the forewing, pterostigma reduced in size. Costal vein (C) present. Media between Rs+M and 2r-rs completely absent. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M absent. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu absent. Free section of the cubitus absent.

*Aphaenogaste*r Mayr, 1853

Mandible with 3–6 teeth which decrease in size from apex to base. Palp formula 3,2. Antennal scrobe absent. Antenna consisting of 13 segments. First funicular segment not globular, shorter than the scape. Scape short not, reaching the lower edge of the margin of lateral ocelli. Eyes large, at or in front of the midlength of the sides. Ocelli placed well below occipital margin in front view. Occipital carina strongly developped, forming a nuchal collar. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed, sometimes with short teeth/denticles. Petiole with a long anterior peduncle, the spiracle located at the apex of the peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally so that 1m-cu arises from Rs+M not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Calyptomyrmex Emery, 1887

Mandible triangular and distinctly dentate, with 5–6 teeth which decrease in size from apex to base. Palp formula 2,2. Antennal scrobe reduced. Antenna consisting of 12 segments. First funicular segment not globular, shorter than scape. Scape short, not reaching the lower edge of the margin of lateral ocelli. Eyes

large, at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum punctate. Notauli absent with a longitudinal median carina that is narrowly bifurcated anteriorly. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum armed, projects at a low angle. Petiole with a long anterior peduncle, the spiracle located at the apex of the peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle absent. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus absent.

Cardiocondyla Emery, 1869

Ergatoid males of *Cardiocondyla* are easily distinguished by having: (1) mandibles very effective: long, toothless and saber-shaped mandibles for *Cardioncondyla wroughtonii* and worker-like mandibles have been observed in *Cardioncondyla emeryi* and *Cardiocondyla shuckardi*; and (2) reduce black pigmentation (leading to a light-yellowish-brown overall colouration), decrease eye size, and reduce the ocelli partially or completely (Seifert 2003).

In winged males, mandible reduced, short and narrow, with only 5 teeth. Palp formula 2,2. Antennal scrobe reduced. Antenna consists of 12 segments. First funicular segment not globular, shorter than the scape. Scape short, not reaching the lower edge of the margin of lateral ocelli. In full-face view, eye located above base of clypeus. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum punctate. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum armed. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle absent. Pubescence short, dense over most of body. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media between Rs+M and 2r-rs completely absent. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M absent. R absent. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

Carebara Westwood, 1840

Mandible reduced, with 3–4 teeth which decrease in size from apex to base. Palp formula 3,2. Antennal scrobe absent. Antenna consists of 13 segments. First funicular segment not globular, shorter than the scape. Scape shorter than second funicular segment. Eyes large, at or in front of the midlength of the

sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent with a longitudinal median carina that is narrowly bifurcated anteriorly. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed and round. Petiole with a short, stout anterior peduncle and a short but relatively high node. Abdominal segment III is broadly attaching to abdominal segment IV. Paramere large. Pygostyle present. Pubescence short, dense over most of body. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) reaches costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Cataulacus Smith, 1853

Mandible triangular with denticles which decrease in size from apex to base. Palp formula 4,2. Antennal scrobe running below the eyes. Antenna consists of 12 segments. Length of first funicular is equal to that of the second funicular segment + the third funicular segment. Scape short, not reaching the lower edge of the margin of lateral ocelli. In full-face view, eye located in front of midlength of head capsule. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum striate. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole without a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere visible. Pygostyle absent. Pilosity simple throughout the body. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media between Rs+M and 2r-rs completely absent. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merge with Rs. R absent. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

Crematogaster Lund, 1831

Mandible triangular and distinctly dentate, with 0–2 teeth. Palp formula 3,2; 5,3. Antennal scrobe is absent. Antenna consists of 11–12 segments. First funicular segment subglobular, shorter than the scape. Scape shorter than 2+3 funicular segment. Eyes large, at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the

highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed and round. Petiole and postpetiole are equal in size. Abdominal segment III dorsally attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) present. Media (M) between Rs+M and 2rs-m and after 2rs-m completely present. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Rs+M present but vestigial. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus absent.

Cyphomyrmex Mayr, 1862

Mandible triangular with 3 teeth. Palp formula 2,2. Antennal scrobe running above the eyes. Antenna consists of 13 segments. First funicular segment not globular, shorter than the scape. Eyes large, at or in front of the midlength of the sides Ocelli placed near occipital margin in front view. Occipital carina invisible. With head in full-face view, its width excluding eyes is distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior margin of the eyes is nearly twice as wide as that at the level of the mandible insertions. Pronotum anterodorsally sharply marginate, with sharp, dentate corners. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum armed or the angle projects as a low, obtuse tooth. Petiole with a short pedencule. Abdominal segment III is narrowly attaching to abdominal segment IV. Paramere visible. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma reduced in size. Costal vein (C) present. Media between Rs+M and 2r-rs completely absent. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merge with Rs. R present. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

Dicroaspis Emery, 1908

Mandible triangular with 7 teeth. Antennal scrobe running above the eyes. Antenna consisting of 10 segments. First funicular segment not globular, shorter than the scape. Scape very long, extending to margin of the head. Eyes large, at or in front of the midlength of the sides. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Pronotum anterodorsally sharply marginate, with sharp, dentate corners. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed and round. Petiole with a long pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere visible. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu

absent. Rs+M merge with Rs. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu absent. Free section of the cubitus absent.

Erromyrma Bolton and Fisher, 2016

Mandible reduced, short and narrow, with only 4–5 teeth. Palp formula 5,3. Antennal scrobe absent. Antenna consists of 13 segments. First funicular segment subglobular, same size as the scape. Eyes large, at or in front of the midlength of the sides. Ocelli placed close to occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed and round. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere visible. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Eurhopalothrix Brown and Kempf, 1961

Mandible triangular without teeth. Palp formula 2,2. Antennal scrobe running above the eyes. Antenna consists of 13 segments. First funicular segment not globular, shorter than the scape. Eyes large, at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With head in full-face view, its width excluding eyes is distinctly narrowed anteriorly from the level of the posterior margin of the eyes: the width at the level of the posterior margin of the eyes is nearly twice as wide as that at the level of the mandible insertions. Mesoscutum punctate. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum angle projects as a low, obtuse tooth. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media between Rs+M and 2r-rs completely absent. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merge with Rs. R present. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

Eutetramorium Emery, 1899

Mandible stoutly triangular, with 7 teeth. Palp formula 4,3. Antennal scrobe is absent. Antenna consists of 13 segments. SI 31. First funicular segment long but not globular, about 25% longer than the length of the second funicular segment. In full-face view, eye located in front of midlength of head capsule. Ocelli placed well below occipital margin in front view. Occipital carina sharp but not forming a raised crest.

With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Anterior mesoscutum, between the notauli arms, with a longitudinal median carina that is narrowly bifurcated anteriorly. Notauli weakly present, the anterior arms forming a V-shape. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg pectinate tibial spur. Mesotibia tibial spur simple. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed, the spiracle low on the side and in front of the midlength of the sclerite; propodeal lobes conspicuous, rounded. Petiole with a short, stout anterior peduncle and a short but relatively high node, the spiracle about level with the base of the anterior face of the node. Postpetiole greatly elongated, in profile almost twice the length of the petiole. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Denser upright pilosity. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Malagidris Bolton and Fisher, 2014

Mandible triangular and strongly dentate, with 9 sharp teeth. Palp formula 3,2. Antennal scrobe is reduced. Antenna consists of 13 segments. First funicular segment short, not globular, about one quarter to one half the length of the second funicular segment. In full-face view, eye located in front of midlength of head capsule. Ocelli placed near occipital margin in front view. Occipital carina sharp, forming a distinct crest. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum convex in profile, the mesoscutum and mesoscutellum elevated, much higher than the propodeal dorsum, which is depressed and slopes downward posteriorly. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg pectinate tibial spur. Mesotibia tibial spur simple. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed, the spiracle high on the side and at about the midlength, or slightly in front of the midlength, of the sclerite; propodeal lobes conspicuous, rounded. Petiole with a long anterior peduncle and a low node, the spiracle at or behind the midlength of the peduncle, but in front of the level of the node. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Few pilosity. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Melissotarsus Emery, 1877

Mandible triangular and distinctly dentate, with 0–2 teeth. Palp formula 0,1. Antennal scrobe is reduced. Antenna consists of 12 segments. First funicular segment short, not globular, about half the length of the

second funicular segment. In full-face view, eye located in front of midlength of head capsule. Ocelli placed close to occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum convex in profile, the mesoscutum and mesoscutellum elevated, much higher than the propodeal dorsum, which is depressed and slopes downward posteriorly. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg without tibial spur. Mesotibia tibial spur simple. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed and round. Petiole without a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle absent. Pilosity simple throughout the body. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) vestigial. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M present. R present. Cross-vein cu-a vestigial. Cu absent. Free section of the cubitus absent.

