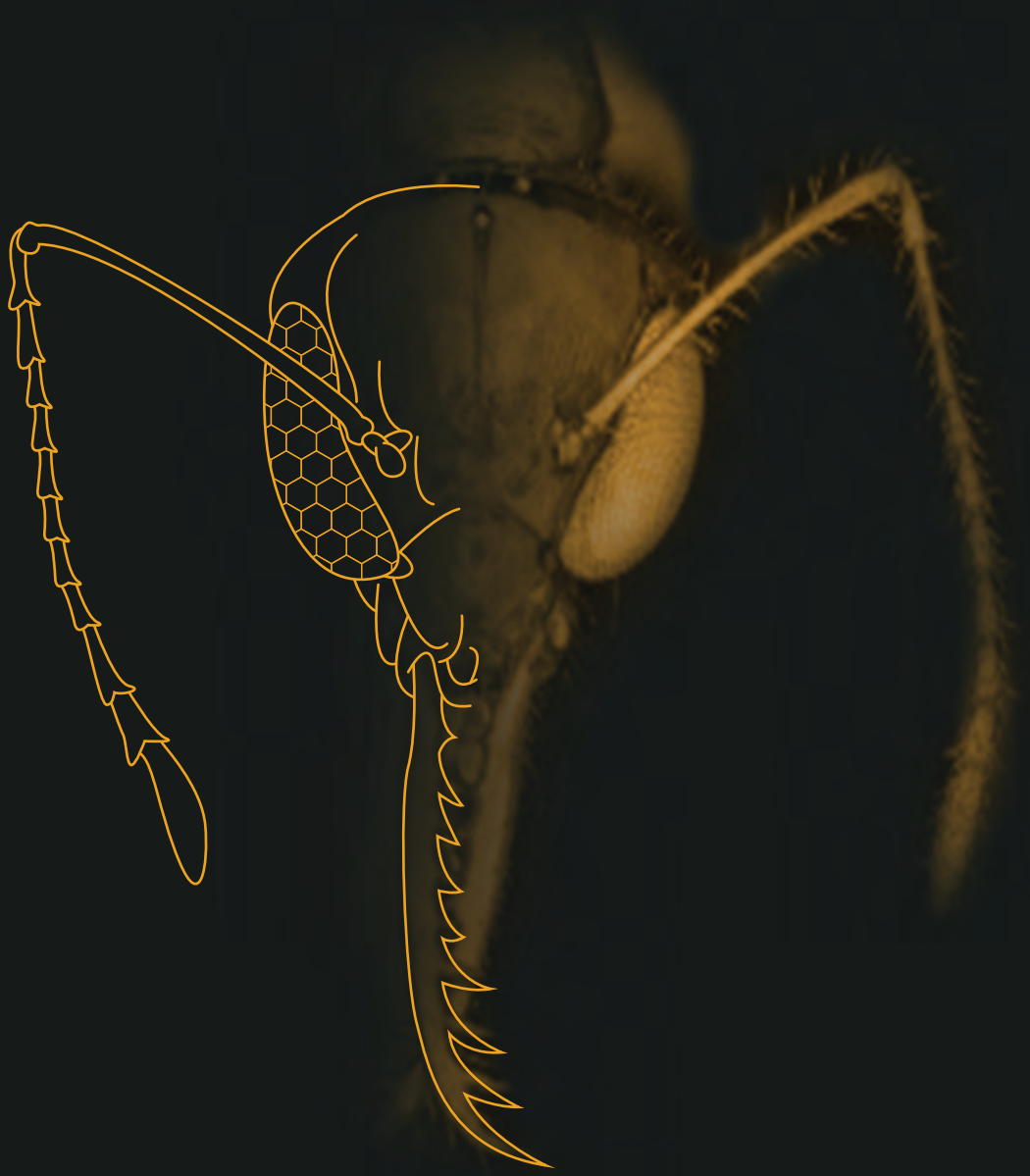
A GUIDE TO THE ANTS OF JAMBI (SUMATRA, INDONESIA)

Identification Key to Common Ant Genera
and Images of the EFForTS collection



Rizky Nazarreta, Damayanti Buchori, Purnama Hidayat,
Rico Fardiansah, Stefan Scheu, Jochen Drescher

Version 4.0 *beta*, October 2019

A Guide to the Ants of Jambi (Sumatra, Indonesia)

Identification Key to Common Ant Genera and Images of the EFForTS collection

Rizky Nazarreta[1], Damayanti Buchori[1], Purnama Hidayat[1],

Rico Fardiansah[2], Stefan Scheu[3], Jochen Drescher[3]

[1] Department of Plant Protection, IPB University, Jalan Kamper Kampus IPB Darmaga, Bogor 16680, Indonesia

[2] Centre of Biodiversity and Sustainable Land Use, University of Göttingen, Von-Siebold-Str. 8, 37075 Göttingen, Germany

[3] Animal Ecology, University of Göttingen, J.-F.-Blumenbach-Institute for Zoology and Anthropology, Untere Karspüle 2, 37073 Göttingen, Germany

Correspondence: jochen.drescher@biologie.uni-goettingen.de. ORCID ID: 0000-0002-5162-9779

Funded by the German Research Foundation (DFG), ***EFForTS*** is a Collaborative Research Centre (CRC) involving the University of Göttingen (Germany) and IPB University, Jambi University and Tadulako University Palu (all Indonesia). ***EFForTS*** focuses on the ecological and socioeconomic dimensions of rainforest conversion to rubber and oil palm. Download this and other guides at https://www.uni-goettingen.de/de/handbooks+and+guides/605977.html.

How to cite

Nazarreta R, Buchori D, Hidayat P, Fardiansiah R, Scheu S, Drescher J. 2019. A Guide to the Ants of Jambi (Sumatra, Indonesia) – Identification key to Common Ant Genera and Images of the EFForTS collection. Version 4.0. Animal Ecology, Johann-Friedrich-Blumenbach Institute for Zoology and Anthropology, University of Göttingen, Germany.

Contributions

37 images of ant species traits were added to Hashimoto's 'Identification guide to the ant genera of Borneo[1]' by Rico Fardiansiah. Unless otherwise stated, all ant images were taken by Rizky Nazarreta, Jochen Drescher, Leonie Schardt, Katherine Angulo Schipper, and Jan Wohlert. Ant sorting by Rizky Nazarreta, Herry Marta Saputra and Jan Wohlert. Taxonomic checking for selected groups by Dmitry Dubovikoff, Brian Fisher, Shingo Hosoichi, Dirk Mezger, Phil S. Ward and Seiki Yamane, coordinated by Jochen Drescher. The glossary is based on Barry Bolton's 'Identification Guide to the Ant Genera of the World'[2]. This work is licensed under the Creative Commons Attribution-NoCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0): https://creativecommons.org/licenses/by-nc-nd/4.0/.

CONTENTS

I. Introduction

Ants (Hymenoptera: Formicidae) are the most diverse and numerous social insects on earth, only rivaled by termites in overall abundance. These two kinds of insects, along with bees and wasps, can make up more than 75 percent of the total insect biomass in terrestrial tropical ecosystems[3]. Worldwide, there are more than 16,000 confirmed ant species, with many more awaiting discovery and description. In Indonesia, over 1,750 species/subspecies have been confirmed, belonging to 153 genera from 10 subfamilies. Of those, 714 species are listed as endemic, while 14 are introduced[4].
Within the framework of *EFForTS*[5], we collected ants from leaf litter and the canopy in a nested design in four land-use systems in Jambi Province, Sumatra, Indonesia: Old growth secondary lowland rainforest, jungle rubber (extensive rubber cultivation[6]), and monocultures of rubber and oil palm. (Fig. 1 a-d).

Figure 1. The four land-use systems investigated in the framework of *EFForTS*: (a) Lowland old growth secondary rainforest (here: PT REKI), (b) jungle rubber, and monoculture plantations of (c) rubber and (d) oil palm.

The *EFForTS* study sites are located in and around two forest reserves, i.e. the Bukit Duabelas National Park and the lowland rainforest restoration concession of PT Restorasi Ekosistem Indonesia (PT REKI), also called Harapan Rainforest. In each of the two 'landscapes', we established a mirrored design of four plots of each land use type in each of the two landscapes, resulting in 4 × 4 × 2 = 32 'core plots' (Fig. 2). Each core plot measures 50 × 50 m. Canopy ants were collected from three sites per core plot via canopy fogging (twelve 1 m² traps underneath each site) both in the dry season 2013 and the rainy season 2013/14, while leaf litter ants were collected by sieving litter from three randomly placed 1 m² frames per core plot in the dry season 2012.

This guide includes a modified version of the 'Identification guide to ant genera of Borneo'[1], and a glossary of ant morphology based on the 'Identification Guide to the Ant Genera of the World'[2]. The main body of this guide, consists of images of our collection of (morpho-) species. In the current version, we include 336 (morpho-) species from 74 genera and 10 subfamilies in 654 images.

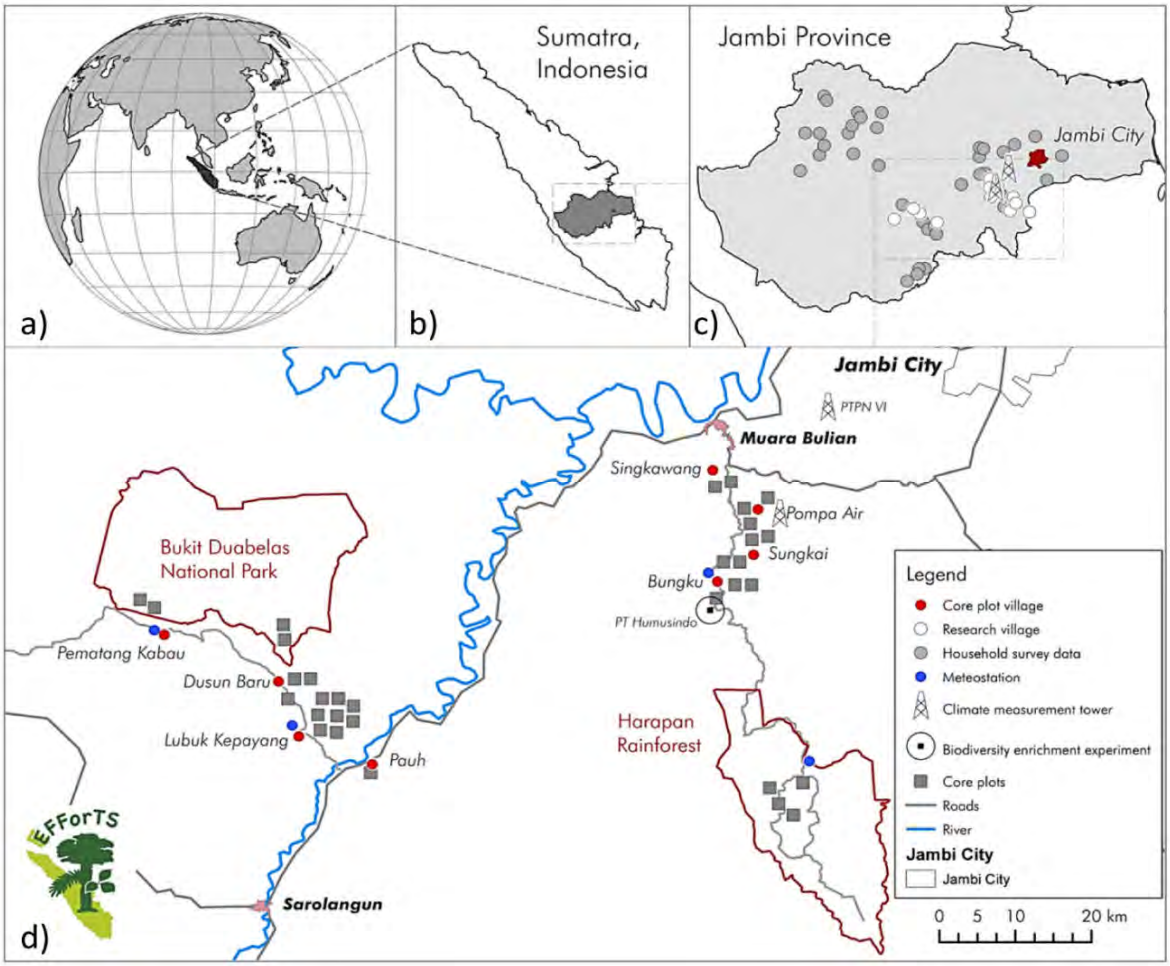


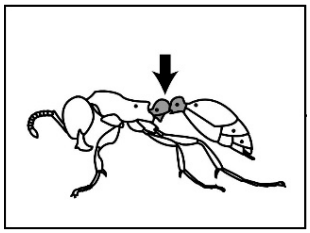
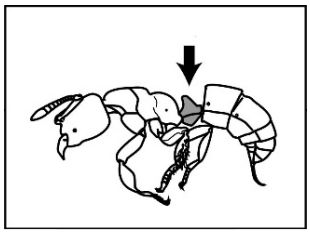
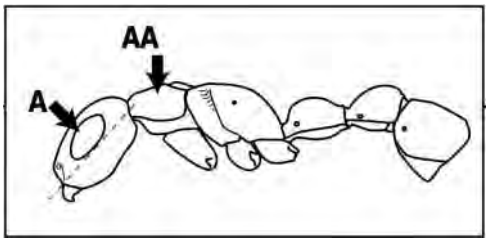
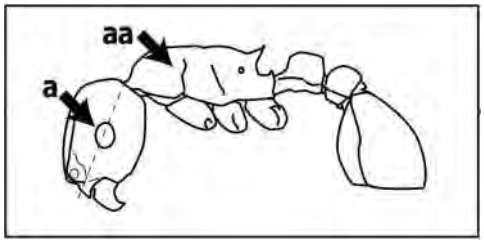
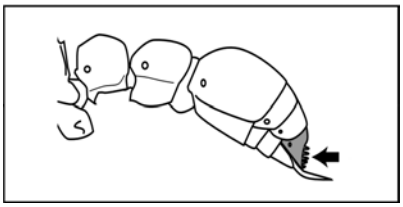
Figure 2. Location of EFForTS study sites in Sumatra (a, b) and Jambi Province (c, d). The core plot design (grey squares) is mirrored in two landscapes within and adjacent to two lowland rainforests, i.e. the Bukit Duabelas National Park and the Harapan Rainforest. Circles represent study villages and sites for the socioeconomic surveys also carried out in EFForTS (map from: Drescher *et al*., 2016)[5].

II. References

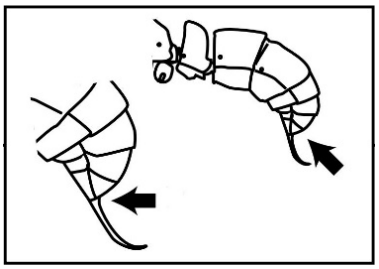
1. Hashimoto, Y. Identification guide to ant genera of Borneo. In: Inventory & Collection - Total protocol for understanding of biodiversity. (2003)
2. Bolton, B. *Identification Guide to the Ant Genera of the World*. (Harvard University Press, 1994).
3. Hölldobler, B. & Wilson, E. O. *The Ants*. (Harvard University Press, 1990)
4. AntWeb: Ants of Indonesia. (2019). Available at: https://www.antweb.org/country.do?name=Indonesia. (Accessed: 25th April 2019)
5. Drescher, J. *et al.* Ecological and socio-economic functions across tropical land use systems after rainforest conversion. *Philos. Trans. R. Soc. B Biol. Sci.* (2016). doi:10.1098/rstb.2015.0275
6. Gouyon, A., de Foresta, H. & Levang, P. Does 'jungle rubber' deserve its name? An analysis of rubber agroforestry systems in southeast Sumatra. *Agrofor. Syst.* **22**, 181–206 (1993)

II. Identification Key to Ant Subfamilies

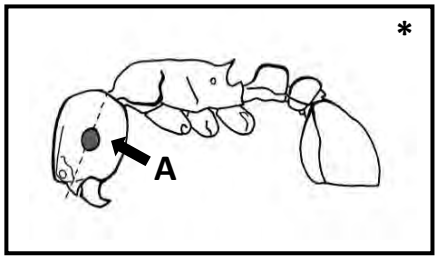
(Based on Hashimoto 2003[1]. Additional drawings by the authors marked with *)

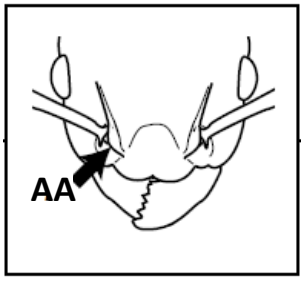
No.	Characters	Go to
1.	a. Mesosoma attached to the gaster by 2 segments (petiole and postpetiole) 	**2**
	b. Mesosoma attached to the gaster by one segment (petiole) 	**5**
2.	a. Eyes present, very large and elongate (A); Pronotum (first segment of the mesosoma) connected to mesonotum (second segment of the mesosoma) by a flexible joint (AA) 	**Pseudomyrmecinae (*Tetraponera*)**
	b. Eyes present, generally small and round (a); Pronotum (first segment of the mesosoma) fused to mesonotum (second segment of the mesosoma) (aa) 	**3**
3.	a. Pygidium (upper surface of tip of the gaster) transversely flattened and with a row of small spines 	**Cerapachyinae**

b. Pygidium (upper surface of tip of the gaster) rounded and without a row of spines **4**

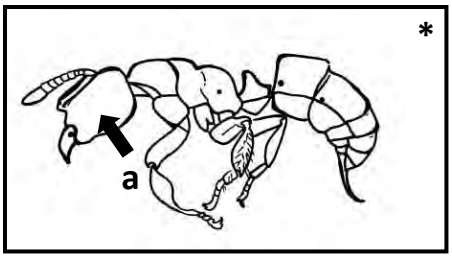


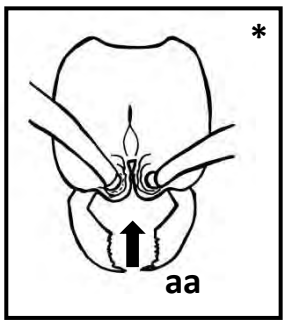
4. a. Eyes present, generally small and round (A); Frontal lobes present (AA) **Myrmicinae**



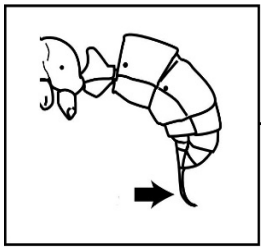


b. Eyes absent (a); Frontal lobes absent (aa) **Dorylinae**



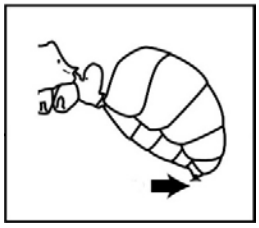


5. a. Sting present



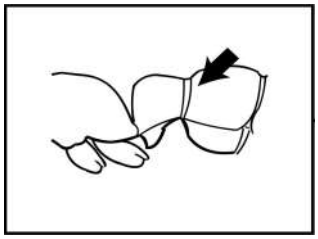
6

b. Sting absent



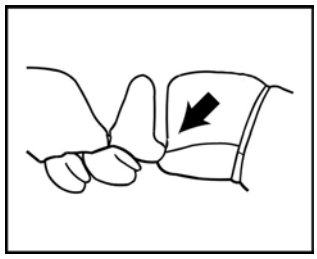
9

6. a. Petiole broadly attached to gaster



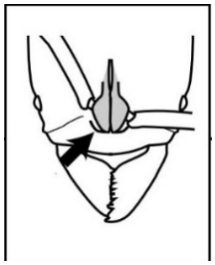
Amblyoponinae

b. Petiole narrowly attached to gaster



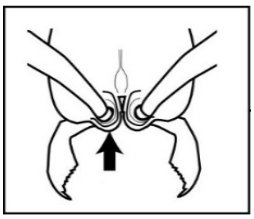
7

7. a. Frontal lobes and clypeus present; Antennal sockets entirely covered in dorsal view