Meranoplus Smith, 1853

Mandible reduced, short and narrow, with only one tooth. Palp formula 5,3. Antennal scrobe absent. Antenna consists of 13 segments. First funicular segment short, not globular, about half the length of the second funicular segment. In full-face view, eye located in front of midlength of head capsule. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur simple. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed and round. Petiole without a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere visible. Pygostyle absent. Pilosity long throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu absent. Free section of the cubitus absent.

Metapone Forel, 1911

Mandible triangular and distinctly dentate with 4 teeth. Palp formula 1,2. Antennal scrobe running above the eyes. Antenna consisting of 12 segments. First funicular segment short, not globular, about the same size as second funicular segment. In full-face view, eye located in front of midlength of head capsule. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum striate. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur.

Mesotibia tibial spur absent. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed. Petiole without peduncle. In profile, petiolar node rectangular nodiform; both waist segments strongly sculptured. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle absent. Pilosity long, erect to suberect. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Monomorium Mayr, 1855

Mandible triangular with 3–4 teeth. Palp formula 5,3. Antennal scrobe absent. Antenna consists of 13 segments. First funicular segment short, not globular. In full-face view, eye located in front of midlength of head capsule. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed and round. Petiole without peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Rs+M absent. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Nesomyrmex Wheeler, 1910

Mandible triangular and distinctly dentate, with 5 teeth. Palp formula 5,3. Antennal scrobe reduced. Antenna consists of 13 segments. First funicular segment not globular, shorter than the scape. In full-face view, eye located in front of midlength of head capsule Ocelli placed well below occipital margin in front view. Occipital carina sharp but not forming a raised crest. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a long anterior peduncle and a low node, the spiracle at or behind the midlength of the peduncle, but in front of the level of the node. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle absent. Sparse pilosity. On the forewing, pterostigma well developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merge

with Rs. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu absent. Free section of the cubitus absent.

Pheidole Westwood, 1839

Mandible with 4–7 teeth which decrease in size from apex to base. Palp formula 5,3. Antennal scrobe is absent. Antenna consisting of 13 segments. First funicular segment globular, shorter than the scape. In full-face view, eye located in front of midlength of head capsule. Ocelli placed close to occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Sparse pilosity. On the forewing, pterostigma well developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Pilotrochus Brown, 1978

Mandible with 4–7 teeth. Palp formula 5,3. Antennal scrobe is reduced. Antenna consisting of 13 segments. First funicular segment globular, shorter than the scape. In full-face view, eye located in front of midlength of head capsule. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With head in full-face view, its width excluding eyes is distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior margin of the eyes is nearly twice as wide as that at the level of the mandible insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Sparse pilosity. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Pristomyrmex Mayr, 1866

Mandible edentate. Palp formula 2,2. Antennal scrobe reduced. Antenna consists of 12 segments. First funicular segment short, not globular, about a third the length of the second funicular segment. In full-face view, eye located above of base of clypeus. Ocelli placed close to occipital margin in front view.

Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merges with Rs. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu absent. Free section of the cubitus absent.

Royidris Bolton and Fisher, 2014

Mandible triangular and distinctly dentate, with 2–3 teeth. Palp formula 4,3. Antennal scrobe absent. Antenna consists of 13 segments. SI 30–52. First funicular segment short and globular. Eyes large, located at or in front of the midlength of the sides. Ocelli placed close to occipital margin in front view. Occipital carina sharp but not forming a raised crest. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli variably developed, from vestigial to having anterior arms present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur simple. Metatibia tibial spur simple. Aroliae small. Propodeum usually unarmed and rounded, but in some the posterodorsal angle is reinforced by a carina, or the angle projects as a low, obtuse tooth; propodeal lobes rounded. Petiole with an anterior peduncle, the spiracle at, or slightly in front of, the midlength of the peduncle, well in front of the level of the low, rounded node. Petiole in profile slightly longer than postpetiole. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus absent.

Solenopsis Westwood, 1840

Mandible with 2–3 teeth. Palp formula 5,3. Antennal scrobe is reduced. Antenna consists of 11 segments. First funicular segment globular, shorter than the scape. Eyes large, located at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter

not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Strumigenys Smith, 1860

Mandible edentate. Palp formula 5,3. Antennal scrobe is absent. Antenna consisting of 13 segments. First funicular segment not subglobular, same size of the scape. Eyes large, located at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With head in full-face view, its width excluding eyes is distinctly narrowed anteriorly from the level of the posterior margin of the eyes: the width at the level of the posterior margin of the eyes is nearly twice as wide as that at the level of the mandible insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum angle projects as a low, obtuse tooth. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Sparse pilosity. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) absent. Media (M) absent. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M absent. R absent. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

Syllophopsis Santschi, 1915

Mandible with 3 teeth. Palp formula 5,3. Antennal scrobe reduced. Antenna consists of 13 segments. First funicular segment short, not globular. Eyes large, located at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from

Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Teratanер Emery, 1912

Mandible triangular and distinctly dentate, with 5-6 teeth. Palp formula 4,3. Antennal scrobe absent. Antenna consisting of 13 segments. First funicular segment globular, shorter than the scape. Eyes large, at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Pronotum anterodorsally sharply marginate, with sharp, dentate corners. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion is higher than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur simple. Aroliae small. Propodeum unarmed. Petiole with a long anterior peduncle. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity long, erect to suberect. On the forewing, pterostigma well-developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Tetramorium Mayr, 1855

Mandible triangular and distinctly dentate, with 4–7 teeth. Palp formula 5,3. Antennal scrobe reduced. Antenna consists of 10–13 segments. First funicular segment is more distinctly elongated than the others: its length is nearly or more than twice as long as that of the second flagellar segment. Eyes large, at or in front of the midlength of the sides. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur simple. Aroliae small. Propodeum armed or the angle projects as a low, obtuse tooth. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle present. Pilosity long, erect to suberect. On the forewing, pterostigma well-developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Trichomyrmex Mayr, 1865

Mandible reduced, short and narrow, with only 2–3 teeth. Palp formula 5,3. Antennal scrobe absent. Antenna consists of 13 segments. First funicular segment subglobular. Eyes large, at or in front of the

midlength of the sides. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole with a short pedencule. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere small. Pygostyle absent. Sparse pilosity. On the forewing, pterostigma well developed. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M merge with Rs. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus absent.

Vitsika Bolton and Fisher, 2014

Mandible triangular and distinctly dentate, with 5–7 teeth. Palp formula 4,3. Antennal scrobe reduced. Antenna consists of 13 segments. SI 30–52. First funicular segment short but not globular. Eyes large, located at or in front of the midlength of the sides. Ocelli placed near occipital margin in front view. Occipital carina sharp but not forming a raised crest. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli variably developed, from vestigial to having anterior arms present. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum usually unarmed and rounded. Petiole with an anterior peduncle, the spiracle at, or slightly in front of, the midlength of the peduncle, well in front of the level of the low, rounded node. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. Pilosity simple throughout the body. On the forewing, pterostigma well-developed. Costal vein (C) present. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally so that 1m-cu arises from Rs+M not from M. R absent. Cross-vein cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present.

Vollenhovia Mayr, 1865

Mandible edentate. Palp formula 2,2. Antennal scrobe absent. Antenna consists of 13 segments. First funicular equal in size to scape, not globular. Ocelli placed well below occipital margin in front view. Occipital carina invisible. With the head full-face view, its width excluding eyes is not distinctly narrowed anteriorly from level of posterior margin of the eyes: the width at the level of the posterior edge of the eyes is not twice as wide as that at the level of the mandibular insertions. Mesoscutum in profile strongly overhangs the pronotum, the latter not visible in dorsal view. Notauli absent with a longitudinal median carina that is narrowly bifurcated anteriorly. With mesopleuron in lateral view, its anterodorsal portion lower than the highest point of the wing process. Front leg with pectinate tibial spur. Mesotibia

tibial spur absent. Metatibia tibial spur absent. Aroliae small. Propodeum unarmed. Petiole without peduncle, in profile petiolar node rectangular nodiform. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle absent. Pilosity long, erect to suberect. On the forewing, pterostigma reduced in size. Costal vein (C) absent. Media between Rs+M and 2r-rs completely absent. Media (M) absent. Radial sector (Rs) never reaching costal margin. Cross-vein 2r-rs present, forming base of 'free stigma vein'. Cross-vein 2rs-m absent. Cross-vein 1m-cu absent. Rs+M absent. R absent. Cross-vein cu-a absent. Cu absent. Free section of the cubitus absent.

PONERINAE Lepeletier de Saint-Fargeau, 1835

Diagnosis of male ants of the subfamily Ponerinae in The Malagasy region

- Antenna filiform, consisting of 13 segments.
- Scape not reaching posterior margin of head.
- Mesopleural oblique furrow reaching pronotum far away from pronotal posteroventral margin.
- Scuto-scutellar suture usually longitudinally sculptured.
- Dorsal constriction between the two segments is distinct and deep.
- Abdominal segment III is nearly as large as abdominal segment IV.
- Abdominal segment II is much smaller than segment III in lateral view.
- Apical portion of abdominal sternum IX not bi-spinose.
- Pygostyles well developed.
- Metatibia with one or two spurs.