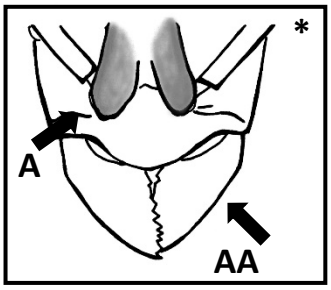
8

b. Frontal lobes and clypeus absent or frequently reduced; Antennal sockets are exposed in a full-face (frontal) view of the head

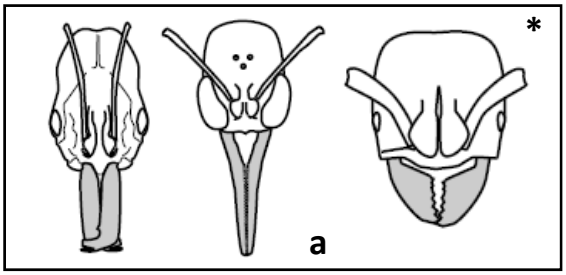


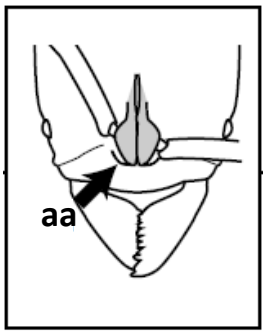
Proceratiinae

8. a. Mandibles triangular (A); Frontal lobes elongate (AA) **Ectatomminae**

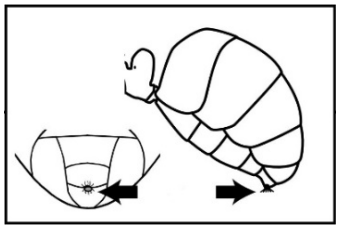


b. Mandibles variable from linear to triangular (a); Frontal lobes rounded (aa) **Ponerinae**

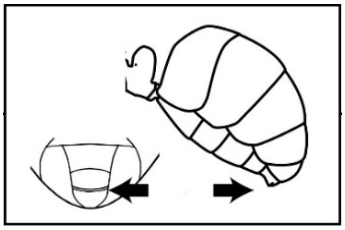




9. a. Tip of gaster with a circular or semicircular opening (acidopore) which is often fringed with short hairs **Formicinae**



b. Tip of the gaster slit-like and never with a fringe of short hairs **Dolichoderinae**

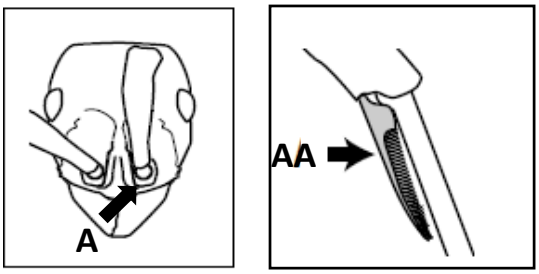


III. Identification Key to Ant Genera

(based on Hashimoto 2003[1]. Additional drawings by the authors marked with *)

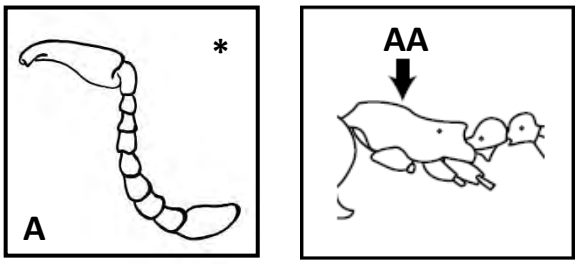
1. Cerapachyinae (only encountered genus: *Cerapachys*)

- Antennal sockets close together, separated by a narrow triangular posterior extension of the clypeus (A); Tibiae on the middle legs with a single spur (AA)

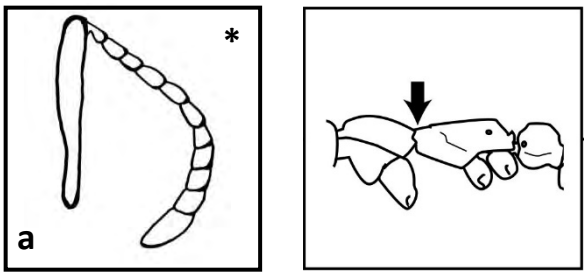


2. Dorylinae

No.	Characters	Go to
1.	a. Antenna with 8-10 segments (including the scape) (A); Promesonotal suture absent (AA)	***Aenictus***

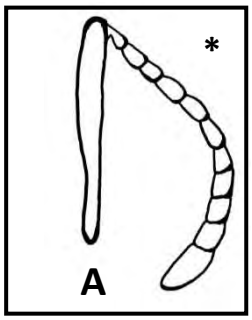


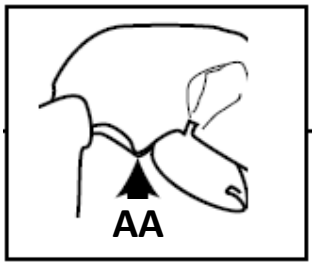
	b. Antenna with 7-12 segments (including the scape) (a); Promesonotal suture dorsally conspicuous (aa)	***Dorylus***

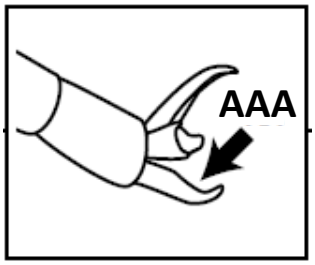


3. Ectatomminae (only encountered genus: *Gnamptogenys*)

- Antenna segment 12 (including the scape)(A); Anteroventral margin of pronotum rounded(AA); Hind pretarsal claw without median tooth (AAA)

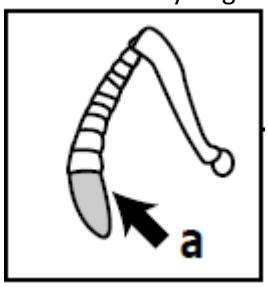




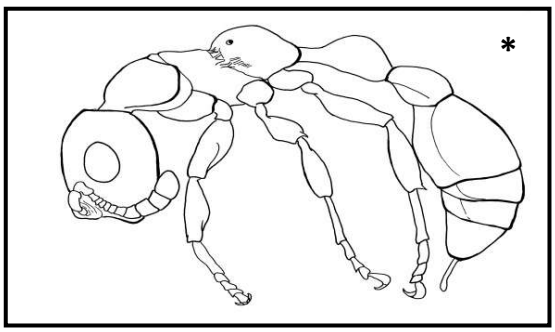


4. Proceratiinae (only encountered genus *Discothyrea*)

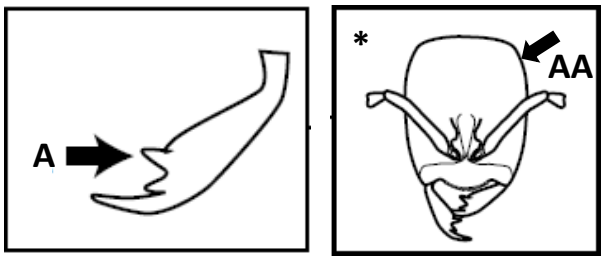
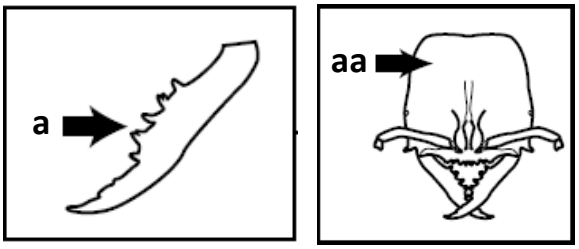
- Apical segment of antennal club extremely large and bulbous



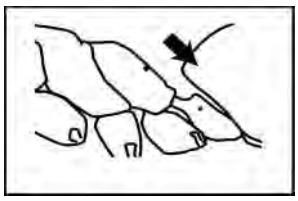
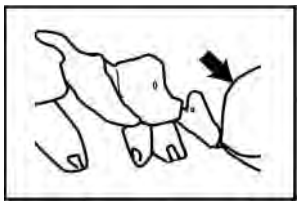
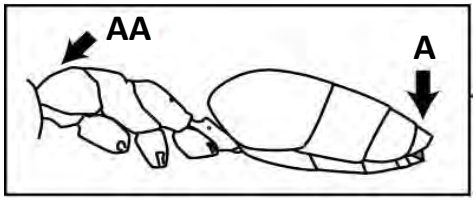
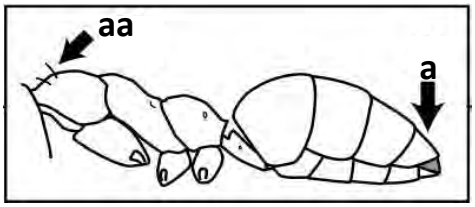
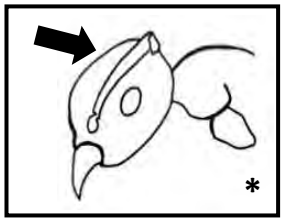
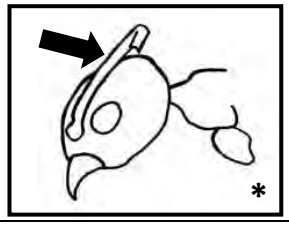
5. Pseudomyrmecinae (*Tetraponera* is the only valid genus)



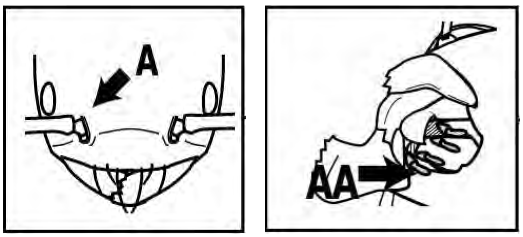
6. Amblyoponinae

No.	Characters	Go to
1.	a. Mandibles short and narrow, with only 3 teeth (A); Posterior margin of head flat or slightly concave (AA) 	***Prionopelta***
	b. Mandibles long, slender and linear, with more than 3 teeth (a); Posterior margin of head at most weakly concave, hairs and head long and thin (aa) 	***Stigmatomma*** (ex *Amblyopone*)

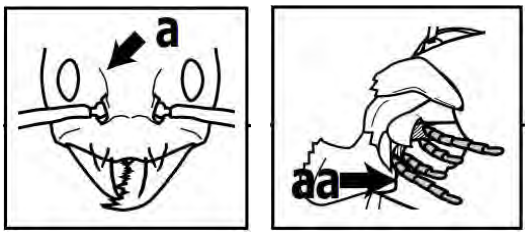
7. Dolichoderinae

No.	Characters	Go to
1.	a. Petiole overhung by first gastral segment 	**2**
	b. Petiole not overhung by first gastral segment 	**3**
2.	a. Gaster with 4 visible tergites, the fifth tergite segment reflexed below the fourth (A); Pronotum generally lacking erect hairs (AA) 	***Tapinoma***
	b. Gaster with 5 visible tergites, the fifth tergite small but not reflexed below the fourth (a); Pronotum commonly with erect hairs (aa) 	***Technomyrmex***
	b1. Scape short, extending to the rear margin of head when viewed in profile, body color black 	*Technomyrmex albipes*
	b2. Scape longer, extending beyond rear margin of head when in profile, body color brown or dark brown 	*Technomyrmex vitiensis*

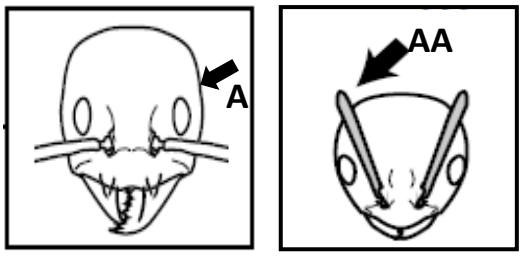
3. a. Frontal carina reduced or absent (A); Mesosoma a compact appearance; Palps short with a formula 2:2 (2 segments maxillary palps and 2 segments labial palps) (AA) ***Chronoxenus***



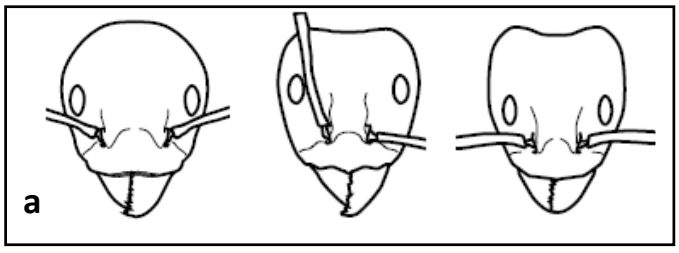
b. Frontal carina present (a); Palps long with a formula 6:4 (6 segments maxillary palps and 4 segments labial palps) (aa) **4**

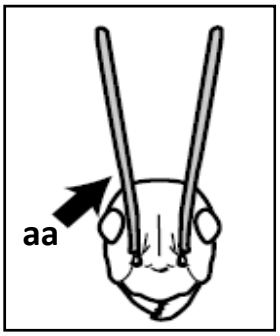


4. a. Head vertex convex (with a very slight central concavity) (A); Scape short, at most surpassing the vertex by less than one-third its length (AA) ***Loweriella***

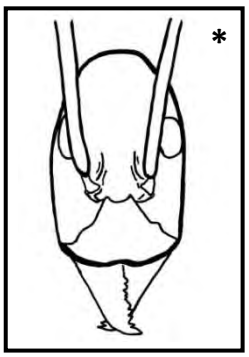
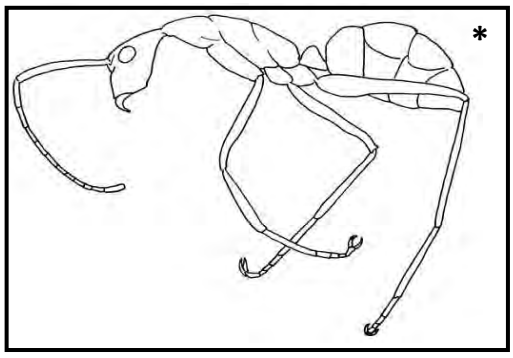


b. Head vertex convex to very weakly concave (a); Scape long, surpassing the vertex by about one-half its length (aa) **5**

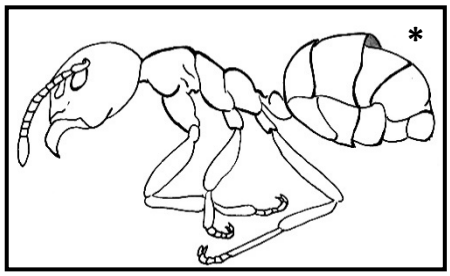




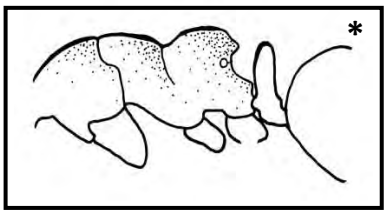
5. a. Head and mesosoma much longer than broad; Compound eyes present, approximately round, relatively posterior on the head; Legs extremely elongated — ***Leptomyrmex***

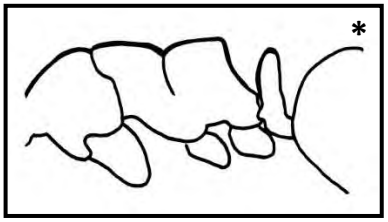
b. Head roughly triangular and mesosoma not elongated; Compound eyes present, approximately round, position on head variable; Legs not elongated — **6**

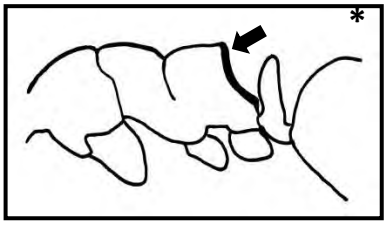
6. a. Mesosoma often heavily sculptured integument; Rear face of the propodeum generally concave (sometimes flat) — ***Dolichoderus***



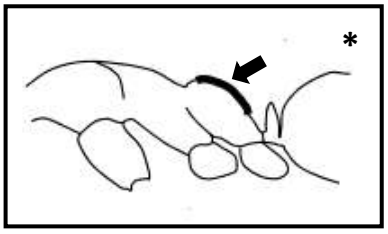
b. Mesosoma with thin and generally smooth integument — **7**



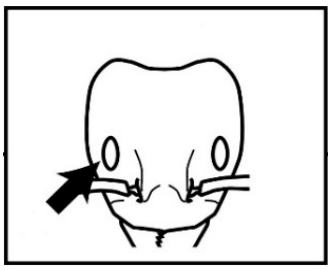
7. a. Rear face of propodeum distinctly concave; Metanotal groove a narrow — ***Oechetellus***



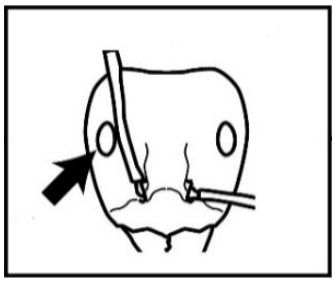
7. b. Rear face of propodeum flat or convex; Metanotal grove a broad impression — **8**



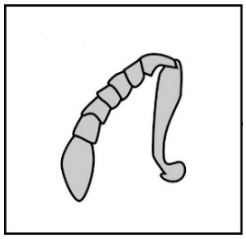
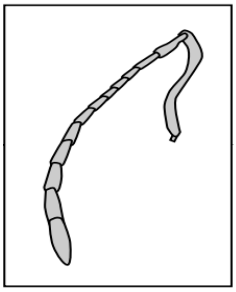
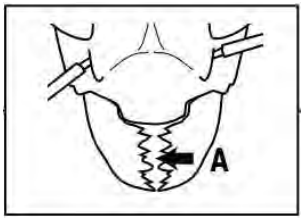
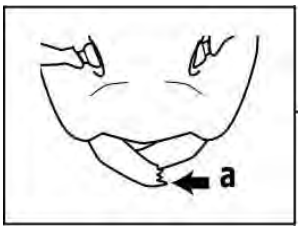
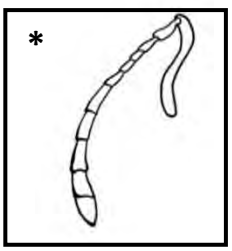
8. a. Eyes located relatively downward on the head; Posterior margin of the distinctly depressed or strongly concave — ***Philidris***



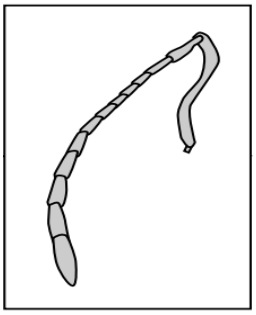
b. Eyes located relatively upward on the head; Posterior margin of the head generally rounded, occasionally weakly depressed — ***Iridomyrmex***



8. Formicinae

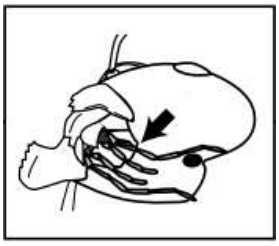
No.	Characters	Go to
1.	a. Antennae with 8 segments (including the scape)	**2**
		
	b. Antennae with 9 – 12 segments (including the scape)	**3**
		
2.	a. Apical margin of mandible with more than 4 teeth (A); Eyes large; Antennae folding back below the eye	***Gesomyrmex***
		
	b. Apical margin of mandible with 4 teeth (a); Eyes small; Antennae folding back above the eye	***Cladomyrma***
		
3.	a. Antennae with 9 – 11 segments (including the scape)	**4**
		

3. b. Antennae with 12 segments (including the scape) **7**

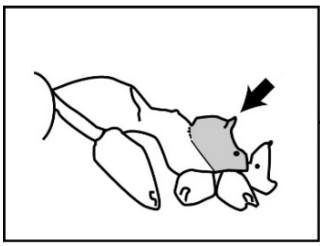


4. a. Palp formula 5:3 or less (5 segments maxillary palps and 3 segments labial palps) ***Acropyga***

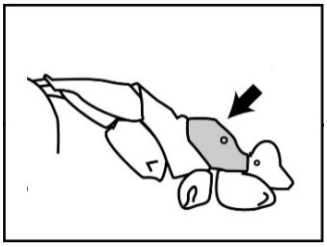
b. Palp formula 6:4 (6 segments maxillary palps and 4 segments labial palps) **5**



5. a. Propodeum armed with a pair of spines ***Lepisiota***

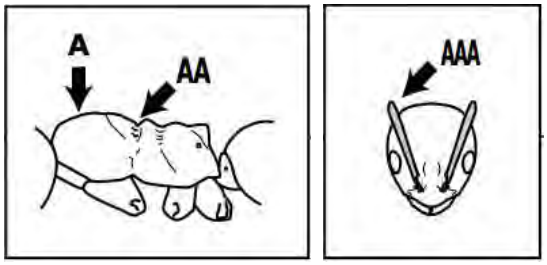


b. Propodeum unarmed without a pair of spines **6**

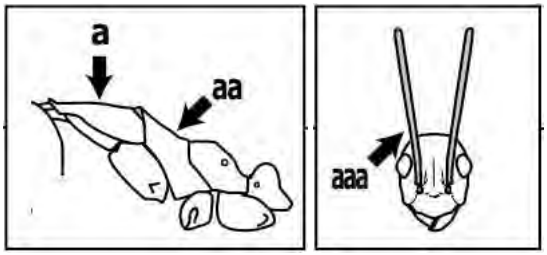


Plagiolepis

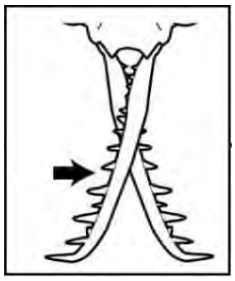
6. a. Pronotum compact (A); metanotal groove present (AA); Antennal scape short (surpassing the rear margin of the head by less than one-quarter their length) (AAA)



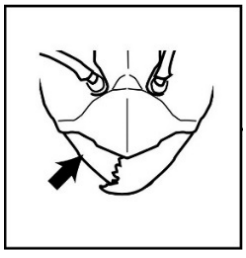
b. Pronotum elongate (a); metanotal groove absent (aa); Antennal scape extremely long, surpassing the rear margin of the head by two-thirds their length or more (aaa) ***Anoplolepis***



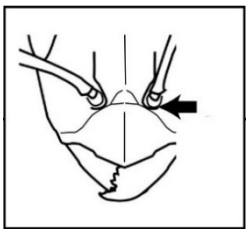
7. a. Mandibles extremely long and slender, with 10 or more teeth ***Myrmoteras***



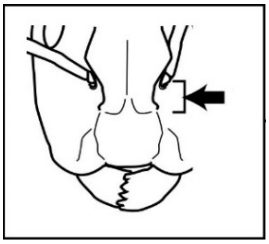
b. Mandibles subtriangular or elongate-triangular, with fewer than 10 teeth **8**



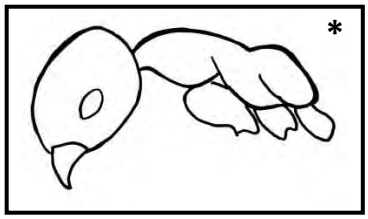
8. a. Antennal sockets very close to the rear margin of the clypeus **9**



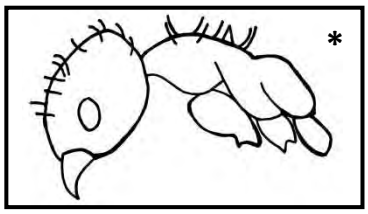
b. Antennal sockets separated from the rear margin of the clypeus **15**



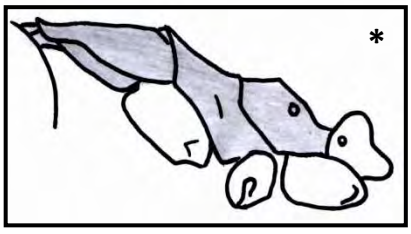
9. a. Dorsal surface of head and thorax without pairs of erect hairs ***Overbeckia***



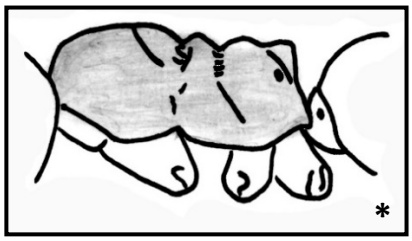
b. Dorsal surface of head and thorax with pairs of erect hairs **10**



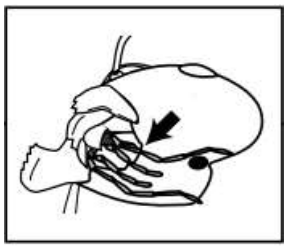
10. a. Mesosoma long and slender **11**



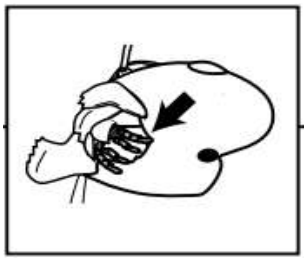
b. Mesosoma short and compact **14**



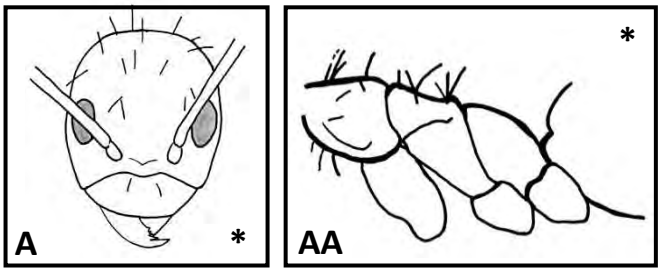
11. a. Palps long with a formula 6:4 (6 segments maxillary palps and 4 segments labial palps) **12**



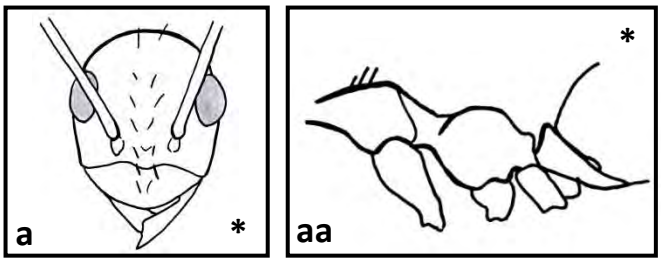
b. Palps short with a formula 2:3, 3:3 or 4:3 (2, 3 or 4 segments maxillary palps and 3 segments labial palps) **13**



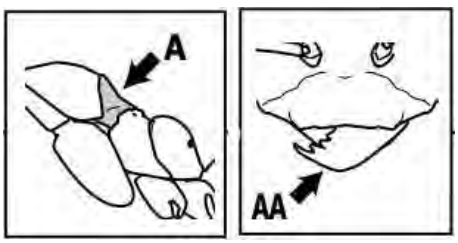
12. a. Erect setae on surface of the head with randomly scattered (A); Pronotum slightly convex (AA) ***Paratrechina***



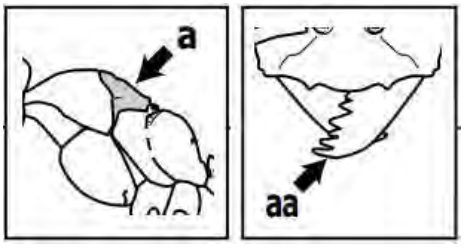
b. Erect setae on surface of the head with two parallel rows (a); Pronotum convex (aa) ***Prenolepis***



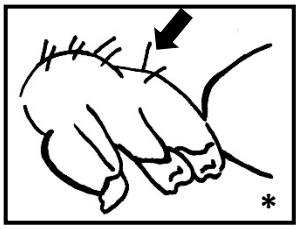
13. a. Mesonotum and anepisternum together not forming a roughly triangular (A); External margin of mandible strongly curved in apical half (AA) ***Euprenolepis***



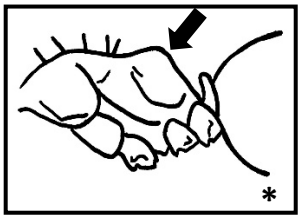
13. b. Mesonotum and anepisternum together forming a roughly triangular (a); Lateral margin of mandible shallowly curved in apical half (aa) — ***Pseudolasius***



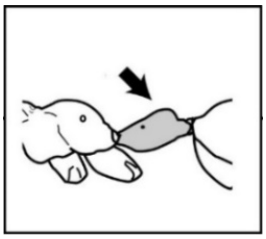
14. a. Propodeum with one pair of erect setae — ***Paraparatrechina***



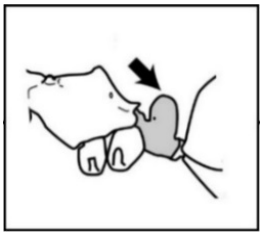
b. Propodeum without one pair of erect setae — ***Nylanderia***



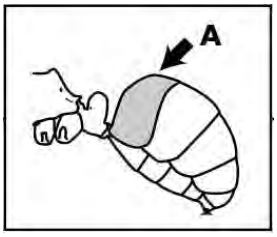
15. a. Petiole reduced to an elongate, low node — ***Oecophylla***



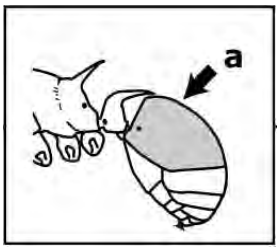
b. Petiole with an erect node — **16**



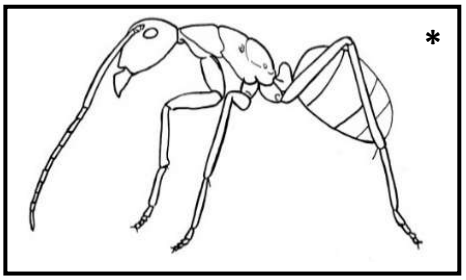
16. a. Tergite of first gastral segment at most only slightly longer than the second (A); Petiole node unarmed **17**



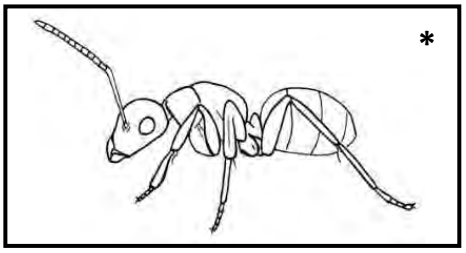
b. Tergite of first gastral segment distinctly much longer than the second (a); Petiole node armed with spines **19**



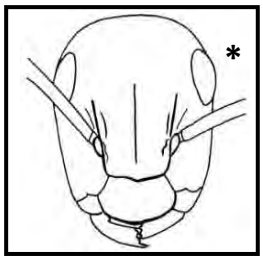
17. a. Very large size (>20 mm); Antennae and legs elongate ***Dinomyrmex***



b. Medium to large size (less than 20 mm); Antennae and legs not elongate **18**

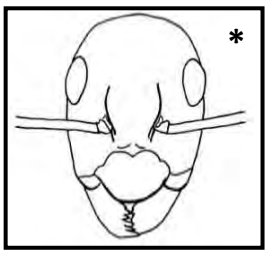


18. a. Generally small species (HW 0.65 – 1.70); Antennal insertions relatively well separated, occurring at midlength of frontal carinae; Anterolateral extremities of clypeus set off from rest of clypeus by a sulcus or impression, so clypeus appears to lack prominent anterolateral extensions



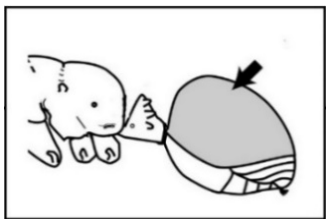
Colobopsis

b. Small to large species (HW 0.70 – 3.00); Antennal insertions less well separated; antennal insertions usually occurring in front of midlength of frontal carinae; Clypeus typically with prominent anterolateral extensions



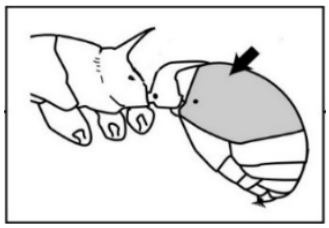
Camponotus

19. a. First gastral tergite more than half the total length of the gaster; Body usually covered with short hairs



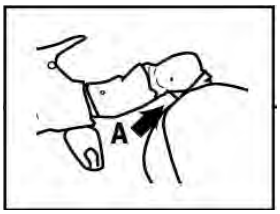
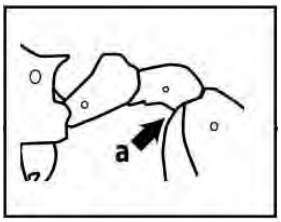
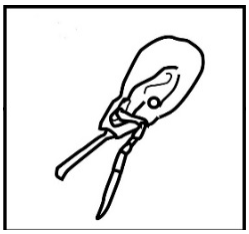
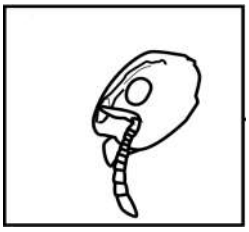
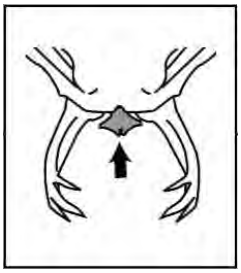
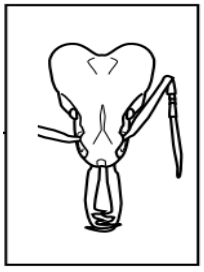
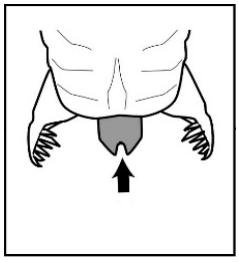
Echinopla

b. First gastral tergite less than half the total length of the gaster; Body usually covered with long erect hairs

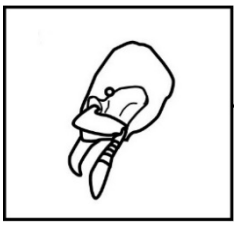


Polyrhachis

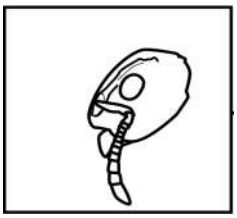
9. Myrmicinae

No.	Characters	Go to
1.	a. Postpetiole attached to the upper surface of the gaster (A); Gaster viewed from above roughly heart-shaped 	***Crematogaster***
	b. Postpetiole attached to the front of the gaster (a); Gaster viewed from above not particularly heart-shaped 	**2**
2.	a. Antennae with 4-6 segments (including the scape) 	**3**
	b. Antennae with more 7-12 segments (including the scape) 	**4**
3.	a. Shield of labrum roughly T-shaped  	***Strumigenys (all)***
	b. Shield of labrum never T-shaped  	***Strumigenys (ex Pyramica)***

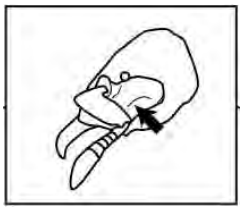
4. a. Antennae with 7 segments (including the scape) **5**



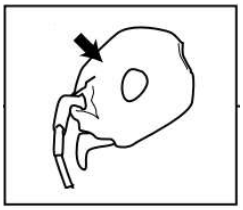
b. Antennae with 8-12 segments (including the scape) **6**



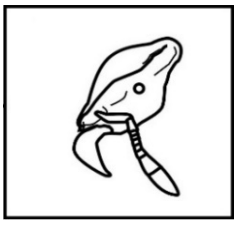
5. a. Antennal scrobes present below the eyes ***Eurhopalothrix***



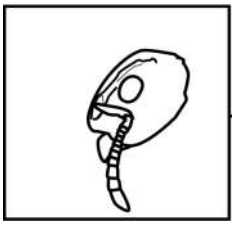
b. Antennal scrobes absent ***Myrmicaria***



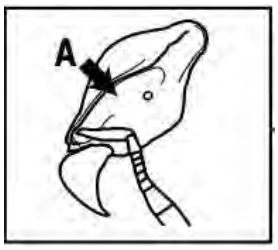
6. a. Antennae with 9 segments (including the scape) **7**

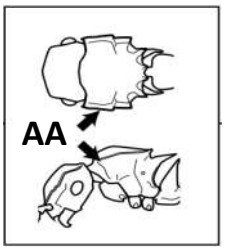


b. Antennae with 10-12 segments (including the scape) **8**

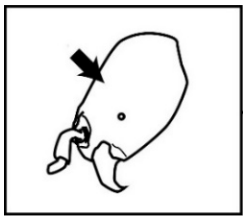


7. a. Antennal scrobes present (A); Upper surface of the mesosoma forming a broad shield (AA); Propodeal spines short — ***Meranoplus***



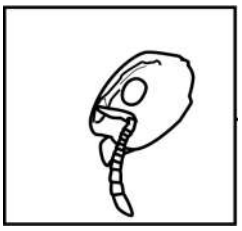


b. Antennal scrobes absent — ***Oligomyrmex***



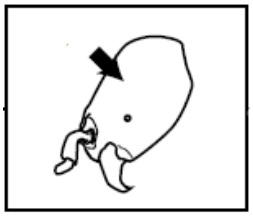
8. a. Antennae with 10 segments (including the scape) — **9**

b. Antennae with 11-12 segments (including the scape) — **13**

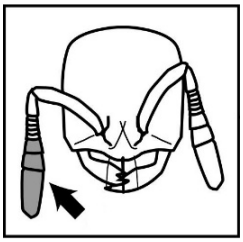


9. a. Upper surface of the head with deep groove (antennal scrobe) — ***Mayriella***

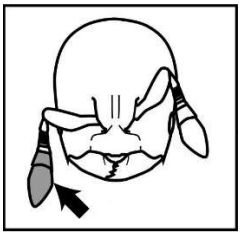
b. Upper surface of the head lacking groove (antennal scrobe) — **10**



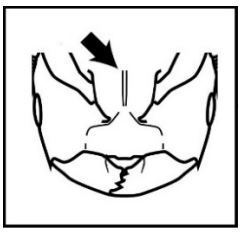
10. a. Antennae with 3 segmented club — ***Monomorium*** **(part)**



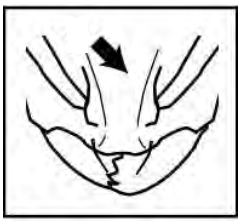
b. Antennae with 2 segmented club — **11**



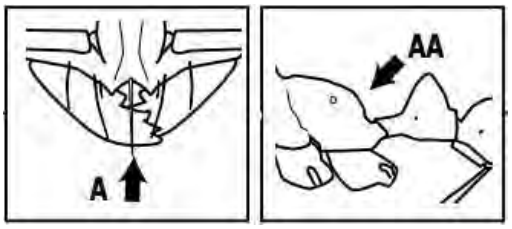
11. a. Frontal lobes very closely approximated touching — ***Rhopalomastix***



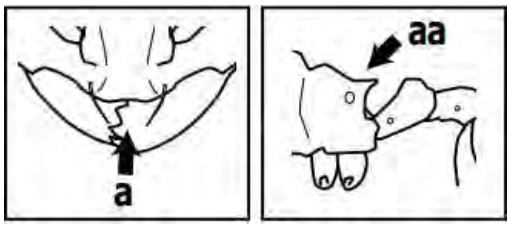
b. Frontal lobes separated — **12**



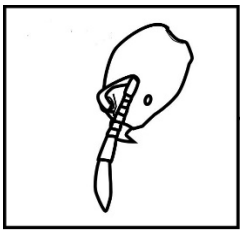
12. a. Front margin of the clypeus with a single central elongate setae (A); Propodeum rounded and without spines (AA) — ***Solenopsis***