Remarks. Our key includes ten ponerinae genera recorded from the Malagasy region. Overall key modified from Yoshimura and Fisher (2007) Males of *Parvaponera* are unknown were not included in this genera key. *Mesoponera* is known to be paraphyletic (Schmidt and Shattuck 2014). The two species in the Malagasy region, *Mesoponera ambigua* and *Mesoponera melanaria macra* do not group in the same clade and are keyed out seperatly.

Male−based key to genera of the subfamily Ponerinae

1 Wings absent ……*Hypoponera punctatisima*

− Wings present ……2

2 Mandibles stout and fully developed, masticatory margins overlap completely when mandibles are fully closed (Fig. 59A). Antennal scrobe well defined and extends as long as length of antennal scape ……*Platythyrea*

− Mandibles very reduced in size and lobate, the masticatory margins do not overlap completely when mandibles are fully closed (Fig. 59B). Antennal scrobe absent; if weakly defined, then length distinctly shorter than length of antennal scape ……3

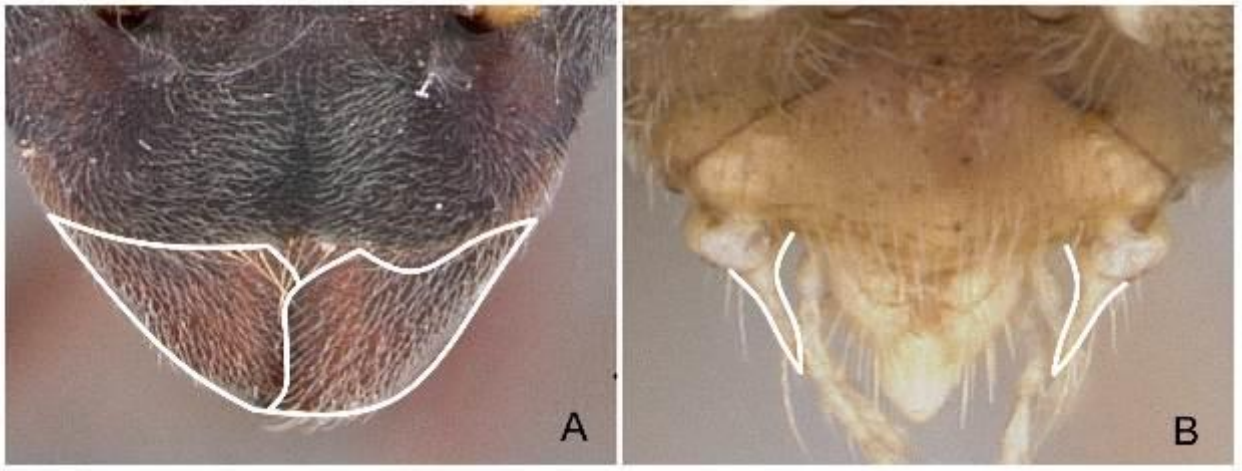


Figure 59. Mandible in full-face view. **A** *Platythyrea arthuri* (CASENT0442287) **B** *Mesoponera ambigua* (CASENT0052325). Photographer April Nobile.

3 Pretarsal claw multidentate to pectinate (Fig. 60A) ……*Leptogenys*

– Pretarsal claw edentate or with at most two preapical teeth (Fig. 60B) ……4

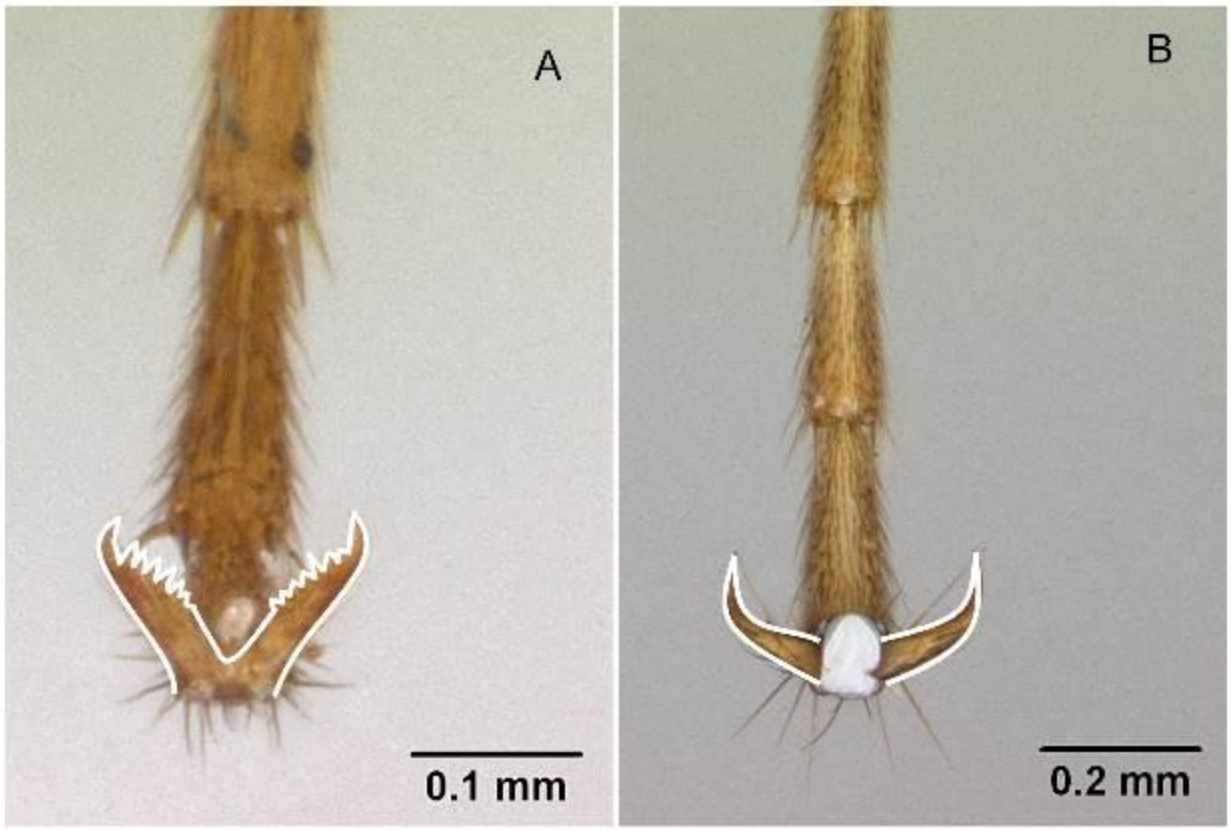


Figure 60. Pretarsal claw. **A** *Leptogenys mangabe* (CASENT0496777) **B** *Bothroponera cambouei* (CASENT0497079). Photographer April Nobile.

4 Hind wing with jugal lobe (Fig. 61A) ……5

– Hind wing without jugal lobe (Fig. 61B) ……11

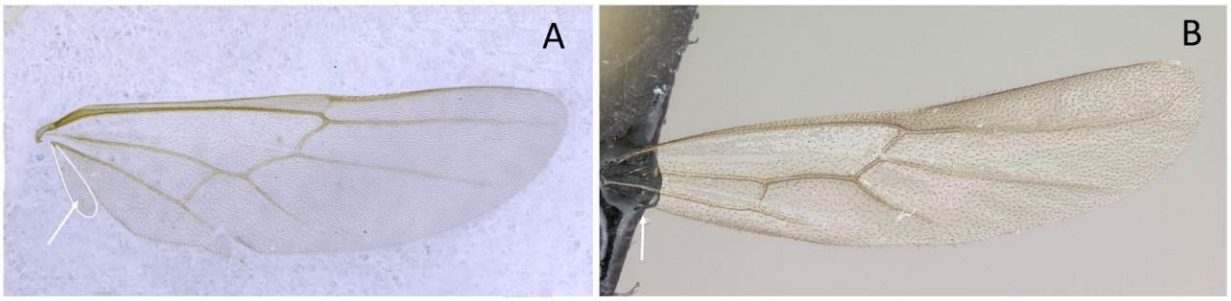


Figure 61. Hind wing. **A** *Odontomachus coquereli* (CASENT0740610) **B** *Leptogenys mangabe* (CASENT0496777). Photographers Isabella Muratore (61A) April Nobile (61B).