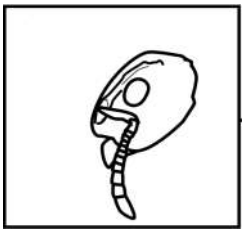
b. Front margin of the clypeus without a single central elongate setae (a); Propodeum with spines (aa) — ***Oligomyrmex*** **(part)**



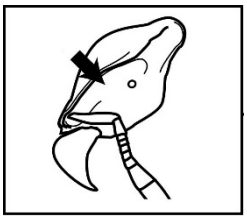
13. a. Antennae with 11 segments (including the scape) **14**



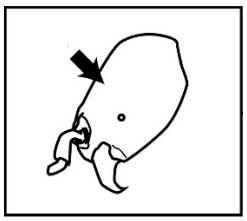
b. Antennae with 12 segments (including the scape) **23**



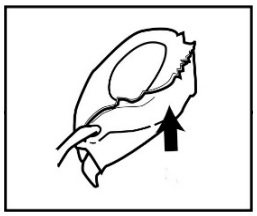
14. a. Antennal scrobes present **15**



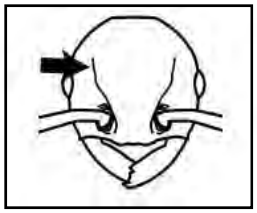
b. Antennal scrobes absent **16**



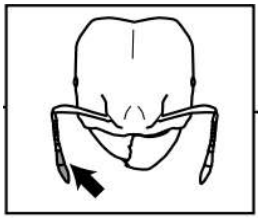
15. a. Antennal scrobes present below the eyes ***Cataulacus***



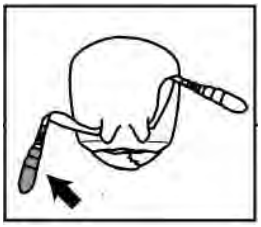
b. Antennal scrobes present above the eyes and very feeble ***Tetramorium*** **(part)**



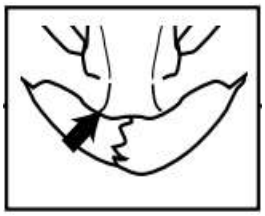
16. a. Antenna with 2 segmented club (apical and preapical antennal segments much larger than funicular segments) **17**



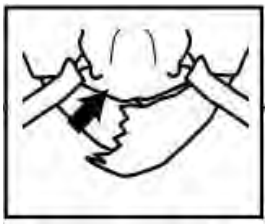
b. Antenna with 3 segmented club **18**



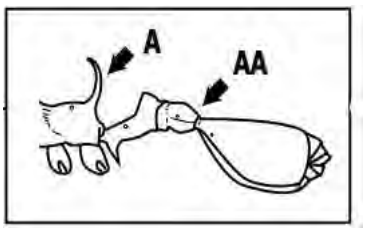
17. a. Clypeus with a pair of longitudinal ridges ***Oligomymrex* (part)**



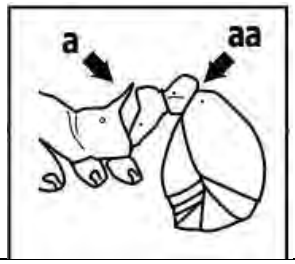
b. Clypeus smooth without longitudinal ridges ***Carebara***



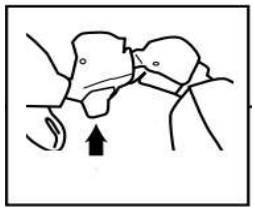
18. a. Propodeum armed with a pair of spines which curve upwards and forwards (A); Junction of postpetiole and gaster strongly dorsoventrally compressed and very narrow in profile (AA) ***Recurvidris***



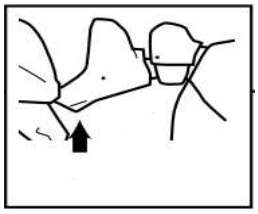
b. Propodeum unarmed or with a pair of straight spines (a); Junction of postpetiole and gaster not strongly compressed (aa) **19**



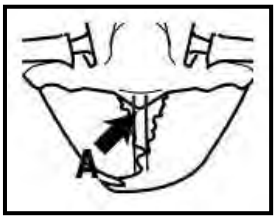
19. a. Petiole with a large to very large process — ***Vollenhovia*** **(part)**

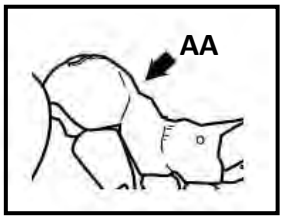


b. Petiole lacking process or with a small process — **20**

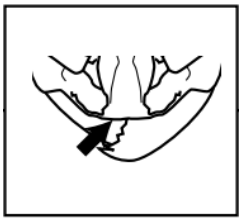


20. a. Anterior margin of clypeus with a median anteriorly protruding point (A); Pronotum forming a high, dome-like arc (AA) — **21**

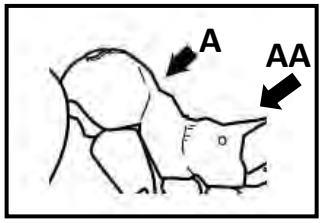




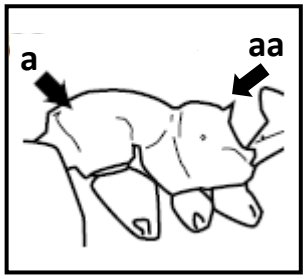
b. Anterior margin of clypeus without a median anteriorly protruding point — **22**



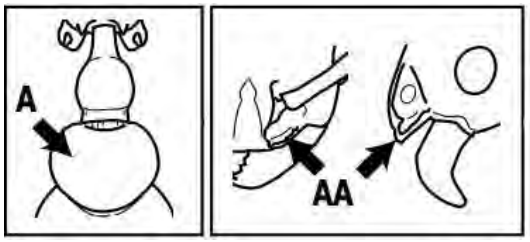
21. a. Pronotum forming a high, dome-like arc (A); propodeal spines long and sharp (AA) — ***Lophomyrmex***



b. Pronotum flat to compact (a); propodeal spines short and blunt (aa) — ***Gauromyrmex***

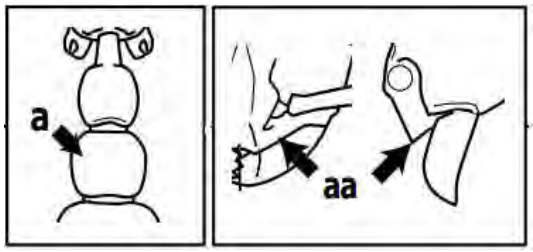


22. a. Postpetiole swollen, wider than long (A); Lateral portions of clypeus flattened and projrcting as a shelf over the mandibles (AA)



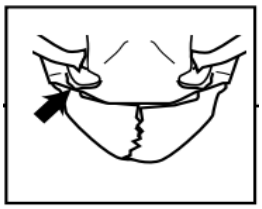
***Cardiocondyla* (part)**

b. Postpetiole at most only slightly wider than long (a); lateral portions of clypeus not flattened, not projecting as a shelf over the mandibles (aa)



***Monomorium* (part)**

23. a. Area of the clypeus immediately below the antennal sockets raised into a sharp-edged ridge

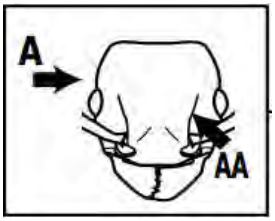


24

b. Area of the clypeus immediately below the antennal sockets without sharp-edged ridge

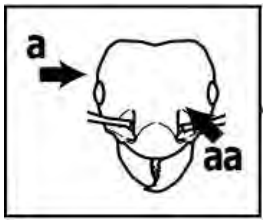
25

24. a. Head shape roughly square or rectangular (A); Frontal carinae present (AA)



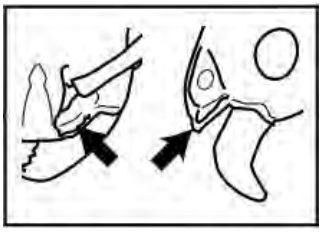
***Tetramorium* (part)**

b. Head roughly heart-shaped (a); frontal carinae absent (aa)

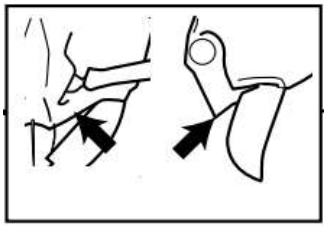


Tetramorium* *(ex Rhoptromyrmex)

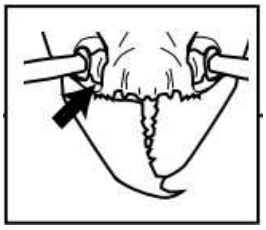
25. a. Lateral portions of clypeus flattened and projecting as a shelf over the mandibles — ***Cardiocondyla*** **(part)**



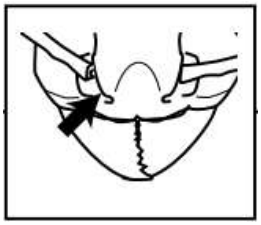
b. Lateral portions of clypeus not flattened, not as a shelf over the mandibles — **26**



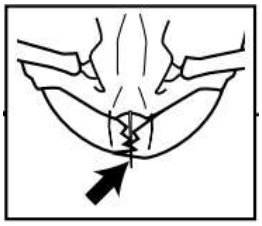
26. a. Frontal lobes absent and antennal articulations are exposed — ***Acanthomyrmex***



b. Frontal lobes present and covering antennal articulations — **27**

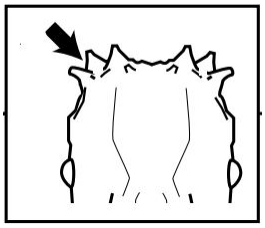


27. a. Front margin of the slypeus with a single central elongate setae — ***Monomorium*** **(part)**

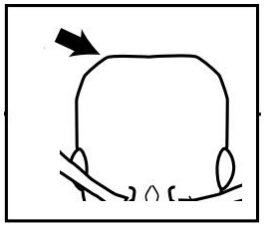


b. Front margin of the clypeus without a single central elongate seta — **28**

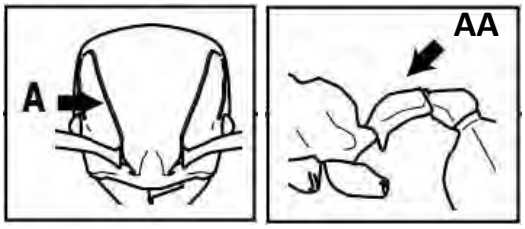
28. a. Occipital region of head with 3 pairs of similar prominences — ***Proatta***



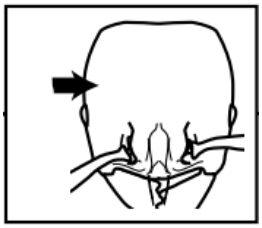
b. Occipital region of head without 3 pairs of similar prominences — **29**



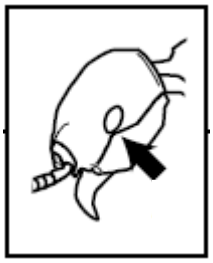
29. a. Antennal scrobes present above the eyes (A); Petiole rounded and barrel-shaped (AA) — ***Dilobocondyla***



b. Antennal scrobes absent — **30**

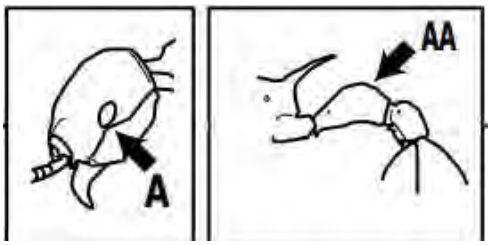


30. a. Head with an elongate groove — **31**



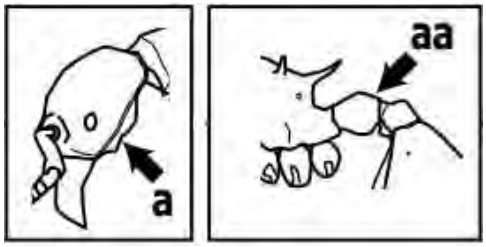
b. Head behind the eye without an elongate groove — **32**

31. a. Elongate ridge touching the eye (A); Petiole with a distinct, arched node on its upper surface (AA)



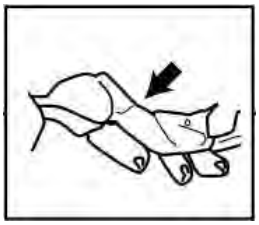
Vombisidris

b. Elongate ridge passing well below the eye (a); Petiole low and without a distinct node (aa)



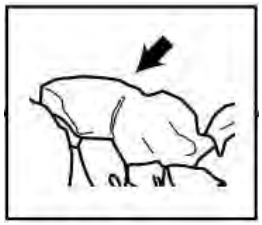
Myrmecina

32. a. Pronotum forming a high, dome-like arc



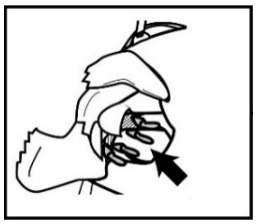
33

b. Pronotum forming a very shallowly convex curve



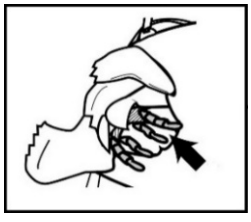
34

33. a. Palp formula 2:2 or 3:2 (2 or 3 segmented maxillary palps, 2 segmented labial palps)



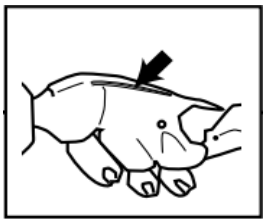
Pheidole

b. Palp formula 4:3 (4 segmented maxillary palps, 3 segmented labial palps)

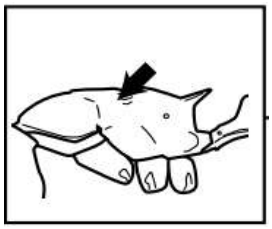


Aphaenogaster

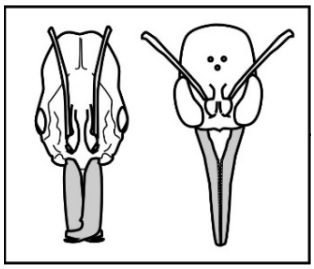
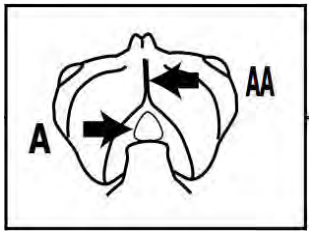
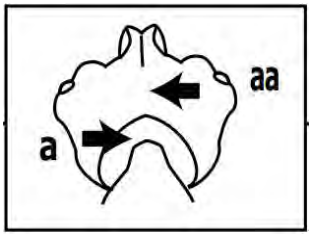
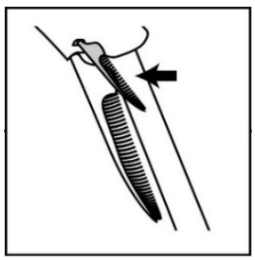
34. a. Mesonotum and propodeum is marginate laterally — ***Rotastruma***



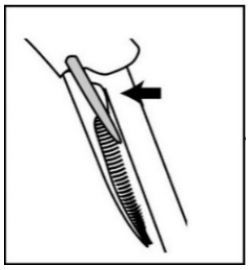
b. Mesonotum and propodeum without rugulae — ***Vollenhovia***



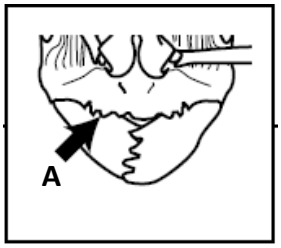
10. Ponerinae

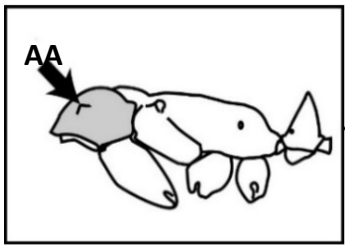
No.	Characters	Go to
1.	a. Mandibles long and straight	**2**
		
	b. Mandibles triangular	**3**
		
2.	a. Top of the head with V-shaped lines (A); Upper front of the head sometimes with shallow groove (AA)	***Odontomachus***
		
	b. Top of the head without V-shaped lines (a); Upper front of the head usually smooth (aa)	***Anochetus***
		
3.	a. Frontal lobes broadly separated by posteromedian portion of clypeus; Tibiae of the hind legs each with two comb-like (pectinate) spurs	***Platythyrea***
		

3. b. Frontal lobes narrowly separated by posteromedian portion of clypeus; tibiae of the hind legs each with a comb-like (pectinate) spur and a simple one **4**

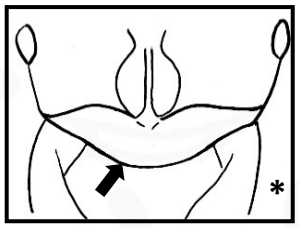


4. a. Anterior clypeal margin armed with 7-9 of distinct teeth (A); Pronotum with a pair of laterally directed triangular teeth (AA) ***Odontoponera***

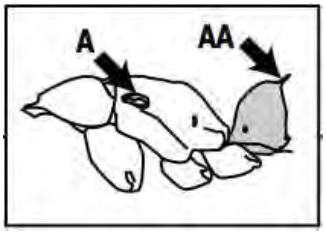




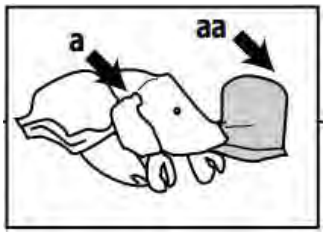
b. Anterior clypeal margin without a series of distinct teeth **5**



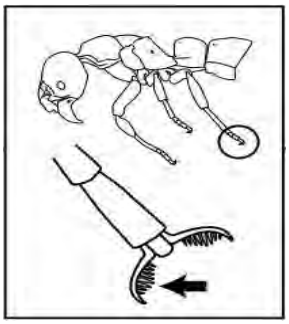
5. a. Side of the mesosoma with a conspicuous pocket-like pit just below its upper surface (A); Petiole with a pair of spines on its upper surface (AA) ***Diacamma***



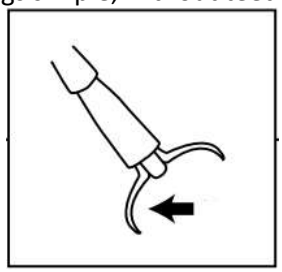
b. Side of the mesosoma smooth, and never with a pocket-like pit (a); Petiole usually rounded above and unarmed (aa) **6**



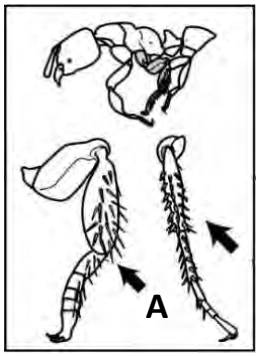
6. a. Claws on the hind legs usually with a series of small teeth on their inner surface (pectinate), but always with at least 1 tooth present — ***Leptogenys***

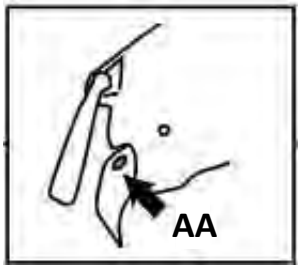


b. Claws on the hind legs simple, without teeth on their inner surface — **7**

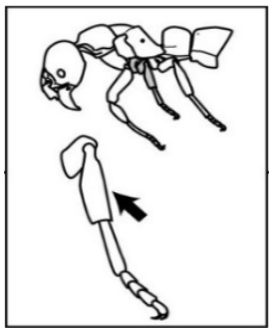


7. a. Outer surfaces of the tibiae of the middle legs with thickened peg-like setae (A); Side of the mandible near its insertion into the head with a small oval or round depression or pit (AA) — ***Cryptopone***