5 Notauli present on mesoscutum (Fig. 62A) ……6

– Notauli absent on mesoscutum (Fig. 62B) ……8

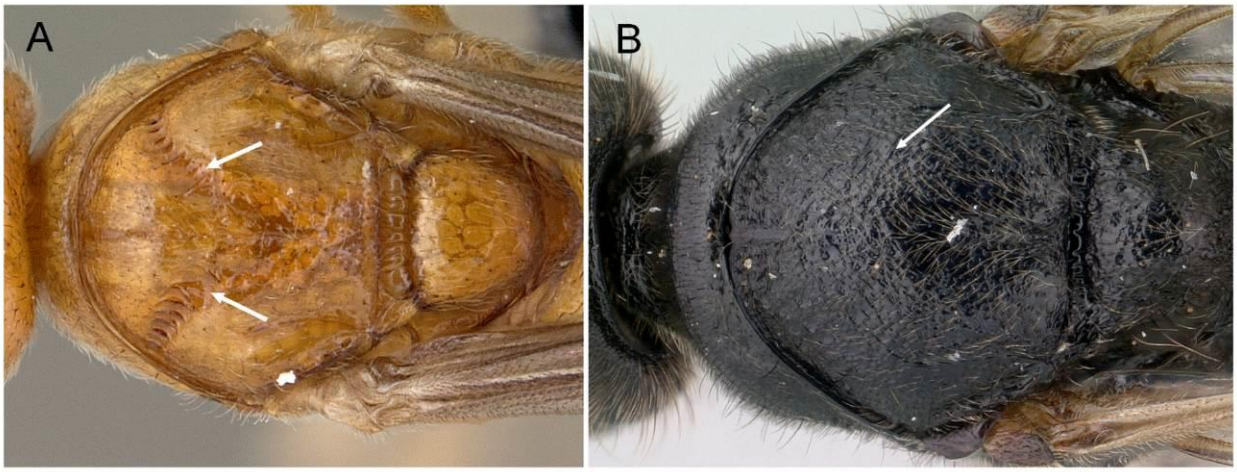


Figure 62. Notauli on mesoscutum. **A** *Anochetus goodmani* (CASENT0147683). **B** *Bothroponera wasmannii* (CASENT0134532). Photographer Dimby Raharinjanahary.

6 Mesometapleural suture deep and sculptured, dorsal margin of petiole, in frontal view, usually showing two apices (Fig. 63A) ……*Anochetus goodmani*

– Mesometapleural suture deep but not sculptured, dorsolateral corner of petiole in frontal view, not showing two apices (Fig. 63B) ……7

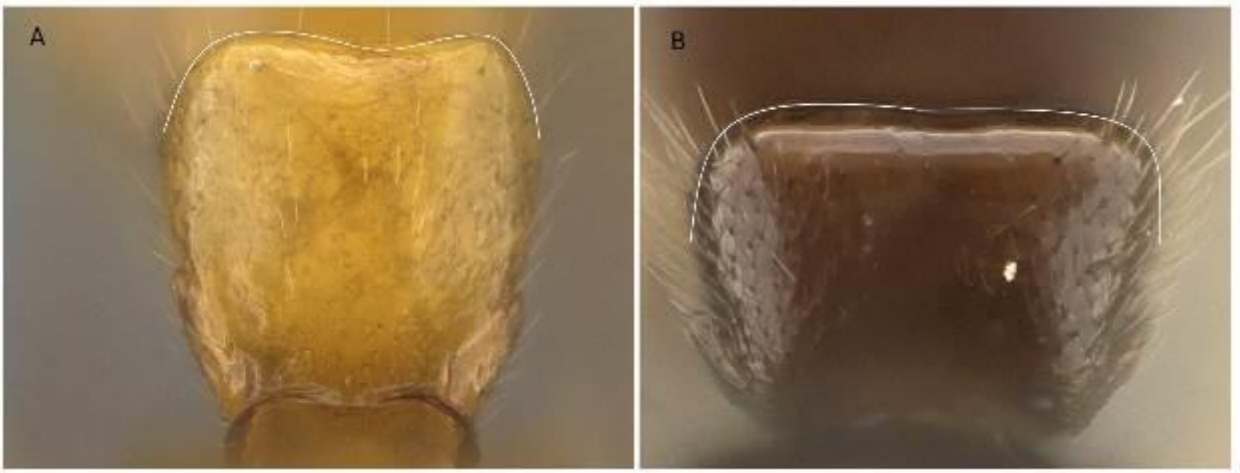


Figure 63. Dorsolateral corner of petiole in rear view. **A** *Anochetus goodmani* (CASENT0147683) **B** *Mesoponera ambigua* (CASENT0108325). Photographer Michele Esposito.

7 Subpetiolar process in profile view convexe ventrally (Fig. 64A). Apical portion of abdominal tergum VIII forming a distinct spine (Fig. 64C) ……*Mesoponera melanaria macra*

– Subpetiolar process in profile view subtriangular (Fig. 64B). Apical portion of abdominal tergum VIII not forming a spine (Fig. 64D) ……*Mesoponera ambigua*

Figure 64. Petiole in profile view showing the subpetiolar process; apical portion of abdominal tergum VIII. **A, C** *Mesoponera melanaria macra* (CASENT0272313) **B, D** *Mesoponera ambigua* (CASENT0135592). Photographers Michele Esposito (64A, 64C), Dimby Raharinjanahary (64B, 64D).

8 Apical portion of abdominal tergum VIII not forming a spine (Fig. 65A) ……*Anochetus*

– Apical portion of abdominal tergum VIII forming a distinct spine (Fig. 65B) ……9

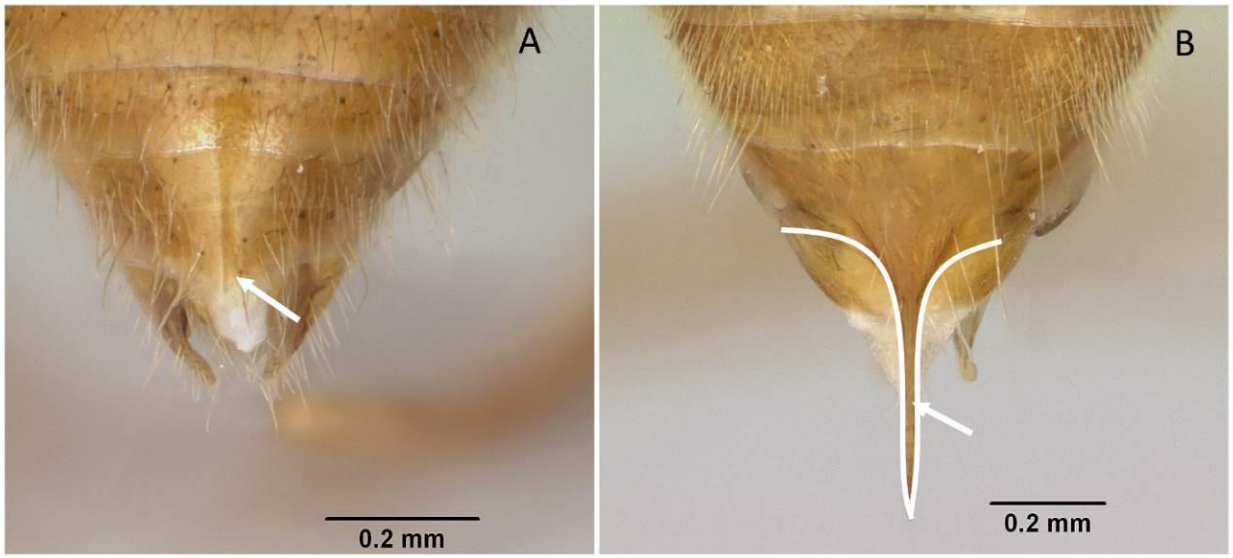


Figure 65. Apical portion of abdominal tergum VIII. **A** *Anochetus madagascarensis* (CASENT0442379) **B** *Odontomachus coquereli* (CASENT0049797). Photographer April Nobile.

9 Dorsal margin of petiole, in frontal view, with single sharp apex (Fig. 66A) ……*Odontomachus*

– Dorsal margin of petiole, in frontal view, without single sharp apex (Fig. 66B) ……10

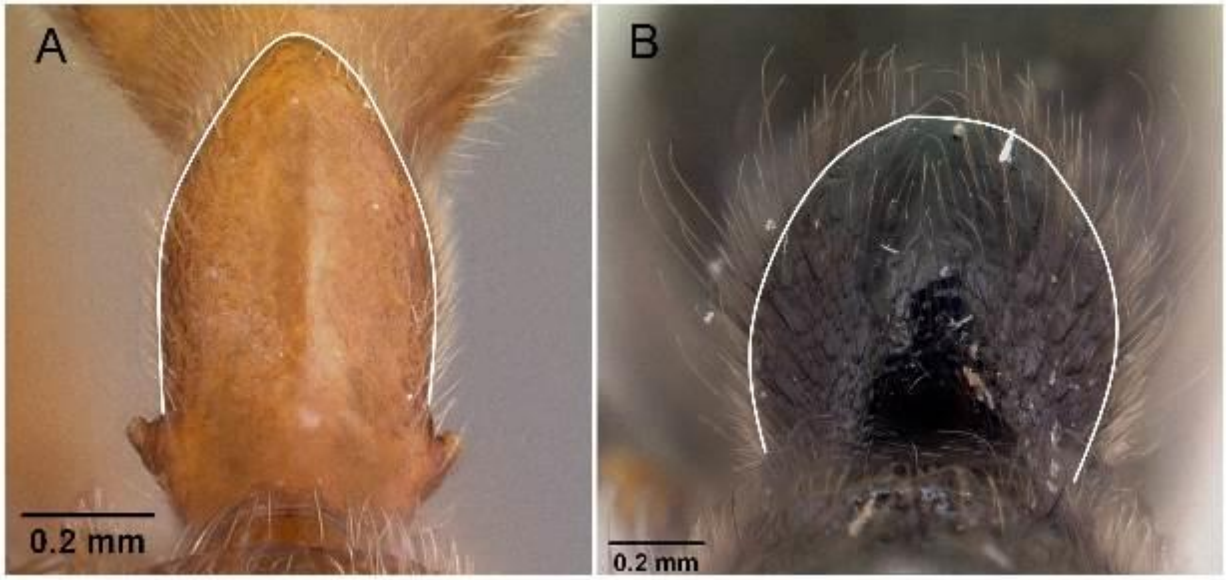


Figure 66. Petiole in front view. **A** *Odontomachus coquereli* (CASENT0049797) **B** *Bothroponera cambouei* (CASENT0497079). Photographers Masashi Yoshimura (66A), April Nobile (66B).