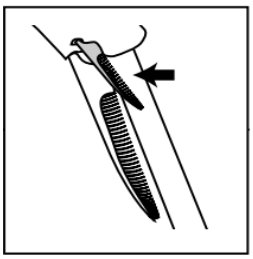




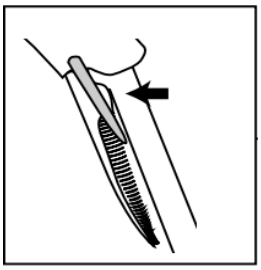
b. Outer surfaces of the tibiae of the middle legs with all hairs thin or lacking hairs — **8**



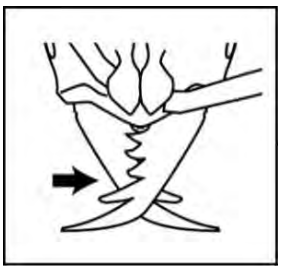
8. a. Tibiae of the hind legs each with two comb-like spurs **9**



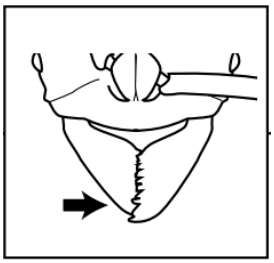
b. Tibiae of the hind legs each with a comb-like (pectinate) spur and a simple one **11**



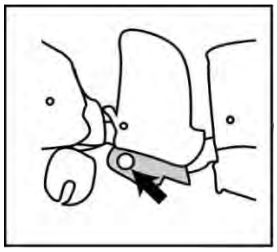
9. a. Mandible elongate-triangular and armed with 5 long teeth ***Emeryopone***



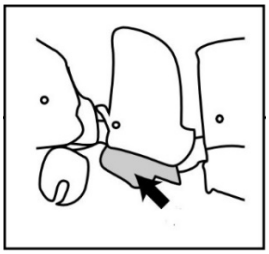
b. Mandible triangular, not armed with 5 spiniform teeth **10**



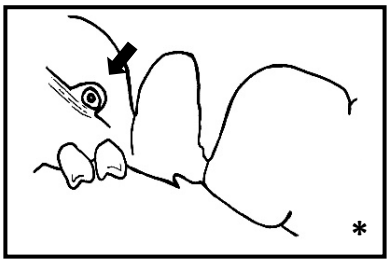
10. a. Subpetiolar process with a translucent thin spot ***Ponera***



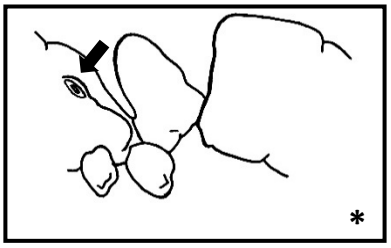
10. b. Subpetiolar process without a translucent thin spot — ***Hypoponera***



11. a. Orifice of propodeal spiracle round or oval; Prora reduced and not externally visible — ***Brachyponera***



b. Orifice of propodeal spiracle elongate or slut-shaped; Prora conspicuous; Mesopleuron divided by a transverse groove — ***Ectomomyrmex***



V. Species List of EFForTS (morpho-) species

This is a checklist of the ants encountered in the canopy and litter in the framework of *EFForTS*. The list contains a mix of confirmed Linnéan species and morphospecies we defined *de novo*, due to the large number of undescribed species in Sumatra. The following list uses five categories, and is sorted alphabetically according to subfamily and (morpho-) species:

1. (Morpho-) Species: Genus plus species denominator. Partially reviewed by Dmitry Dubovikoff, Brian Fisher, Shingo Hosoichi (SH), Dirk Mezger, Phil S. Ward and Seiki Yamane (SKY).
2. MSp Code: Internal EFForTS identifier, containing information regarding the respective *EFForTS* project, taxonomic information and running number for each defined morphospecies.
3. Land Use: The land-use system in which the respective ant species was found, i.e. lowland rainforest (F), jungle rubber (J), rubber plantation (R) and/or oil palm plantation (O).
4. Figures: Image number of the respective morphospecies. NA: No image available in this guide.
5. Stratum: Sampling stratum, either leaf litter or canopy, where this particular MSp was encountered.

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Amblyoponinae				
Prionopelta sp.01	Z02.HymFrm330.rn	R	canopy	3-4
Stigmatomma sp.01	Z02.HymFrm160.rn	J, O, R	canopy	5-6
Stigmatomma sp.02	B01.HymFrm230.jw	F	litter	NA
Cerapachyinae				
Cerapachys sp.01	Z02.HymFrm034.rn	F, J, O, R	canopy	7-8
Cerapachys sp.02	Z02.HymFrm265.rn	J	canopy	9-10
Cerapachys sp.03	Z02.HymFrm331.rn	F	canopy	11-12
Dolichoderinae				
Chronoxenus rossi	Z02.HymFrm104.rn	F, J, O, R	canopy	13-14
Dolichoderus buttelli	Z02.HymFrm009.rn	F, J, O, R	canopy	15-16
Dolichoderus cuspidatus	Z02.HymFrm045.rn	F, J	canopy	17-18
Dolichoderus cf. *cuspidatus*	Z02.HymFrm151.rn	F	canopy	19-20
19-Dolichoderus gibbus	B01.HymFrm291.jw	F	litter	21-22
Dolichoderus cf. *affinis*	Z02.HymFrm108.rn	F, J	canopy	23-24
Dolichoderus sulcaticeps	Z02.HymFrm293.rn	F	canopy	25-26
Dolichoderus thoracicus complex	Z02.HymFrm020.rn	F, J, O, R	canopy	27-28
Dolichoderus sp.06	Z02.HymFrm094.rn	F, J	canopy	29-30
Leptomyrmex sp.01	Z02.HymFrm335.rn	F	canopy	31-32
Leptomyrmex sp.02	Z02.HymFrm403.rn	F	canopy	33-34
Loweriella sp.01	Z02.HymFrm216.rn	O	canopy	35-36
Ochetellus sp.01	Z02.HymFrm284.rn	F, J	canopy	37-38
Philidris cordata	Z02.HymFrm008.rn	F, J, R	canopy	39-40
Philidris sp.02	Z02.HymFrm191.rn	F	canopy	NA

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Dolichoderinae contd.				
Tapinoma melanocephalum	Z02.HymFrm014.rn	F, J, O, R	canopy	41-42
Tapinoma glaucum-andamanensis group sp.01	Z02.HymFrm035.rn	F, J, O, R	canopy	43-44
Tapinoma sp.05	B01.HymFrm249.rn	O	litter	NA
Tapinoma sp.06	B01.HymFrm285.rn	F, J	litter	45-46
Technomyrmex albipes	Z02.HymFrm005.rn	F, J, O, R	canopy	47-48
Technomyrmex albipes cf. vitiensis sp.01	Z02.HymFrm033.rn	F, J, O, R	canopy	49-50
Technomyrmex albipes cf. vitiensis sp.02	Z02.HymFrm149.rn	F, J, O, R	canopy	51-52
Technomyrmex dubius	Z02.HymFrm097.rn	F, J	canopy	53-54
Technomyrmex elatior	Z02.HymFrm003.rn	F, J, O, R	canopy	55-56
Technomyrmex grandis	Z02.HymFrm199.rn	F	canopy	57-28
Technomyrmex horni cf. schimmeri	B01.HymFrm266.rn	F, J	litter	59-60
Technomyrmex kraepelini	B01.HymFrm265.rn	F, J, O, R	litter	61-62
Technomyrmex lisae	Z02.HymFrm336.rn	F	canopy	63-64
Technomyrmex textor	Z02.HymFrm502.rn	F, J	canopy	65-66
Technomyrmex wheeleri	Z02.HymFrm503.rn	J	canopy	67-68
Technomyrmex sp.05	Z02.HymFrm190.rn	F	canopy	NA
Dorylinae				
Aenictus inflatus	Z02.HymFrm146.rn	F, J	canopy	69-70
Aenictus cf. *glabrinotum*	Z02.HymFrm109.rn	F, J, O	canopy	71-72
Dorylus sp.01	B09			NA
Ectatomminae				
Gnamptogenys sp.01	B01.HymFrm221.jw	F, J	litter	73-74
Formicinae				
Anoplolepis gracilipes	Z02.HymFrm056.rn	J, R, O	canopy	75-76
Camponotus festinus	Z02.HymFrm504.jd	J	canopy	77-78
Camponotus cf. *carin*	Z02.HymFrm505.jd	F, R	canopy	79-80
Camponotus cf. *korthalsiae*	Z02.HymFrm290.rn	F	canopy	81-82
Camponotus (Karavaievia) dolichoderoides	Z02.HymFrm050.rn	F	canopy	83-84
Camponotus (Karavaievia) gombaki	Z02.HymFrm188.rn	F	canopy	85-86
Camponotus (Myrmamblys) bedoti	Z02.HymFrm179.rn	F, J, O, R	canopy	87-88
Camponotus (Myrmamblys) sp.27 of SKY	Z02.HymFrm270.rn	J, O	canopy	89-90
Camponotus (Myrmamblys) sp.40 of SKY	Z02.HymFrm178.rn	O, R	canopy	91-92
Camponotus (Myrmamblys) sp.100 of SKY	Z02.HymFrm099.rn	F	canopy	93-94
Camponotus (Myrmamblys) sp.101	Z02.HymFrm215.rn	F, J, R	canopy	95-96

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Formicinae contd.				
Camponotus (Tanaemyrmex) arrogans (*C.* sp.72 of SKY)	Z02.HymFrm049.rn	F, J, O	canopy	97-98
Camponotus (Tanaemyrmex) sp.129 of SKY	Z02.HymFrm040.rn	F, J, O, R	canopy	99-102
Camponotus sp.42 of SKY	Z02.HymFrm059.rn	F, J, O	canopy	103-104
Camponotus sp.93 of SKY	Z02.HymFrm182.rn	F, J	canopy	105-106
Camponotus sp.05	Z02.HymFrm180.rn	F, J, O	canopy	107-108
Camponotus sp.09	Z02.HymFrm075.rn	F	canopy	109-110
Camponotus sp.15	Z02.HymFrm177.rn	F, J	canopy	111-112
Camponotus sp.18	B01.HymFrm296.rn	R	litter	NA
Camponotus sp.21	Z02.HymFrm192.rn	F	canopy	113-114
Camponotus sp.24	Z02.HymFrm212.rn	J	canopy	115-116
Camponotus sp.26	Z02.HymFrm010.rn	F, J, O, R	canopy	117-118
Camponotus sp.28	Z02.HymFrm337.rn	F	canopy	119-120
Camponotus sp.29	Z02.HymFrm417.rn	R	canopy	121-122
Camponotus sp.103	Z02.HymFrm415.rn	F	canopy	123-124
Cladomyrma cf. *nudidorsalis*	Z02.HymFrm218.rn	F	canopy	125-126
Colobopsis leonaldi group sp.01	Z02.HymFrm032.rn	F, J, O, R	canopy	127-130
Colobopsis saundersi group sp.01	Z02.HymFrm155.rn	F	canopy	131-132
Colobopsis saundersi group sp.02	Z02.HymFrm048.rn	F	canopy	133-134
Colobopsis saundersi group sp.03	Z02.HymFrm219.rn	F	canopy	135-136
Colobopsis saundersi group sp.04	Z02.HymFrm090.rn	F	canopy	137-138
Colobopsis vitrea praerufa	Z02.HymFrm187.rn	F, J, O, R	canopy	139-140
Colobopsis vitrea group sp.01	Z02.HymFrm211.rn	F, J, R	canopy	NA
Colobopsis sp.15	B01.HymFrm228.jw	F	litter	NA
Colobopsis sp. (*Camponotus* sp.28 of SKY)	Z02.HymFrm186.rn	F, J	canopy	141-142
Colobopsis sp. (*Camponotus* sp.65 of SKY)	Z02.HymFrm195.rn	F, J	canopy	143-144
Dinomyrmex gigas	Z02.HymFrm063.rn	F, J, R	canopy	145-148
Echinopla lineata	Z02.HymFrm143.rn	F, J, R	canopy	149-150
Echinopla striata	Z02.HymFrm013.rn	F, J, R	canopy	151-152
Echinopla tritschleri	Z02.HymFrm334.rn	F	canopy	153-154
Euprenolepis procera	B01.HymFrm213.jw	F, J	litter	155-156
Gesomyrmex kalshoveni	Z02.HymFrm101.rn	F, J	canopy	157-160
Lepisiota sp.01	Z02.HymFrm210.rn	J	canopy	161-162
Myrmoteras estrudae	B01.HymFrm210.jw	F	litter	163-164
Myrmoteras sp.01	Z02.HymFrm046.rn	F	canopy	165-166
Nylanderia bourbonica	B01.HymFrm304.jw	J	litter	167-168
Nylanderia kraepelini	Z02.HymFrm115.rn	F, J, O, R	canopy	169-170

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Formicinae contd.				
Nylanderia cf. *kraepelini*	B01.HymFrm241.jw	F, J, R	litter	171-172
Nylanderia cf. *vaga*	Z02.HymFrm207.rn	F, O, R	canopy	173-174
Nylanderia cf. *vividula*	Z02.HymFrm281.rn	J, R	canopy	175-176
Oecophylla smaragdina	Z02.HymFrm062.rn	R, O	canopy	177-178
Overbeckia sp.01	Z02.HymFrm031.rn	F, J, O	canopy	179-180
Overbeckia subclavata	Z02.HymFrm285.rn	J, R	canopy	181-182
Paraparatrechina dichroa	Z02.HymFrm001.rn	F, J, O, R	canopy	183-184
Paraparatrechina cf. *opaca*	Z02.HymFrm068.rn	F, J, O, R	canopy	185-186
Paraparatrechina sp.102	B01.HymFrm251.jw	F	litter	NA
Paraparatrechina sp.103	B01.HymFrm317.jw	R	litter	NA
Paraparatrechina sp.104	B01.HymFrm318.jw	J	litter	NA
Paratrechina longicornis	Z02.HymFrm208.rn	J, O, R	canopy	187-188
Plagiolepis cf. *alluaudi*	B01.HymFrm246.jw	O, R	litter	NA
Plagiolepis sp.01	Z02.HymFrm026.rn	F, J, O, R	canopy	189-190
Plagiolepis sp.02	Z02.HymFrm217.rn	F, J	canopy	191-192
Polyrhachis (Cyrtomyrma) cf. *lepida*	Z02.HymFrm064.rn	F, J, O, R	canopy	093-194
Polyrhachis (Myrma) nigropilosa	Z02.HymFrm130.rn	F, J	canopy	195-196
Polyrhachis (Myrma) proxima	Z02.HymFrm070.rn	F, J, O, R	canopy	197-198
Polyrhachis (Myrma) sp. cf. *inermis*	Z02.HymFrm170.rn	F, O	canopy	199-200
Polyrhachis (Myrmatopa) schang	Z02.HymFrm025.rn	F, J, O, R	canopy	201-202
Polyrhachis (Myrmatopa) simillima	Z02.HymFrm166.rn	F, J, R	canopy	203-204
Polyrhachis (Myrmatopa) sp.01	Z02.HymFrm052.rn	F, O	canopy	205-206
Polyrhachis (Myrmhopla) abdominalis	Z02.HymFrm069.rn	F, J, O, R	canopy	207-208
Polyrhachis (Myrmhopla) armata	Z02.HymFrm011.rn	F, J, O, R	canopy	209-210
Polyrhachis (Myrmhopla) armata group sp.01	Z02.HymFrm015.rn	F, J, O, R	canopy	211-212
Polyrhachis (Myrmhopla) armata group sp.02	Z02.HymFrm163.rn	F, J, O	canopy	213-214
Polyrhachis (Myrmhopla) armata group sp.03	Z02.HymFrm507.jd	F, J, O, R	canopy	215-216
Polyrhachis (Myrmhopla) *armata* group sp.04	Z02.HymFrm.333.rn	F, J, O, R	canopy	217-218
Polyrhachis (Myrmhopla) bicolor group sp.01	Z02.HymFrm024.rn	F, J, O, R	canopy	219-220
Polyrhachis (Myrmhopla) bicolor group sp.02	Z02.HymFrm078.rn	F, O	canopy	221-222
Polyrhachis (Myrmhopla) bicolor group sp.03	Z02.HymFrm508.jd	F, J, O, R	canopy	223-224
Polyrhachis (Myrmhopla) bicolor group sp.04	Z02.HymFrm291.rn	F	canopy	225-226

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Formicinae contd.				
Polyrhachis (Myrmhopla) bicolor group sp.05	Z02.HymFrm221.rn	F, O	canopy	227-228
Polyrhachis (Myrmhopla) bicolor group sp.06	Z02.HymFrm509.jd	F, J, O, R	canopy	229-230
Polyrhachis (Myrmhopla) bicolor group sp.07	Z02.HymFrm510.jd	F, J, O	canopy	231-232
Polyrhachis (Myrmhopla) flavoflagellata group sp.1	Z02.HymFrm200.rn	F	canopy	233-234
Polyrhachis (Myrmhopla) mucronata group sp.01	Z02.HymFrm023.rn	F, J	canopy	235-236
Polyrhachis (Myrmhopla) ochracea group sp.01	Z02.HymFrm220.rn	F	canopy	NA
Polyrhachis (Myrmhopla) rufipes	Z02.HymFrm138.rn	J	canopy	237-238
Polyrhachis (Myrmhopla) sp. near *basirufa*	Z02.HymFrm172.rn	F	canopy	239-240
Polyrhachis (Myrmothrinax) near *thrinax* sp.01	Z02.HymFrm071.rn	F, J, O, R	canopy	241-242
Polyrhachis (Myrmothrinax) near *thrinax* sp.02	Z02.HymFrm124.rn	F, J	canopy	243-244
Polyrhachis (Myrmothrinax) near *thrinax* sp.03	Z02.HymFrm222.rn	O, R	canopy	245-246
Polyrhachis (Myrmothrinax) near *thrinax* sp.04	Z02.HymFrm259.rn	F	canopy	NA
Polyrhachis (Myrmothrinax) near *thrinax* sp.05	Z02.HymFrm080.rn	F, J, O	canopy	247-248
Polyrhachis (Polyrhachis) olybria	Z02.HymFrm267.rn	F, J	canopy	249-250
Polyrhachis (Polyrhachis) ypsilon	Z02.HymFrm148.rn	F	canopy	251-252
Polyrhachis sp.21	B01.HymFrm247.jw	O	litter	NA
Polyrhachis sp.38	Z02.HymFrm414.rn	F	canopy	NA
Polyrhachis sp.101	Z02.HymFrm113.rn	F, J, O, R	canopy	253-254
Polyrhachis sp.103	Z02.HymFrm.413.rn	F, J, O, R	canopy	255-256
Prenolepis sp.01	Z02.HymFrm066.rn	F, J, O, R	canopy	257-258
Prenolepis subopaca	B01.HymFrm286.jw	J	litter	259-260
Pseudolasius sp.01	B01.HymFrm214.jw	F	litter	NA
Pseudolasius sp.02	B01.HymFrm215.jw	F	litter	NA
Myrmicinae				
Acanthomyrmex ferox	B01.HymFrm220.jw	F, J	litter	261-264
Aphaenogaster feae	B01.HymFrm211.jw	F	litter	265-266
Aphaenogaster sp.01	Z02.HymFrm161.rn	F	canopy	267-268
Cardiocondyla wroughtonii	Z02.HymFrm021.rn	F, J, O, R	canopy	269-270
Cardiocondyla sp.01	Z02.HymFrm206.rn	F	canopy	271-272
Cardiocondyla sp.02	B01.HymFrm227.jw	F, J, R	litter	273-274

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Myrmicinae contd.				
Cardiocondyla sp.03	B01.HymFrm303.jw	R	litter	NA
Carebara pygmaea	Z02.HymFrm141.rn	F, J	canopy	275-278
Carebara sp.01	B01.HymFrm223.jw	F, O, R	litter	279-282
Carebara sp.02	B01.HymFrm224.jw	F	litter	283-286
Carebara sp.03	B01.HymFrm225.jw	O	litter	287-288
Carebara sp.04	Z02.HymFrm201.rn	F, J	canopy	289-290
Carebara sp.61	Z02.HymFrm061.rn	F, J, O, R	canopy	291-292
Carebara sp.99	Z02.HymFrm154.rn	F	canopy	NA
Carebara sp.104	B01.HymFrm226.jw	O	litter	293-294
Cataulacus hispidulus	Z02.HymFrm091.rn	F, J, O, R	canopy	295-296
Cataulacus horridus	Z02.HymFrm159.rn	F	canopy	297-298
Cataulacus latissimus	Z02.HymFrm030.rn	F, J, O, R	canopy	299-300
Cataulacus praetextus	Z02.HymFrm004.rn	F, J, O	canopy	301-302
Crematogaster borneensis gr. sp.01	Z02.HymFrm239.rn	F, J, R	canopy	303-304
Crematogaster borneensis gr. sp.02	Z02.HymFrm252.rn	F, J, O, R	canopy	305-306
Crematogaster borneensis gr. sp.03	Z02.HymFrm256.rn	J	canopy	307-308
Crematogaster borneensis gr. sp.04	Z02.HymFrm407.rn	J	canopy	309-310
Crematogaster cf. *cylindriceps*	Z02.HymFrm074.rn	F, J, O, R	canopy	311-312
Crematogaster cf. *discinodis*	Z02.HymFrm226.rn	F, J, R	canopy	313-314
Crematogaster cf. *indosinensis*	Z02.HymFrm242.rn	F, J, O	canopy	315-316
Crematogaster cf. *pfeifferi*	Z02.HymFrm247.rn	F, J, R	canopy	317—318
Crematogaster coriaria	Z02.HymFrm225.rn	F, J, O, R	canopy	319-320
Crematogaster ferrarii	Z02.HymFrm237.rn	F, J, O	canopy	321-322
Crematogaster fraxatrix	Z02.HymFrm254.rn	F, J, O, R	canopy	323-324
Crematogaster fraxatrix group *simboloni* sp.01	Z02.HymFrm244.rn	F, J, O, R	canopy	325-326
Crematogaster inflata	Z02.HymFrm313.rn	F	canopy	327-328
Crematogaster modiglianii	Z02.HymFrm301.rn	F, J	canopy	329-330
Crematogaster reticulata	Z02.HymFrm234.rn	F, J, R	canopy	331-332
Crematogaster rogenhoferi group sp.01	Z02.HymFrm017.rn	F, J, O, R	canopy	333-334
Crematogaster rogenhoferi group sp.02	Z02.HymFrm117.rn	F, J, O, R	canopy	335-336
Crematogaster rogenhoferi group sp.03	Z02.HymFrm229.rn	J, R	canopy	337-338
Crematogaster sewardi	Z02.HymFrm245.rn	F	canopy	339-340
Crematogaster treubi	Z02.HymFrm238.rn	F, J, O, R	canopy	341-342
Crematogaster treubi group sp.01	Z02.HymFrm248.rn	F, J	canopy	343-344
Crematogaster treubi group sp.02	Z02.HymFrm295.rn	J	canopy	345-346
Crematogaster tumidula	Z02.HymFrm253.rn	F, J, O, R	canopy	347-348

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Myrmicinae contd.				
Crematogaster sp.02 of SH	Z02.HymFrm236.rn	F, J, O, R	canopy	349-350
Crematogaster sp.02	Z02.HymFrm044.rn	F, J, O, R	canopy	351-352
Crematogaster sp.06	B01.HymFrm232.jw	F, J	litter	353-354
Crematogaster sp.07	B01.HymFrm233.jw	F	litter	356-356
Crematogaster sp.09	B01.HymFrm235.jw	F	litter	NA
Crematogaster sp.10	B01.HymFrm236.jw	O, R	litter	357-358
Crematogaster sp.11	B01.HymFrm237.jw	F	litter	NA
Crematogaster sp.12	B01.HymFrm238.jw	F, J	litter	359-360
Crematogaster sp.13	B01.HymFrm239.jw	F, J	litter	361-362
Crematogaster sp.14	B01.HymFrm305.jw	R	litter	363-364
Crematogaster sp.16	B01.HymFrm307.jw	J, R	litter	365-366
Crematogaster sp.17	Z02.HymFrm299.rn	O	canopy	NA
Crematogaster sp.18	B01.HymFrm309.jw	J	litter	367-368
Crematogaster sp.30	Z02.HymFrm249.rn	F	canopy	369-370
Crematogaster sp.47	Z02.HymFrm303.rn	F	canopy	371-372
Crematogaster sp.71	Z02.HymFrm327.rn	F	canopy	NA
Crematogaster sp.77	Z02.HymFrm409.rn	O	canopy	373-374
Crematogaster sp.78	Z02.HymFrm410.rn	F	canopy	375-376
Crematogaster sp.79	Z02.HymFrm411.rn	F	canopy	377-378
Crematogaster sp.101	Z02.HymFrm235.rn	F, J, O	canopy	379-380
Crematogaster sp.102	Z02.HymFrm246.rn	F, J	canopy	381-382
Crematogaster sp.103	Z02.HymFrm251.rn	F, J, O	canopy	383-384
Crematogaster sp.104	Z02.HymFrm307.rn	F, J	canopy	385-356
Crematogaster sp.105	Z02.HymFrm321.rn	F, R	canopy	387-388
Crematogaster sp.106	Z02.HymFrm327.rn	F	canopy	389-390
Crematogaster sp.107	Z02.HymFrm404.rn	F, J	canopy	391-392
Dilobocondyla borneensis	Z02.HymFrm093.rn	F, J, R	canopy	393-394
Dilobocondyla sp.01	Z02.HymFrm054.rn	F, J	canopy	395-396
Dilobocondyla sp.02	Z02.HymFrm153.rn	F, J, R	canopy	397-398
Dilobocondyla sp.03	Z02.HymFrm401.rn	F	canopy	399-400
Eurhopalothrix sp.01	B01.HymFrm301.jw	J	litter	401-402
Gauromyrmex sp.01	Z02.HymFrm037.rn	F, J	canopy	403-404
Gauromyrmex sp.02	Z02.HymFrm338.rn	F	canopy	405-406
Lophomyrmex bedoti	B01.HymFrm209.jw	F, J, O, R	litter	407-408
Lophomyrmex sp.01	Z02.HymFrm418.rn	F	canopy	409-410
Mayriella sp.01	B09			NA
Meranoplus castaneus	Z02.HymFrm133.rn	F, O, R	canopy	411-412
Meranoplus sp.02	Z02.HymFrm332.rn	J	canopy	413-414
Monomorium floricola	Z02.HymFrm006.rn	F, J, O, R	canopy	415-416

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Myrmicinae contd.				
Monomorium sp.02	Z02.HymFrm019.rn	F, J, O, R	canopy	417-418
Monomorium sp.03	Z02.HymFrm111.rn	F, J, R	canopy	419-420
Monomorium sp.04	Z02.HymFrm036.rn	F, J, O, R	canopy	421-422
Monomorium sp.05	B01.HymFrm244.jw	F, J, O	litter	423-424
Monomorium sp.06	B01.HymFrm245.jw	F, O, R	litter	425-426
Myrmecina sp.01	B01.HymFrm217.jw	F	litter	NA
Myrmecina sp.02	B01.HymFrm218.jw	F	litter	NA
Myrmica sp.02	Z02.HymFrm203.rn	F	canopy	427-428
Myrmicaria adpressipilosa	Z02.HymFrm339.rn	F	canopy	429-430
Myrmicaria luteiventris	Z02.HymFrm416.rn	F	canopy	431-432
Pheidole aristotelis	B01.HymFrm262.jw	F	litter	433-436
Pheidole cf. *annexa*	B01.HymFrm255.jw	F, O	litter	437-438
Pheidole cf. *poringensis*	B01.HymFrm314.jw	J	litter	439-442
Pheidole cf. *rugifera*	B01.HymFrm312.jw	J	litter	443-446
Pheidole cf. *sauberi*	B01.HymFrm311.jw	J	litter	447-450
Pheidole clypeocornis	B01.HymFrm261.jw	F	litter	451-454
Pheidole ghigii	B01.HymFrm313.jw	R	litter	455-458
Pheidole hortensis	B01.HymFrm264.jw	F, J	litter	459-462
Pheidole huberi	B01.HymFrm315.jw	J	litter	463-446
Pheidole jacobsoni	B01.HymFrm259.jw	F	litter	467-470
Pheidole parvicorpus	B01.HymFrm256.jw	F	litter	471-474
Pheidole plagiaria	B01.HymFrm257.jw	O	litter	475-478
Pheidole rabo	B01.HymFrm263.jw	F	litter	479-482
Pheidole retivertex	B01.HymFrm252.jw	F	litter	483-486
Pheidole submonticola	B01.HymFrm316.jw	J	litter	487-488
Pheidole tjibodana	B01.HymFrm253.jw	F	litter	489-492
Pheidole upeneci	B01.HymFrm258.jw	F	litter	493-496
Pheidole sp.01	Z02.HymFrm038.rn	F, J, O, R	canopy	497-498
Pheidole sp.02	Z02.HymFrm067.rn	F, J, O, R	canopy	499-500
Pheidole sp.03	Z02.HymFrm081.rn	F, J, O	canopy	501-502
Pheidole sp.04	Z02.HymFrm122.rn	F, J, O	canopy	503-504
Pheidole sp.05	Z02.HymFrm197.rn	O, R	canopy	505-506
Pheidole sp.06	Z02.HymFrm292.rn	F	canopy	507-508
Pheidole sp.07	B01.HymFrm254.jw	F, J	litter	509-512
Pheidole sp.08	B01.HymFrm260.jw	F	litter	NA
Proatta butteli	Z02.HymFrm116.rn	J, O	canopy	513-516
Recurvidris kemneri	B01.HymFrm200.jw	F	litter	517-518
Rhopalomastix sp.01	Z02.HymFrm042.rn	F, J	canopy	519-520
Rotastruma sp.01	Z02.HymFrm029.rn	F, J, O	canopy	521-522

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Myrmicinae contd.				
Solenopsis geminata	B09			
Strumigenys sp.01	Z02.HymFrm060.rn	F, J, O, R	canopy	523-524
Strumigenys sp.02	Z02.HymFrm271.rn	F, J	canopy	525-526
Strumigenys sp.03	B01.HymFrm250.jw	F	litter	527-528
Strumigenys sp.04	B01.HymFrm297.jw	R	litter	529-530
Strumigenys sp.05	Z02.HymFrm107.rn	F, J, R	canopy	531-532
Tetramorium cf. *curtulum*	B01.HymFrm206.jw	F, O	litter	533-534
Tetramorium cf. *noratum*	B01.HymFrm268.jw	F, J	litter	535-536
Tetramorium simillimum	B01.HymFrm205.jw	O	litter	537-538
Tetramorium sp.01	Z02.HymFrm098.rn	F, J	canopy	539-540
Tetramorium sp.02	Z02.HymFrm110.rn	F, J, O, R	canopy	541-542
Tetramorium sp.03	Z02.HymFrm120.rn	F, J, O, R	canopy	543-544
Tetramorium sp.04	Z02.HymFrm223.rn	F	canopy	545-546
Tetramorium sp.05	Z02.HymFrm224.rn	F, O, R	canopy	547-548
Tetramorium sp.06	Z02.HymFrm269.rn	R	canopy	549-550
Tetramorium sp.07	Z02.HymFrm402.rn	F	canopy	551-552
Tetramorium sp.08	B01.HymFrm207.jw	F	litter	553-554
Tetramorium sp.09	B01.HymFrm271.jw	O, R	litter	555-556
Tetramorium sp.10	Z02.HymFrm257.rn	R	canopy	557-558
Tetramorium sp.11	Z02.HymFrm289.rn	F	canopy	559-560
Tetramorium sp.99	B01.HymFrm203.jw	F	litter	NA
Tetramorium sp.101	Z02.HymFrm511.jd	F, J	canopy	561-562
Tetramorium sp.104	B01.HymFrm267.jw	F, J, R	litter	563-564
Tetramorium sp.107	B01.HymFrm208.jw	F, J, R	litter	565-566
Vollenhovia sp.01	Z02.HymFrm007.rn	F, J, O, R	canopy	567-568
Vollenhovia sp.02	Z02.HymFrm131.rn	F, J, O, R	canopy	569-570
Vollenhovia sp.03	Z02.HymFrm202.rn	F, J	canopy	571-572
Vollenhovia sp.04	B01.HymFrm248.jw	O	litter	273-574
Vombisidris sp.01	Z02.HymFrm204.rn	F, J	canopy	575-5576
Vombisidris sp.02	Z02.HymFrm205.rn	F, J	canopy	577-578
Ponerinae				
Anochetus myops	B01.HymFrm212.jw	O	litter	579-580
Anochetus sp.01	Z02.HymFrm012.rn	F	canopy	581-582
Brachyponera sp.01	B01.HymFrm281.jw	F, J, O, R	litter	283-584
Cryptopone sp.01	Z02.HymFrm283.rn	F	canopy	NA
Diacamma rugosum	Z02.HymFrm022.rn	F	canopy	585-586
Diacamma sp.01	Z02.HymFrm329.rn	F, J	canopy	587-588
Ectomomyrmex sp.01	B01.HymFrm273.jw	F, J	litter	589-590
Ectomomyrmex sp.02	B01.HymFrm274.jw	F	litter	591-592

(Morpho-) Species	MSp Code	Land Use	Stratum	Figures
Ponerinae contd.				
Emeryopone buttelreepeni	Z02.HymFrm282.rn	J	canopy	593-596
Hypoponera sp.01	Z02.HymFrm085.rn	F, J, O, R	canopy	597-598
Hypoponera sp.02	B01.HymFrm278.jw	F, J	litter	599-600
Hypoponera sp.03	Z02.HymFrm261.rn	O	canopy	601-602
Hypoponera sp.04	Z02.HymFrm262.rn	O	canopy	603-604
Hypoponera sp.05	B01.HymFrm275.jw	O	litter	NA
Hypoponera sp.06	B01.HymFrm276.jw	F	litter	NA
Hypoponera sp.07	B01.HymFrm277.jw	F	litter	NA
Hypoponera sp.08	B01.HymFrm279.jw	O	litter	NA
Hypoponera sp.09	B01.HymFrm300.jw	R	litter	NA
Hypoponera sp.10	B01.HymFrm280.jw	F, J	litter	605-606
Leptogenys sp.01	B01.HymFrm216.jw	F	litter	607-608
Leptogenys sp.02	B01.HymFrm288.jw	J	litter	NA
Odontomachus rixosus	B01.HymFrm219.jw	F, J, O	litter	609—610
Odontomachus sp.01	Z02.HymFrm260.rn	O	canopy	611-612
Odontoponera denticulata	B01.HymFrm201.jw	O, R	litter	613-614
Odontoponera transversa	B01.HymFrm202.jw	F, J	litter	615-616
Odontoponera sp.01	Z02.HymFrm196.rn	O	canopy	617-618
Platythyrea sp.01	Z02.HymFrm065.rn	F, J, O, R	canopy	619-620
Ponera sp.01	B01.HymFrm282.jw	F, J	litter	621-622
Ponera sp.02	Z02.HymFrm105.rn	F, J, O, R	canopy	623-624
Ponera sp.03	Z02.HymFrm258.rn	O, R	canopy	625-626
Ponera sp.04	B01.HymFrm283.jw	F, J, R	litter	627-628
Ponera sp.05	B01.HymFrm284.jw	F	litter	629-630
Proceratiinae				
Discothyrea sp.01	Z02.HymFrm266.rn	J, R	canopy	631-632
Proceratium sp.01	B01.HymFrm222.jw	F	litter	NA
Pseudomyrmecinae				
Tetraponera alloborans	B01.HymFrm298.rn		litter	633-634
Tetraponera attenuata	Z02.HymFrm112.rn	F, J, O, R	canopy	635-636
Tetraponera crassiuscula	Z02.HymFrm193.rn	F, J, R	canopy	637-638
Tetraponera difficilis	Z02.HymFrm043.rn	F, J, R	canopy	639-640
Tetraponera extenuata	Z02.HymFrm128.rn	F, J, R	canopy	641-642
Tetraponera modesta	Z02.HymFrm018.rn	F, J, R	canopy	643-644
Tetraponera nitida	Z02.HymFrm002.rn	F, J, R	canopy	645-646
Tetraponera nodosa	Z02.HymFrm500.rn	F, J, R	canopy	647-648
Tetraponera pilosa	Z02.HymFrm072.rn	F, J, O, R	canopy	649-650
Tetraponera polita	Z02.HymFrm506.rn	J	canopy	651-652
Tetraponera rufonigra	Z02.HymFrm268.rn	R	canopy	653-654

VI. Images of the *EFForTS* ant collection

For the majority of the *EFForTS* (morpho-) species collection, mounted specimens have been photographed using the KEYENCE VHX-2000 digital microscope. All images shown here and further images and data on genus and species level is available on the Ecotaxonomy Database at http://ecotaxonomy.org/. (Morpho-) Species for which images are not available are usually singletons or very rare morphospecies, which we have not mounted yet. In future versions of this guide, missing images will be added. Below, we show frontal and lateral images of one specimen per morphospecies. Further images are available.

1. Amblyoponinae

Fig. 3, 4. *Prionopelta* sp. 01, Z02.HymFrm330.rn.Dealate queen

Fig. 5, 6. *Stigmatomma* sp. 01, Z02.HymFrm160.rn. Dealate queen.

2. Cerapachyinae

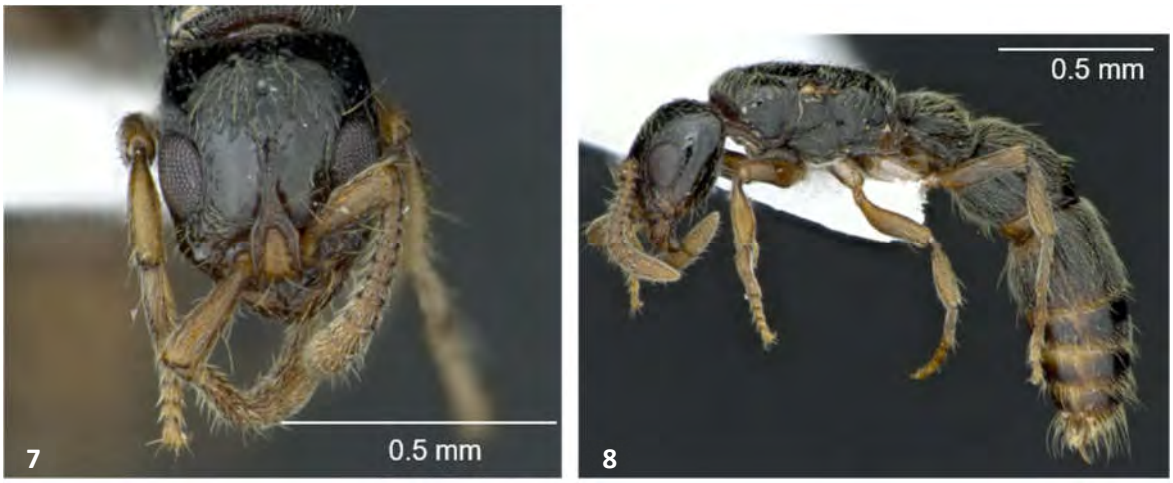


Fig. 7, 8. *Cerapachys* sp. 01, Z02.HymFrm034.rn. Dealate queen.

Fig. 9, 10. *Cerapachys* sp. 02, Z02.HymFrm265.rn. Dealate queen.

Fig. 11, 12. *Cerapachys* sp. 03, Z02.HymFrm331.rn. Alate queen.