10 In profile view, petiole surmounted by a thick node (Fig. 67A) ……*Bothroponera*

– In profile view, petiolar node generally scale-like and thin (Fig. 67B) ……*Brachyponera*

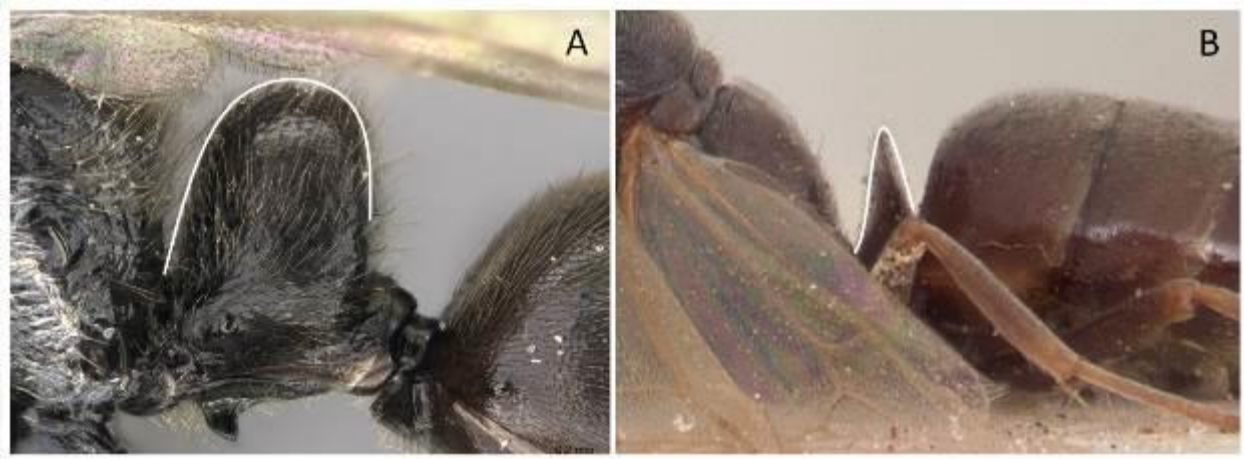


Figure 67. Petiole form. **A** *Bothroponera wasmannii* (CASENT0147642) **B** *Brachyponera sennaarensis* (SAM-HYM-C002312). Photographer Michele Esposito.

11 Apical portion of abdominal tergum VIII without downcurved spine (Fig. 68A) ……*Hypoponera*

– Apical portion of abdominal tergum VIII with downcurved spine (Fig. 68B) ……12

Figure 68. Apical portion of abdominal tergum VIII. **A** *Hypoponera* mg016 (CASENT0466110) **B** *Euponera vohitravo* (CASENT0740617). Photographer Michele Esposito.

12 Ventral apex of meso- and metatibia, when viewed from the front with the femur at right angle to the body, with single spur, the spur large and pectinate (Fig. 69A) ……*Ponera*

– Ventral apex of meso- and metatibia, when viewed from the front with the femur at right angle to the body, with two spur, consisting of a larger, pectinate spur and a smaller, simple spur (Fig. 69B) ……*Euponera*

Figure 69. Tibial spur on metatibia. **A** *Hypoponera* mg057 (CASENT0430684) **B** *Euponera vohitravo* (CASENT0740617). Photographers April Nobile (69A), Michele Esposito (69B).

Anochetus Mayr, 1861

All males winged. Antennal scrobe absent. Mandible reduced. Basal cavity of the mandible extending to its front face, visible in full-face view. Antenna 13. Notauli absent except for *Anochetus goodmani*. Mesepimeron with epimeral lobe. In most cases, each dorsolateral corner of petiole in anterior view with distinct projection. Dorsal margin of petiole, in anterior view, usually showing two apices. Apical margin of abdominal tergum VIII not projecting into sharp spine. Jugal lobe of hind wing present. Mesotibia and metatibia with two spurs. Claws simple, not multidentate or pectinate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m absent. Media (M) usually present. M+Cu present. 1rs-m+M absent. Free section of the cubitus present. Cross-vein cu-a present.

The presence of notauli is known for *Anochetus* in the Asian region, including in Vietnam *Anochetus mixtus*, *Anochetus princeps* and in Indonesia *Anochetus filicornis*, but only the species *goodmani* exhibits this feature in the Malagasy region.

Bothroponera Mayr, 1862

Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli never impressed on

mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole, in frontal view, rounded and in profile view, petiole surmounted by a thick node. Apical margin of abdominal tergum VIII projecting into sharp spine. Jugal lobe of hind wing present. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs vestigial. Cross-vein 1rs-m present. Media (M) absent. M+Cu present. 1rs-m+M present. Free section of the cubitus present. Cross-vein cu-a present.

Brachyponera Emery, 1900

Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli never impressed on mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole, in frontal view, rounded and in profile view, petiolar node generally scale-like and thin. Apical margin of abdominal tergum VIII projecting into sharp spine. Jugal lobe of hind wing present. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located closed to junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Euponera Forel, 1891.

Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli present or absent. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole, in frontal view, rounded. Apical margin of abdominal tergum VIII projecting into sharp spine. Jugal lobe of hind wing absent. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located close to junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Hypoponera Santschi, 1938

Ergatoid males of ponerinae are easily distinguished by having: (1) abdominal segment III as large as segment IV; and (2) a distinct constriction between abdominal segments III and IV.

In winged males, antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli never impressed on mesoscutum. Mesepimeron without epimeral lobe. Dorsolateral corner of petiole in anterior view lacking distinct projection. Dorsal margin of petiole, in anterior view, without a conical or pointed apex. Apical margin of abdominal tergum VIII without spine. Jugal lobe of hind wing absent. Mesotibia and metatibia with single spur. Claws simple, never multidentate or pectinate. On the forewing, pterostigma reduced in size. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector distal to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Leptogenys Roger, 1861

Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna with 13 segments. Notauli impressed on mesoscutum in most species. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view without distinct projections. Dorsal margin of petiole in anterior view gently rounded, not forming a conical or pointed apex. Apical margin of abdominal tergum VIII occasionally featuring downcurved projection. Jugal lobe of hindwing absent in most species. Mesotibia and metatibia with two spurs. Pretarsal claw multidentate to pectinate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Mesoponera Emery, 1900

Mesoponera ambigua André, 1890. Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli impressed on mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole, in frontal view, rounded. Subpetiolar process in profile view subtriangular. Apical portion of abdominal tergum VIII without downcurved spine. Jugal lobe of hind wing present. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located at the junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m present. Media (M) present. M+Cu present. Free section of the cubitus present. Cross-vein cu-a present.

Mesoponera melanaria macra Emery, 1894. Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of

13 segments. Notauli impressed on mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole, in frontal view, rounded. Subpetiolar process in profile view convexe ventrally. Apical portion of abdominal tergum VIII with downcurved spine. Jugal lobe of hind wing present. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) present. Rs present. Cross-vein 1rs-m present. Media (M) present. M+Cu present. Free section of the cubitus present. Cross-vein cu-a present.

Odontomachus Latreille, 1804.

Males winged. Antennal scrobe absent. Mandible reduced. Basal cavity of mandible extending to its front face and visible in full-face view. Antenna consists of 13 segments. Notauli never impressed on mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view not projecting. Dorsal margin of petiole in anterior view more or less conical, with a narrowly rounded or pointed apex. Apical margin of abdominal tergum VIII projecting into a sharp spine. Jugal lobe of hind wing present. Mesotibia and metatibia with two spurs. Claws simple, never multidentate to pectinate. On the forewing, pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Parvaponera Schmidt and Shattuck, 2014.

While the male of this species remains unknown worldwide, the analysis of wing venation and morphological characteristics based on the gyne might be helpful to identify the male of this species in the future.

Queen: Antenna 13. Mesotibia and metatibia with two spurs. Claws simple, never multidentate to pectinate. On the forewing (Fig. 70), pterostigma well developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located past from junction between media and cubitus. Media between Rs+M and 2rs-m completely present.

Figure 70. Forewing venation in queen caste. *Parvaponera darwinii madecassa* (CASENT0410199). Photographer Cerise Chen.