3. Dolichoderinae

Fig. 13, 14. *Chronoxenus rossi*, Z02.HymFrm104.rn. Worker.

Fig. 15, 16. *Dolichoderus buttelli*, Z02.HymFrm009.rn. Worker.

Fig. 17, 18. *Dolichoderus cuspidatus*, Z02.HymFrm045.rn. Worker.

Fig. 19, 20. *Dolichoderus* cf. *cuspidatus*, Z02.HymFrm151.rn. Worker.

Fig. 21, 22. *Dolichoderus gibbus*, Z02.HymFrm291.rn. Worker.

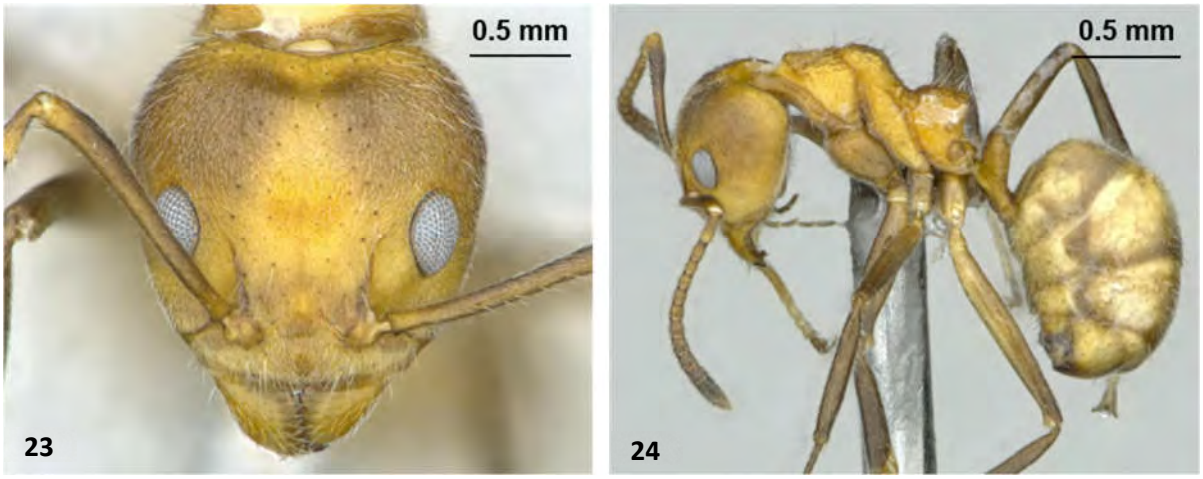


Fig. 23, 24. *Dolichoderus* cf. *affinis*, Z02.HymFrm108.rn. Worker.

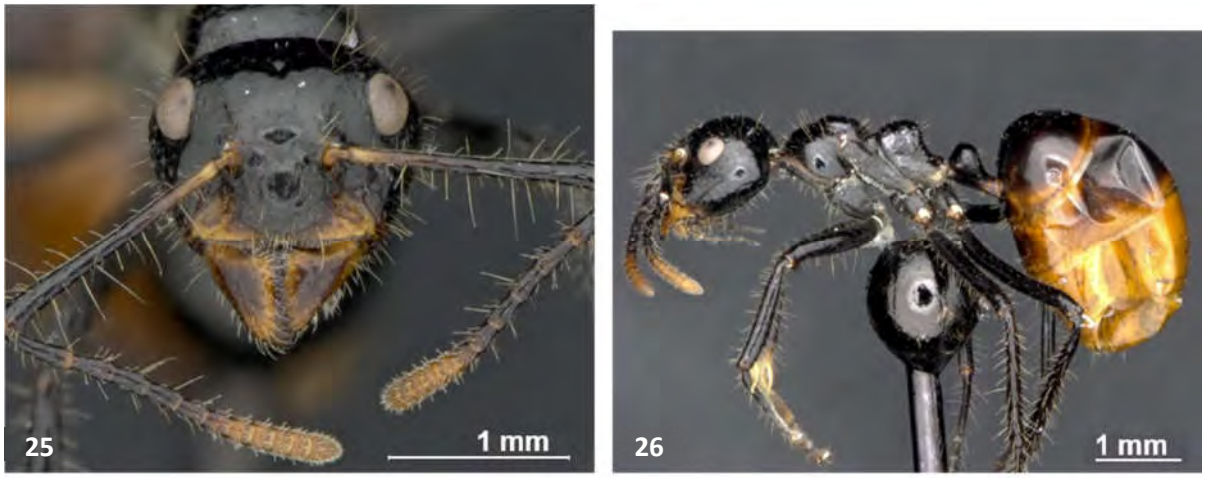


Fig. 25, 26. *Dolichoderus sulcaticeps*, Z02.HymFrm293.rn. Worker

Fig. 27, 28. *Dolichoderus thoracicus* complex, Z02.HymFrm020.rn. Worker.

Fig. 29, 30. *Dolichoderus* sp. 06, Z02.HymFrm094.rn. Worker.

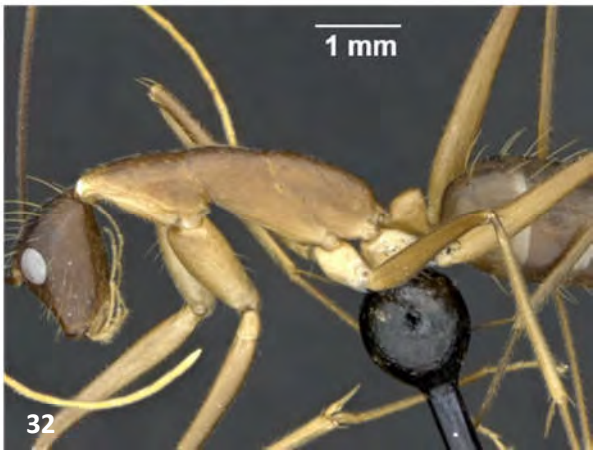


Fig. 31, 32. *Leptomyrmex* sp. 01, Z02.HymFrm335.rn. Worker.

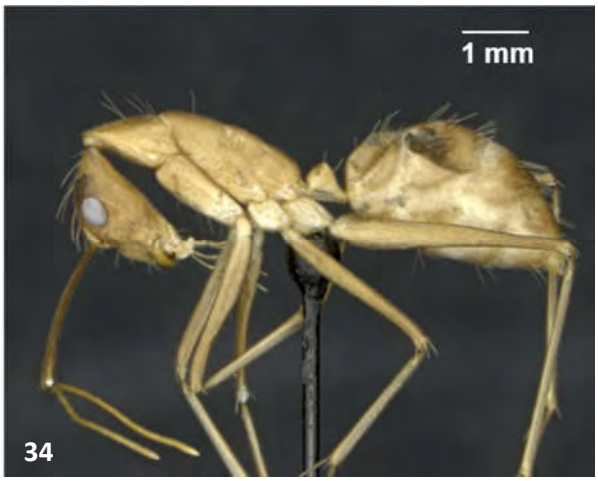


Fig. 33, 34. *Leptomyrmex* sp. 02, worker, Z02.HymFrm403.rn. Worker.

Fig. 35, 36. *Loweriella* sp. 01, worker, Z02.HymFrm216.rn. Worker.

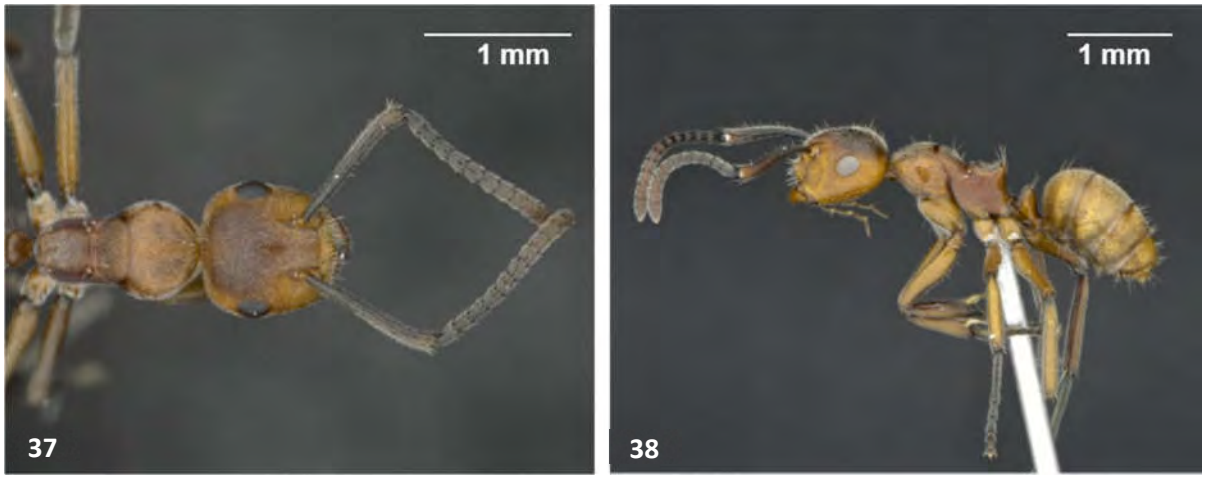


Fig. 37, 38. *Oechetellus* sp. 01, worker, Z02.HymFrm284.rn. Worker.

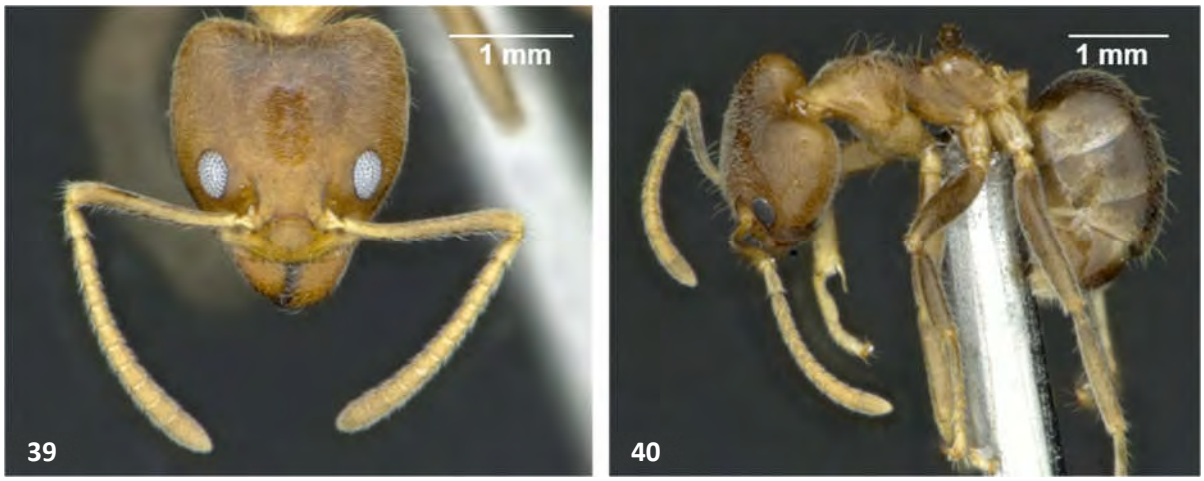


Fig. 39, 40. *Philidris cordata*. Z02.HymFrm008.rn. Worker.

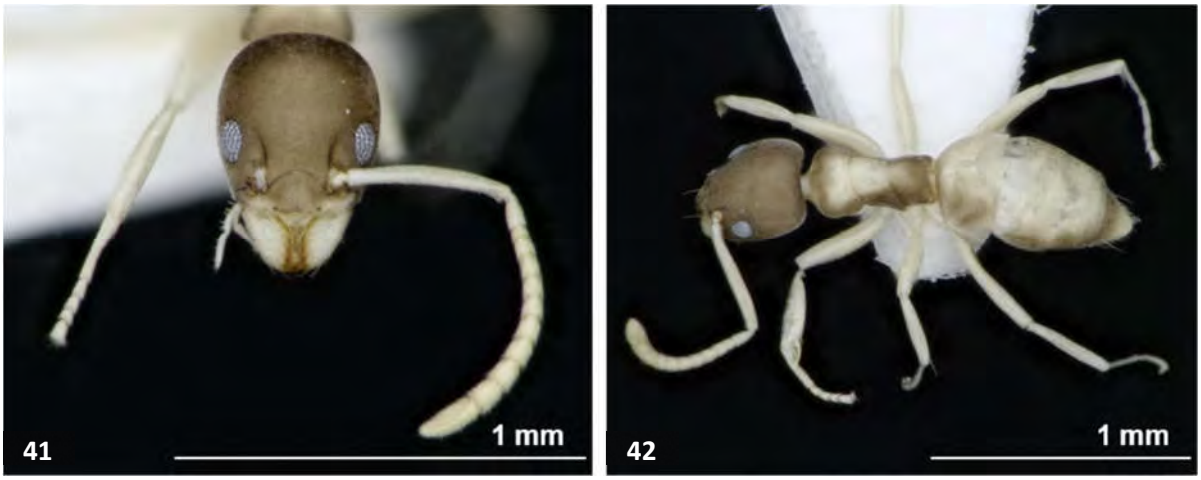


Fig. 41, 42. *Tapinoma melanocephalum*. Z02.HymFrm014.rn. Worker.

Fig. 43, 44. *Tapinoma glaucum-andamanensis* gr. sp.01. Z02.HymFrm035.rn. Worker.

Fig. 45, 46. *Tapinoma* sp.06. Z02.HymFrm285.rn. Worker.

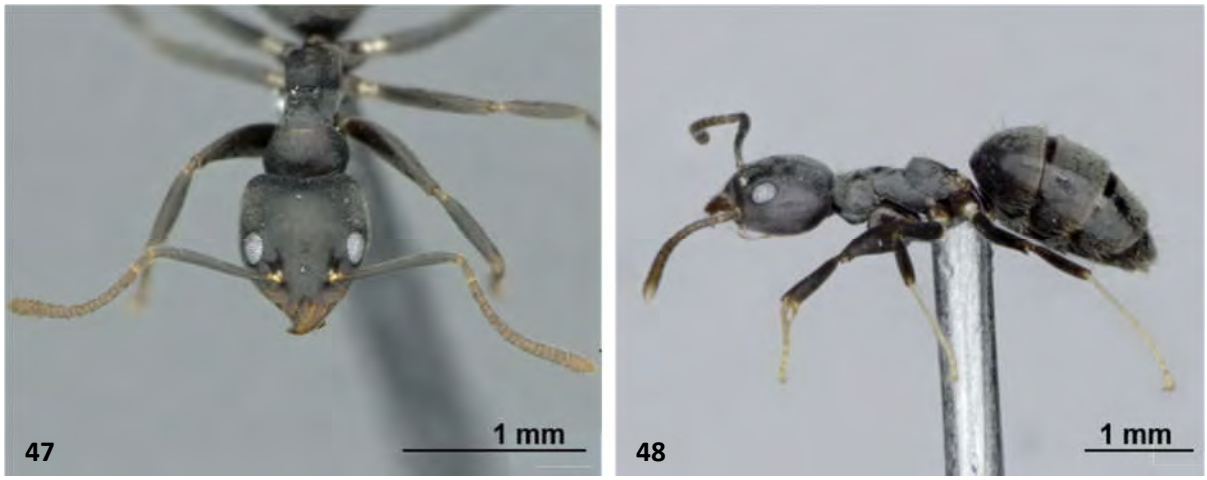


Fig. 47, 48. *Technomyrmex albipes*. Z02.HymFrm005.rn. Worker.

Fig. 49, 50. *Technomyrmex albipes* cf. vitiensis sp.01. Z02.HymFrm033.rn. Worker

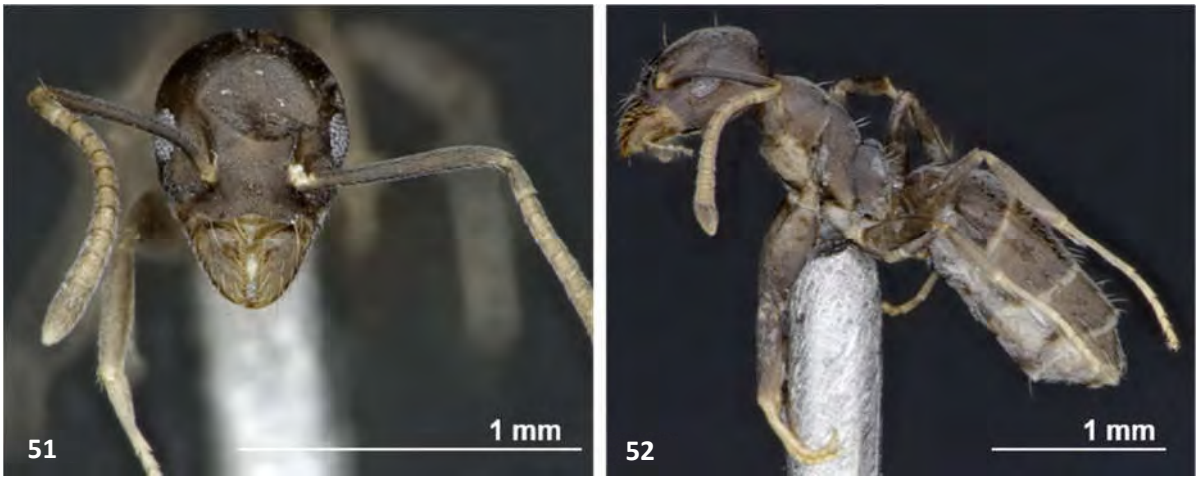


Fig. 51, 52. *Technomyrmex albipes* cf. vitiensis sp.02. Z02.HymFrm149.rn. Worker.

Fig. 53, 54. *Technomyrmex dubius.* Z02.HymFrm097.rn. Worker.

Fig. 55, 56. *Technomyrmex elatior.* Z02.HymFrm003.rn. Worker.

Fig. 57, 58. *Technomyrmex grandis.* Z02.HymFrm199.rn. Worker.

Fig. 59, 60. *Technomyrmex horni* cf. *schimmeri.* B01.HymFrm266.jw. Worker.

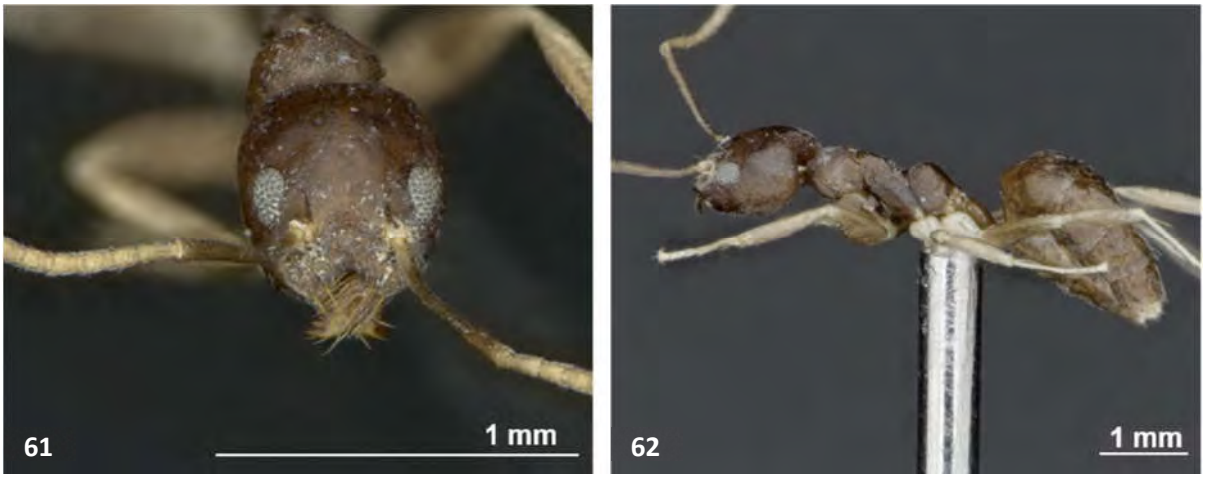


Fig. 61, 62. *Technomyrmex kraepelini.* B01.HymFrm265.jw. Worker.