Platythyrea Roger, 1863

Males winged. Antennal scrobe distinct. Mandible large, stout, triangular, with many teeth on its masticatory margin, and masticatory margins completely overlap when mandibles are fully closed. Basal cavity of mandible invisible in full-face view. Antenna consists of 13 segments. Notauli impressed on mesoscutum. Mesepimeron with epimeral lobe. Dorsolateral corner of petiole in anterior view lacking distinct projection. Dorsal margin of petiole, in anterior view, broadly or narrowly rounded. Apical margin of abdominal tergum VIII does not project strongly into sharp spine. Jugal lobe of hind wing may or may not be present. Mesotibia and metatibiae with two spurs. Claws simple, never multidentate or pectinate. Body surface sparsely punctate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located close to junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

Ponera Latreille, 1804

Males winged. Antennal scrobe absent. Mandible reduced in size. Basal cavity of mandible extending to its front face, visible in full-face view. Antenna consists of 13 segments. Notauli never impressed on mesoscutum. Mesepimeron without epimeral lobe. Dorsolateral corner of petiole in anterior view lacking distinct projection. Dorsal margin petiole, in anterior view, without narrowly rounded or pointed apex. Apical margin of abdominal tergum VIII strongly projecting into a sharp spine. Jugal lobe of hind wing absent. Mesotibia and metatibiae with single spur. Claws simple, never multidentate or pectinate. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu present. Radial sector (Rs) fully complete between M+Rs and 2r-rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m present. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs absent. Cross-vein 1rs-m present. Media (M) present. M+Cu present. 1rs-m+M present. Free section of the cubitus absent. Cross-vein cu-a present.

PROCERATIINAE Emery, 1895

Diagnosis of male ants of the subfamily Proceratiinae in the Malagasy region

- Antenna filiform, consisting of 13 segments.
- Scape not reaching posterior margin of head.
- Mesopleural oblique furrow reaching pronotum close to pronotal posteroventral margin.
- Scuto-scutellar suture usually longitudinally sculptured.
- Petiole attached to abdominal segment III ventrally, so that dorsal constriction between the two segments is distinct and deep.
- Abdominal segment II much smaller than segment III in lateral view.
- Petiole (abdominal segment II) broadly and dorsally attached to abdominal segment III.
- Apical portion of abdominal sternum IX not bi-spinose.
- Pygostyles absent or present.
- Metatibia with one spur.

Remarks. Our key includes three proceratiinae genera recorded from the Malagasy region. Key modified from Yoshimura and Fisher (2009).

Male−based key to genera of the subfamily Proceratiinae

1 Frontal carinae diverging posteriorly or subparallel, but never merged into single carina (Fig. 71A). Cubitus (Cu) in hindwing present, rarely reduced but with short branch ……*Proceratium*

− Frontal carinae merged into single median carina between antennal sockets (Fig. 71B). Cubitus (Cu) in hindwing absent ……2

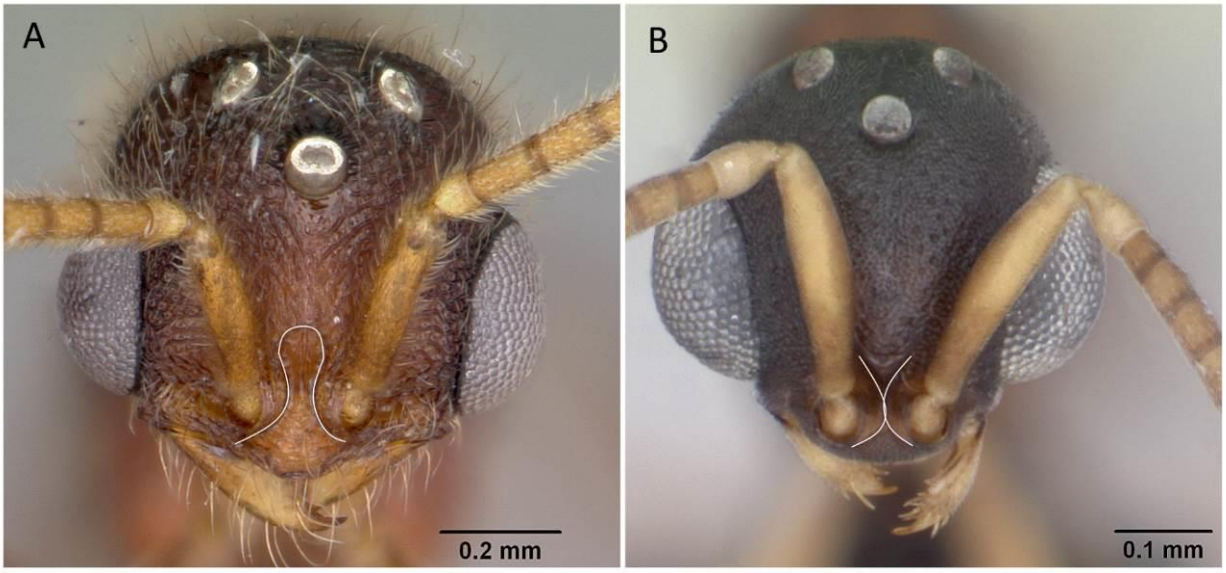


Figure 71. Head in full face view showing the frontal carinae. **A** *Proceratium* mgm09 (CASENT0081854) **B** *Probolomyrmex* mgm01 (CASENT0080551). Photographer April Nobile.

2 Stigmal vein absent: radial sector (Rs) fully present in forewing, joining radius (R) at apical costal margin (Fig. 72A). Pygostyles present ……*Discothyrea*

– Stigmal vein present: radial sector (Rs) absent in medial section of forewing and not reaching costal margin; radius (R) absent on the costal margin (Fig. 72B). Pygostyles absent ……*Probolomyrmex*

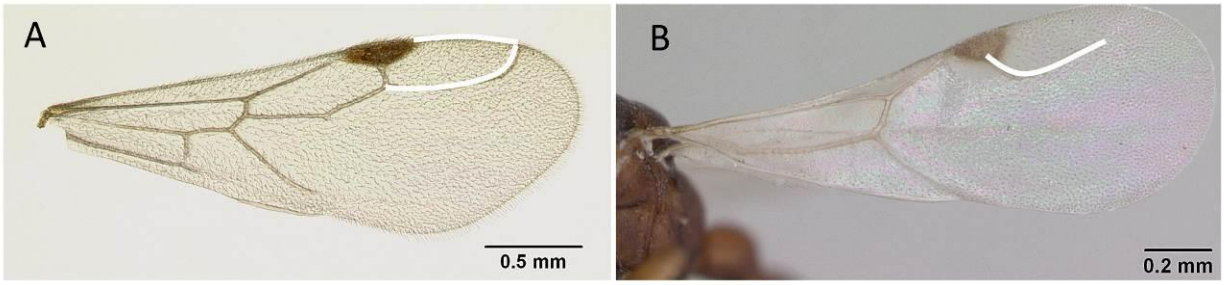


Figure 72. Forewing venation. **A** *Discothyrea* mgm01 (CASENT0083649). **B** *Probolomyrmex curculiformis* (CASENT0050214). Photographers Erin Prado (72A), April Nobile (72B).

Discothyrea Roger, 1863

Mandible smaller than in conspecific worker, but also triangular to subtriangular. Frontoclypeal region projecting dorsally. Frontal carinae merged into a single median carina. Antennal sockets opening posteriorly. Antenna consists of 13 segments. Labrum bilobed apically. Second segment of the maxillary palp not hammer-shaped. Pro-, meso-, and metatibia with a single spur. Pygostyles present. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) fused to M+Rs. Radial sector (Rs) reaches to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. media between Rs+M and 2rs-m completely absent. On the hindwing, radius

(R) absent. Rs present. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a absent.

Probolomyrmex Mayr, 1901

Mandible smaller than in conspecific worker, but also triangular to subtriangular. Frontoclypeal region projecting dorsally. Frontal carinae merged into single median carina. Antennal socket opening posteriorly. Antenna consists of 13 segments. Labrum bilobed apically. Second segment of maxillary palp hammer-shaped. Pro-, meso-, and metatibia with a single spur. Pygostyles absent. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach to costal margin. Cross-vein 2r-rs present, forming base of ‘free stigma vein. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely absent. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m absent. Media (M) absent. M+Cu absent. 1rs-m+M absent. Free section of the cubitus absent. Cross-vein cu-a absent.

Proceratium Roger, 1863

Mandible smaller than in conspecific worker, but also triangular to subtriangular. Frontoclypeal region not projecting dorsally. Frontal carinae separated, not merged into single median carina. Antennal sockets opening dorsally. Antenna consists of 13 segments. Labrum bilobed apically. Second segment of the maxillary palp hammer-shaped. Pro-, meso-, and metatibia with a single spur. Pygostyles absent. On the forewing, pterostigma well-developed. Costal vein (C) present. Cross-vein 1m-cu absent. Radial sector (Rs) absent between M+Rs and 2r-rs. Radial sector (Rs) fails to reach to costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein cu-a located far from junction between media and cubitus. Media between Rs+M and 2rs-m completely present. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m present. Media (M) usually present. M+Cu present. 1rs-m+M present. Free section of the cubitus present. Cross-vein cu-a present.

PSEUDOMYRMICINAE Smith, 1952

Diagnosis of male ants of the subfamily Pseudomyrmicinae in the Malagasy region

- Antenna filiform, consisting of 12 segments.
- Abdominal segment II nearly as large as segment III in lateral view.
- Mesopleural oblique furrow reaching pronotum far away from pronotal posteroventral margin.
- Apical portion of abdominal sternum IX not bi-spinose.
- Pygostyles present.
- Protibia with one spur.
- Mesotibia with two spur.
- Metatibia with two spurs.

Mandible triangular and distinctly dentate. Masticatory margin with 2–6 teeth. Anterior margin of clypeus straight to broadly convex, rarely emarginate. Palp formula 6,4. Antennal scrobe absent. Antenna consists of 12 segments. First funicular segment short and globular. Eyes large, located at or in front of the midlength of the sides. Ocelli conspicuous. Occipital carina sharp but not forming a raised crest.

Promesonotal suture visible in profile or dorsally. Notauli absent. Protibia with pectinate tibial spur. Meso-and metatibiae with two tibial spurs. Aroliae small. Propodeum usually unarmed and rounded. Propodeal spiracle rounded. Abdominal segment III narrowly attaches to abdominal segment IV. Paramere large. Pygostyle present. On the forewing, pterostigma well-developed but not pigmented. Costal vein (C) absent. Media (M) fused with Rs+M. Media (M) never reaching costal margin. Radial sector (Rs) reaches costal margin. Cross-vein 2r-rs connected with radial sector posterior to pterostigma. Cross-vein 2rs-m absent. Cross-vein 1m-cu present. Fusion of Rs+M extended distally, so that 1m-cu arises from Rs+M, not from M. R present. Cu-a located far from junction between media and cubitus. Cu present. Free section of the cubitus present. On the hindwing, radius (R) absent. Rs present. Cross-vein 1rs-m present. Media (M) vestigial. M+Cu absent. 1rs-m+M vestigial. Free section of the cubitus absent. Cross-vein cu-a absent.

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Figure caption

Figure 1. Black light. Photographer Brian Fisher

Figure 2. Yellow pan and Malaise trap. Photographer Brian Fisher

Figure 3. Portion of abdominal sternum IX. **A** *Lioponera* indet (CASENT0001042) **B** *Technomyrmex* mg08 (CASENT0049527). Photographer Masashi Yoshimura.

Figure 4. Abdominal segment II and III in lateral view. **A** *Tetraponera longula* (CASENT0138661) **B** *Probolomyrmex curculiformis* (CASENT0050214). Photographers Dimby Raharinjanahary (4A), April Nobile (4B).

Figure 5. Metatibial spur. **A** *Tetraponera* psw094 (CASENT0053316) **B** *Aphaenogaster swammerdami* (CASENT0000990). Photographers April Nobile (5A), Masashi Yoshimura (5B).

Figure 6. Gaster in dorsal view, the cinctus at abdominal segment IV level. **A** *Euponera sikorae* (CASENT0065480) **B** *Technomyrmex albipes* (CASENT0055727). Photographer Michele Esposito.

Figure 7. Hindwings of male ants. **A** *Discothyrea* mgm01 (CASENT0083649) **B** *Odontomachus coquereli* (CASENT0049797). Mesosoma in lateral view, showing the oblique mesopleural furrow **C** *Proceratium* dr01 (CASENT0145100) **D** *Acropyga goeldii* (CASENT0903184). Photographers Erin Prado (7A, 7B), Dimby Raharinjanahary (7C), Z. Lieberman (7D).

Figure 8. Attachment of petiole (abdominal segment II) to abdominal segment III. **A** *Stigmatomma* mgm04 (CASENT0063981) **B** *Bothroponera perroti* (CASENT0135783). Photographers Erin Prado (8A), Dimby Raharinjanahary (8B).

Figure 9. Mandible in full face view. **A** *Technomyrmex albipes* (CASENT0055727) **B** *Anoplolepis gracilipes* (CASENT0158950). Photographers April Nobile (9A), Michele Esposito (9B).

Figure 10. Tibial spur on metatibia. **A** *Prionopelta subtilis* (CASENT0049809) **B** *Mystrium* mirror (CASENT0492154). Photographer Masashi Yoshimura.

Figure 11. Venation of forewing. **A** *Adetomyrma* mgm01 (CASENT0218013) **B** *Stigmatomma* mg01 (CASENT0083104). Photographer Masashi Yoshimura.

Figure 12. Posterior portion of the abdomen in oblique view. **A** *Stigmatomma* mgm01 (CASENT0007139) **B** *Xymmer* drm01 (CASENT0135825). Photographers April Nobile (10A), Dimby Raharinjanahary (10B).

Figure 13. Venation of forewing. **A** *Mystrium barrybressleri* (CASENT0078803) **B** *Xymmer* mgm04 (CASENT0113147). Photographer Masashi Yoshimura.

Figure 14. Mandible in full face view. **A** *Technomyrmex difficilis* (CASENT0049968) **B** *Ravavy miafina* (CASENT0474633). Photographer April Nobile.

Figure 15. Apical portion of abdominal sternum IX **A** *Technomyrmex* mg08 (CASENT0049527) **B** *Tapinoma* mg07 (CASENT0137327). Photographers Masashi Yoshimura (15A), Erin Prado (15B).

Figure 16. Head in full face view showing the comparison of the scape length. **A** *Aptinoma mangabe* (CASENT0173594). **B** *Tapinoma* mg12 (CASENT0115678). Photographer April Nobile.

Figure 17. Mandible. **A** *Ravavy miafina* (CASENT0179530). **B** *Ochetellus glaber* (CASENT0179489). Photographer Masashi Yoshimura.

Figure 18. Maxillary palps. **A** *Tanipone zona* (CASENT0168822) **B** *Lividopone* mg10 (CASENT0027622). Photographer Michele Esposito.

Figure 19. Forewing showing the cross vein 2rs-m. **A** *Chrysapace sauteri* (CASENT0179567) **B** *Eburopone* dr03 (CASENT0138666). Photographer Erin Prado (19A) Michele Esposito (19B).

Figure 20. Tibial spurs on the middle leg. **A** *Simopone silens* (CASENT0740895) **B** *Lividopone* mg10 (CASENT0496142). Photographer Michele Esposito.

Figure 21. Forewing in lateral view showing the costal vein (C). **A** *Eburopone* dr03 (CASENT0138666) **B** *Lioponera* mg06 (CASENT0138558). Photographer Michele Esposito.

Figure 22. Abdominal segment II and III in lateral view showing the helcium circumference. **A** *Lividopone* dr02 (CASENT0135633) **B** *Eburopone* dr03 (CASENT0138666). Photographer Michele Esposito.

Figure 23. Forewing showing the Rs vein. **A** *Lioponera* dr02 (CASENT0144823) **B** *Parasyscia imerinensis* (CASENT0117837). Photographer Michele Esposito.

Figure 24. Maxillary palp **A** *Brachymyrmex cordemoyi* (CASENT0740909) **B** *Tapinolepis* mg01(CASENT0763590). Photographer Veronica M. Sinotte.

Figure 25. Mandible, showing the number of teeth on the masticatory margin of mandible **A** *Anoplolepis gracilipes* (CASENT0158950) **B** *Nylanderia amblyops* (CASENT0740913). Photographer Veronica M. Sinotte.

Figure 26. Body in lateral view, showing the comparaison between flagellum and mesosoma length. **A** *Tapinolepis* mg01 (CASENT0763590) **B** *Plagiolepis* mg02 (CASENT0179486). Photographers Veronica M. Sinotte (26A), Erin Prado (26B).

Figure 27. Head in lateral view, showing the size of the malar space **A** *Lepisiota capensis* (CASENT0861517) **B** *Plagiolepis alluaudi* (CASENT0495472). Photographers Michele Esposito (27A), Erin Prado (27B).

Figure 28. Head in full-face view, showing the setae disposition of the frons **A** *Camponotus alamaina* (CASENT0481800) **B** *Nylanderia amblyops* (CASENT0066704). Photographers Erin Prado (28A), Michele Esposito (28B).

Figure 29. In full-face view, scape **A** *Nylanderia* jsl-galo (CASENT0370667) **B** *Paratrechina longicornis* (CASENT0137341). Photographers Michele Esposito (29A), April Nobile (29B).

Figure 30. Antennae in lateral view showing the comparaison between the length of the pedicel and first basal funiculus. **A** *Nylanderia bourbonica* (CASENT0160276) **B** *Paratrechina ankarana* (CASENT0701215). Photographer Michele Esposito.

Figure 31. Head in full face view, showing the comparaison of scape and head length. **A** *Paraparatrechina glabra* (CASENT0497708) **B** *Paratrechina longicornis* (CASENT0244951). Photographers April Nobile (31A), Michele Esposito (31B).

Figure 32. In profile view showing occipital carina **A, C** *Aphaenogaster bressleri* (CASENT0495103). In dorsal view form mesoscutellum **B, D** *Cyphomyrmex minitus* (CASENT0264488). Photographers April Nobile (32A, 32C), Michele Esposito (32B, 32D)

Figure 33. Head in profile view **A** *Strumigenys chilo* (CASENT0145240) **B** *Tetramorium silvicola* (CASENT0494732). Photographers Dimby Raharinjanahary (33A), Erin Prado (33B).

Figure 34. Scape length in profile view **A** *Cyphomyrmex minutus* (CASENT0264488) **B** *Eurhopalothrix* km01 (CASENT0146071). Photographers Michele Esposito (34A), Erin Prado (34B).

Figure 35. Forewing in lateral view showing the radial sector **A** *Eurhopalothrix* km01 (CASENT0146071) **B** *Strumigenys dicomas* (CASENT0135118). Photographer Erin Prado

Figure 36. Forewing in lateral view showing the cross vein 2rs-m. **A** *Pheidole* mgs006 (CASENT0135889) **B** *Carebara* drm03 (CASENT0143975). Photographer Dimby Raharinjanahary.

Figure 37. Mandible in full face view. **A** *Pilotrochus besmerus* (CASENT0083498) **B** *Malagidris sofina* (CASENT0906626). Photographers Michele Esposito (37A), Estella Ortega (37B).

Figure 38. Head and mesosoma in profile view. **A** *Monomorium termitobium* (CASENT0460162) **B** *Meranoplus mayri* (CASENT0062813) C *Crematogaster hazolava* (CASENT0317643). Photographers Dimby Raharinjanahary (38A), April Nobile (38B), Estella Ortega (38C).

Figure 39. Head in full-face view showing the pedicel, mandible, postero-median margin of clypeus. **A** *Erromyrma latinodis* (CASENT0788835) **B** *Syllophopsis modesta* (CASENT0143818). Photographers Michele Esposito (39A), Dimby Raharinjanahary (39B).

Figure 40. Forewing, petiole and post petiole in lateral view showing the 1m–cu cross-vein and the peduncular length. **A, C** *Syllophopsis modesta* (CASENT0135642) **B** *Monomorium termitobium* (CASENT0135673) **D** *Monomorium termitobium* (CASENT0135952). Photographer Dimby Raharinjanahary.

Figure 41. Head in full-face view showing the form of the mandible and scape length. **A** *Monomorium exiguum* (CASENT0209350) **B** *Adelomyrmex* sc01 (CASENT0160764). Photographers Dimby Raharinjanahary (41A), Michele Esposito (41B).

Figure 42. Head in lateral view showing the position of the antennal scrobe. **A** *Cataulacus oberthueri* (CASENT0435930) **B** *Metapone emersoni* (CASENT0113799). Photographers April Nobile (42A), Michele Esposito (42B).

Figure 43. Protibia in ventral view. **A** *Melissotarsus insularis* (CASENT0804569) **B** *Teratanер* fhg22 (CASENT0429745). Photographer Michele Esposito.

Figure 44. Mesosoma in lateral view showing the position of mesonotal suture relative to the point of the wing process. **A** *Teratanер alluaudi* (CASENT0496102) **B** *Malagidris dulcis* (CASENT0135071). Photographers Erin Prado (44A), Estella Ortega (44B).

Figure 45. Abdominal segment III attaches to abdominal segment IV. **A** Crematogaster maina (CASENT0132785) **B** *Pilotrochus besmerus* (CASENT0083498). **C** *Crematogaster agnetis* (CASENT0101760) **D** *Carebara jajoby* (CASENT0494540). Photographers Estella Ortega (45A), April Nobile (45B-45D).

Figure 46. Abdominal segment II and III in lateral view showing the peduncular lenght. **A** *Eutetramorium mocquerysi* (CASENT0495192) **B** *Meranoplus mayri* (CASENT0062813). Photographer April Nobile.

Figure 47. Antennae in lateral view showing the first basal flagellar length. **A** *Tetramorium mars* (CASENT0134555) **B** *Pilotrochus besmerus* (CASENT0057183). Photographers Dimby Raharinjanahary (47A), Michele Esposito (47B).

Figure 48. Promesonotum in dorsal view **A** *Tetramorium kelleri* (CASENT0133425). **B** *Dicroaspis* indet (CASENT0389458). Photographers Erin Prado (48A), Michele Esposito (48B).

Figure 49. Head in full-face view, showing occipital carina **A** *Malagidris alperti* (CASENT0248385) **B** *Calyptomyrmex* km01 (CASENT0136409). Photographers Michele Esposito (49A), April Nobile (49B).

Figure 50. Head in full-face view showing antennal scrobe. **A** *Metapone emersoni* (CASENT0113799) **B** *Nesomyrmex angulatus* (CASENT0147245). Photographers Michele Esposito (50A), Erin Prado (50B).

Figure 51. Mesopropodeum in lateral view. **A** *Calyptomyrmex* km01 (CASENT0136409) **B** *Pristomyrmex bispinosus* (CASENT0055726). Photographer April Nobile .

Figure 52. Propodeal spines in lateral view. **A** *Cardiocondyla emeryi* (CASENT0082706) **B** *Vollenhovia piroskae* (CASENT0101658). Photographers Michele Esposito (52A), April Nobile (52B).

Figure 53. Forewing showing Rs reaching the costal margin. **A** *Carebara* drm03 (CASENT0143975) **B** *Monomorium exiguum* (CASENT0135614). Photographer Dimby Raharinjanahary.

Figure 54. Abdomen in lateral view showing the attachment of abdominal segment III. **A** *Carebara jajoby* (CASENT0494540) **B** *Nesomyrmex hafahafa* (CASENT0053313). Photographer April Nobile.

Figure 55. Mandible in full-face view. **A** *Meranoplus mayri* (CASENT0062813) **B** *Nesomyrmex tamatavensis* (CASENT0496295). Photographers April Nobile (55A), Erin Prado (55B).

Figure 56. Mandible in full-face view. **A** *Vollenhovia piroskae* (CASENT0159914). **B** *Monomorium madecassum* (CASENT0209350). Photographer Michele Esposito.

Figure 57. Promesonotum in dorsal view. **A** *Trichomyrmex destructor* (CASENT0787666) **B** *Royidris notorthotenes* (CASENT0002249) Photographers Michele Esposito (57A). April Nobile (57B).

Figure 58. Mandible in full-face view and forewing in profile view **A, C** *Vitsika crebra* (CASENT0050262) **B, D** *Royidris peregrina* (CASENT0206165). Photographers April Nobile (58A, 58C), Estella Ortega (58B, 58D).

Figure 59. Mandible in full-face view. **A** *Platythyrea arthuri* (CASENT0442287) **B** *Mesoponera ambigua* (CASENT0052325). Photographer April Nobile.

Figure 60. Pretarsal claw. **A** *Leptogenys mangabe* (CASENT0496777) **B** *Bothroponera cambouei* (CASENT0497079). Photographer April Nobile.

Figure 61. Hind wing. **A** *Odontomachus coquereli* (CASENT0740610) **B** *Leptogenys mangabe* (CASENT0496777). Photographers Isabella Muratore (61A) April Nobile (61B).

Figure 62. Notauli on mesoscutum. **A** *Anochetus goodmani* (CASENT0147683). **B** *Bothroponera wasmannii* (CASENT0134532). Photographer Dimby Raharinjanahary.

Figure 63. Dorsolateral corner of petiole in rear view. **A** *Anochetus goodmani* (CASENT0147683) **B** *Mesoponera ambigua* (CASENT0108325). Photographer Michele Esposito.

Figure 64. Petiole in profile view showing the subpetiolar process; apical portion of abdominal tergum VIII. **A, C** *Mesoponera melanaria macra* (CASENT0272313) **B, D** *Mesoponera ambigua* (CASENT0135592). Photographers Michele Esposito (64A, 64C), Dimby Raharinjanahary (64B, 64D).

Figure 65. Apical portion of abdominal tergum VIII. **A** *Anochetus madagascarensis* (CASENT0442379) **B** *Odontomachus coquereli* (CASENT0049797). Photographer April Nobile.

Figure 66. Petiole in front view. **A** *Odontomachus coquereli* (CASENT0049797) **B** *Bothroponera cambouei* (CASENT0497079). Photographers Masashi Yoshimura (66A), April Nobile (66B).

Figure 67. Petiole form. **A** *Bothroponera wasmannii* (CASENT0147642) **B** *Brachyponera sennaarensis* (SAM-HYM-C002312). Photographer Michele Esposito.

Figure 68. Apical portion of abdominal tergum VIII. **A** *Hypoponera* mg016 (CASENT0466110) **B** *Euponera vohitravo* (CASENT0740617). Photographer Michele Esposito.

Figure 69. Tibial spur on metatibia. **A** *Hypoponera* mg057 (CASENT0430684) **B** *Euponera vohitravo* (CASENT0740617). Photographers April Nobile (69A), Michele Esposito (69B).

Figure 70. Forewing venation in queen caste. *Parvaponera darwinii madecassa* (CASENT0410199). Photographer Cerise Chen.

Figure 71. Head in full face view showing the frontal carinae. **A** *Proceratium* mgm09 (CASENT0081854) **B** *Probolomyrmex* mgm01 (CASENT0080551). Photographer April Nobile.

Figure 72. Forewing venation **A** *Discothyrea* mgm01 (CASENT0083649). **B** *Probolomyrmex curculiformis* (CASENT0050214). Photographers Erin Prado (72A), April Nobile (72B).