Fig. 61, 62. *Technomyrmex lisae.* Z02.HymFrm336.rn. Worker.

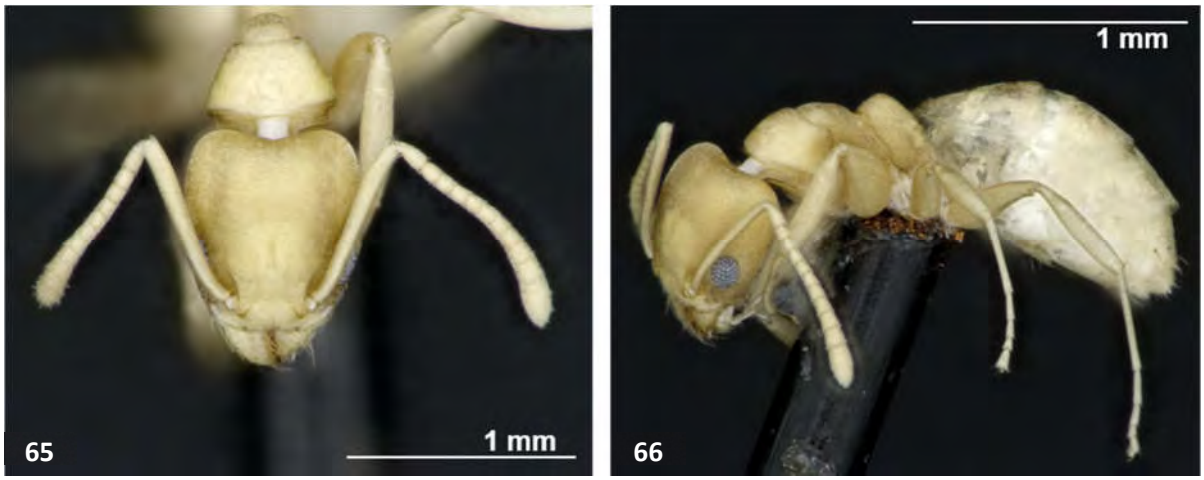


Fig. 65, 66. *Technomyrmex textor.* Z02.HymFrm502.jd. Worker.

Fig. 67, 68. *Technomyrmex wheeleri.* Z02.HymFrm503.jd. Worker.

4. Dorylinae

Fig. 69, 70. *Aenictus inflatus*. Z02.HymFrm146.rn. Worker.

Fig. 71, 72. *Aenictus* cf. *glabrinotum*. Z02.HymFrm109.rn. Worker.

5. Ectatomminae

Fig. 73, 74. *Gnamptogenys* sp.01. B01.HymFrm221.jw. Worker.

6. Formicinae

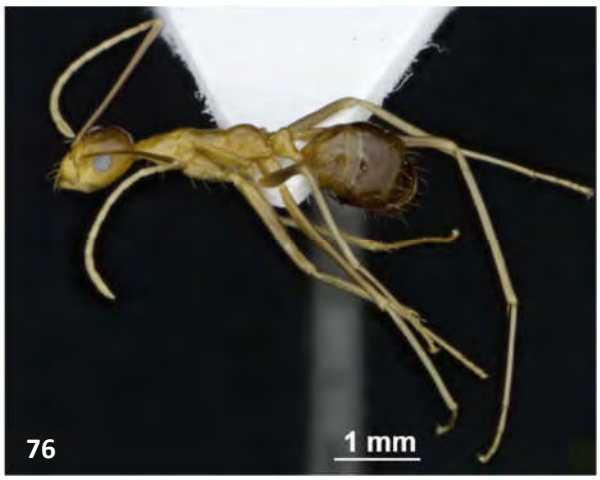


Fig. 75, 76. *Anoplolepis gracilipes*. Z02.HymFrm056.rn. Worker.

Fig. 77, 78. *Camponotus festinus.* Z02.HymFrm504.jd. Alate queen.

Fig. 79, 80. *Camponotus* cf. *carin.* Z02.HymFrm505.jd. Worker.

Fig. 81, 82. *Camponotus* cf. *korthalsiae*, Z02.HymFrm290.rn. Worker.

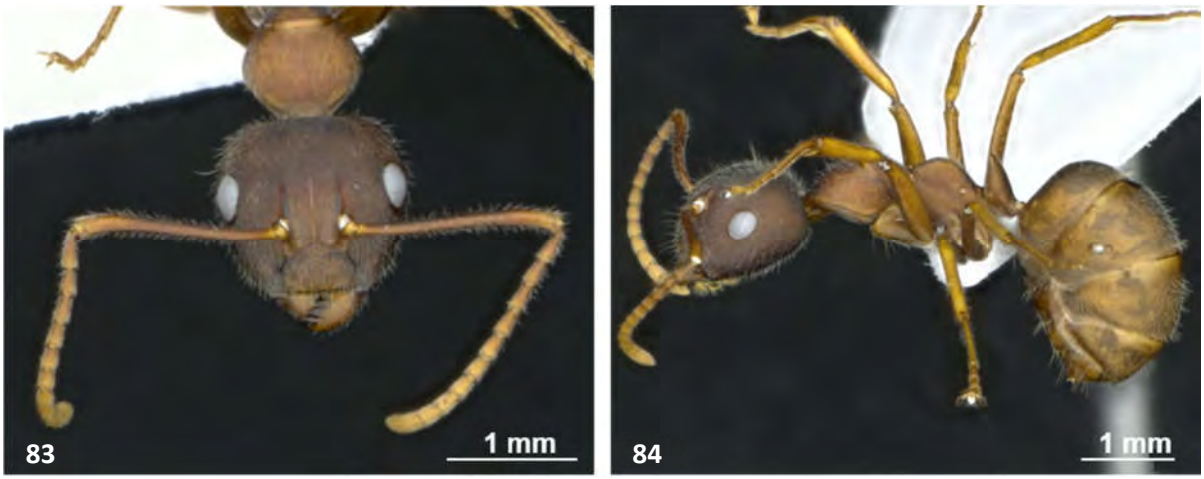


Fig. 83, 84. *Camponotus (Karavaievia) dolichoderoides*, Z02.HymFrm050.rn. Worker.

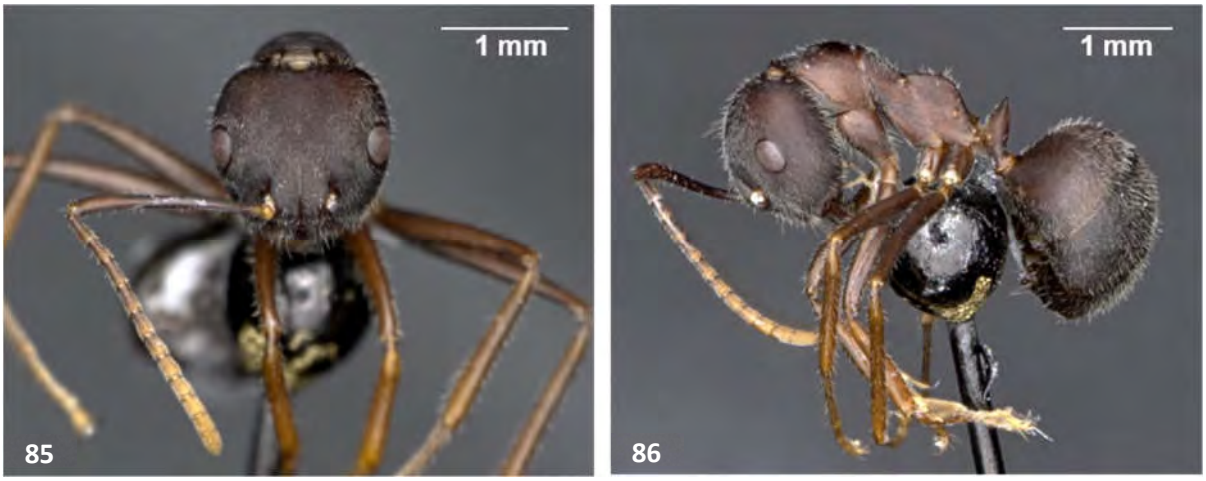


Fig. 85, 86 *Camponotus (Karavaievia) gombaki*, Z02.HymFrm188.rn. Worker.

Fig. 83, 84. *Camponotus (Myrmamblys) bedoti*, Z02.HymFrm179.rn. Worker.

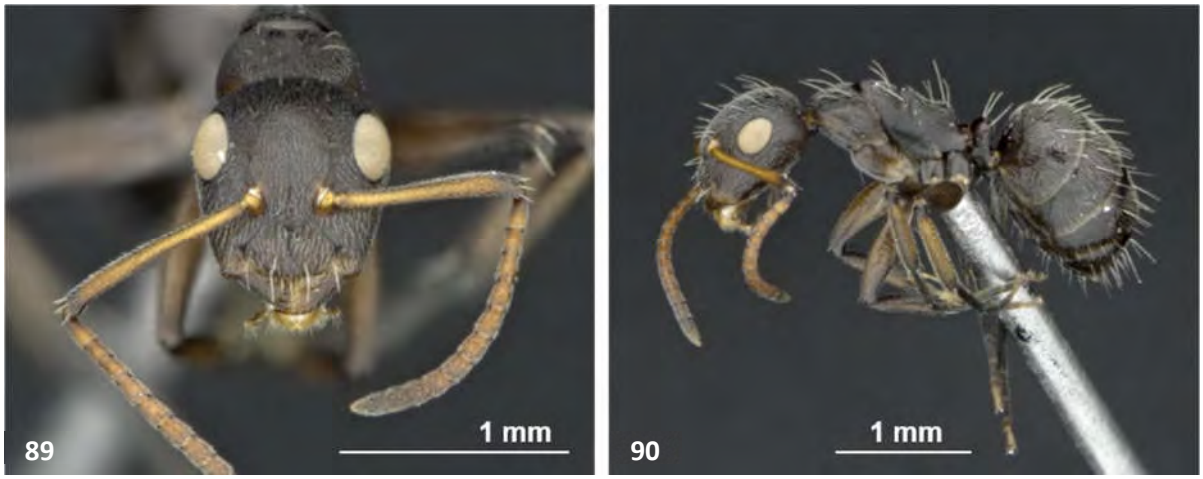


Fig. 85, 86. *Camponotus (Myrmamblys)* sp.27 of SKY, Z02.HymFrm270.rn. Worker.

Fig. 91, 92. *Camponotus (Myrmamblys)* sp.40 of SKY, Z02.HymFrm178.rn. Worker.

Fig. 93, 94. *Camponotus (Myrmamblys)* sp.100 of SKY, Z02.HymFrm099.rn. Worker.

Fig. 95, 96. *Camponotus (Myrmamblys)* sp.101, Z02.HymFrm215.rn. Worker.

Fig. 97, 98. *Camponotus (Tanaemyrmex) arrogans*, Z02.HymFrm049.rn. Worker.

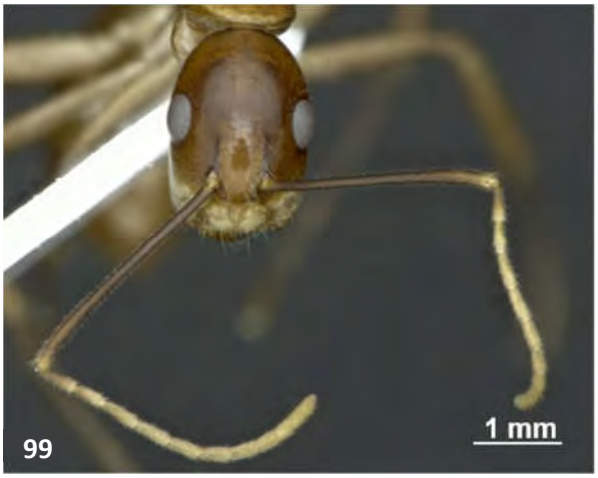
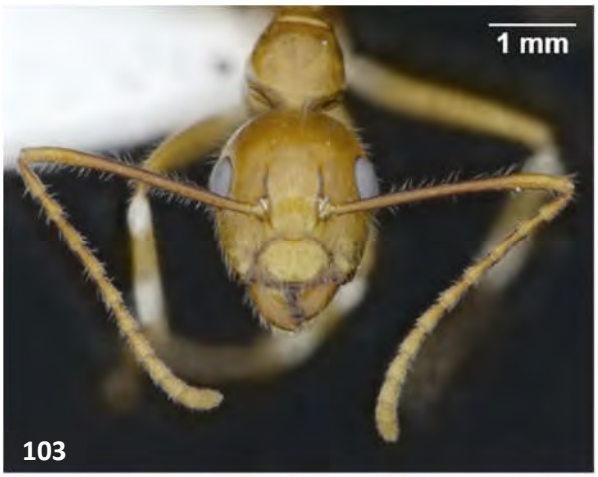


Fig. 99, 100. *Camponotus (Tanaemyrmex)* sp.129 of SKY, Z02.HymFrm040.rn. Minor worker.

Fig. 101, 102. *Camponotus (Tanaemyrmex)* sp.129 of SKY, Z02.HymFrm040.rn. Major worker.



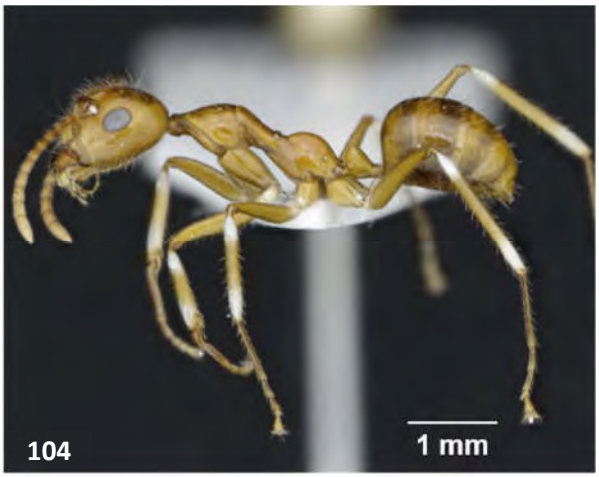


Fig. 103, 104. *Camponotus* sp.42 of SKY, Z02.HymFrm059.rn. Worker.

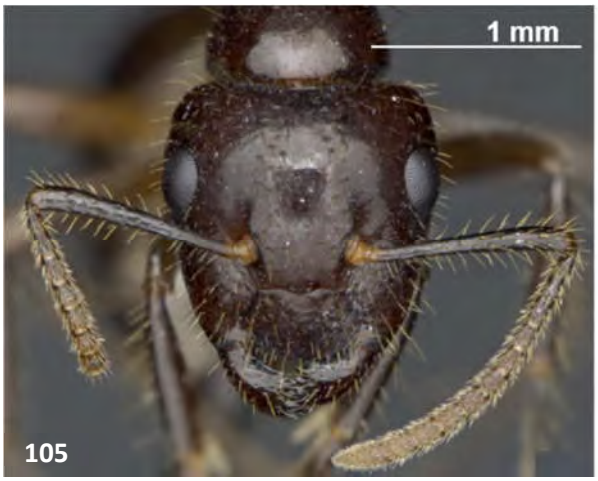


Fig. 105, 106. *Camponotus* sp.93 of SKY, Z02.HymFrm182.rn. Worker.

Fig. 107, 108. *Camponotus* sp.05, Z02.HymFrm180.rn. Worker.

Fig. 109, 110. *Camponotus* sp.09, Z02.HymFrm075.rn. Worker.

Fig. 111, 112. *Camponotus* sp.15, Z02.HymFrm177.rn. Worker.

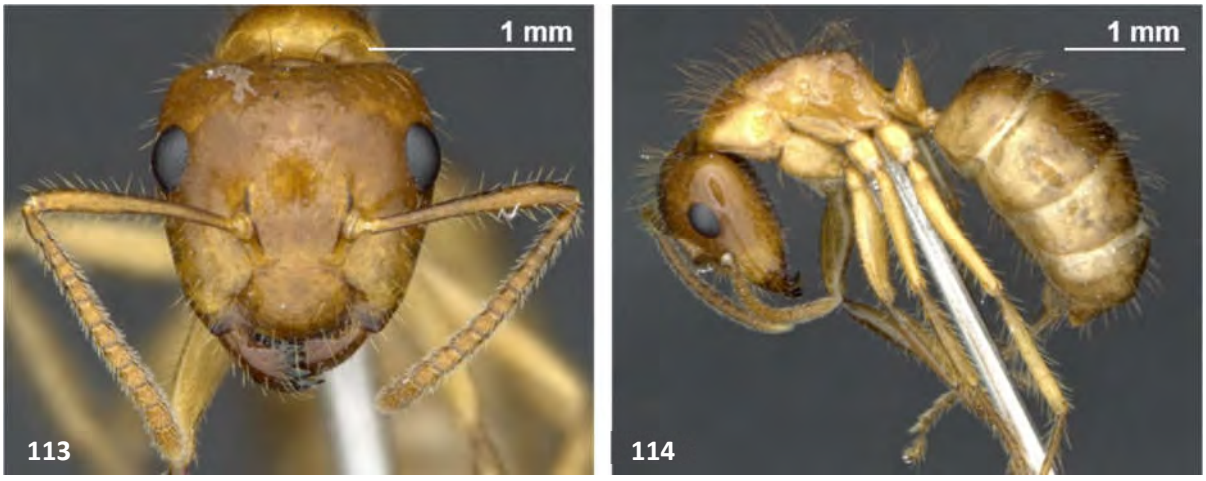


Fig. 113, 114. *Camponotus* sp.21, Z02.HymFrm192.rn. Worker.

Fig. 115, 116. *Camponotus* sp.24, Z02.HymFrm212.rn. Worker.

Fig. 117, 118. *Camponotus* sp.26, Z02.HymFrm010.rn. Worker.

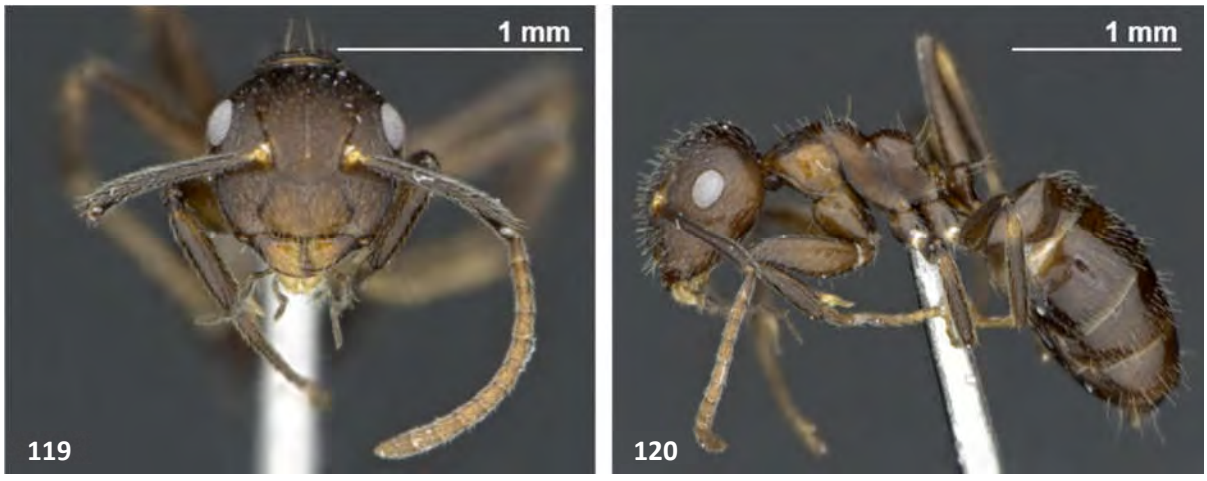


Fig. 119, 120. *Camponotus* sp.28, Z02.HymFrm337.rn. Worker.

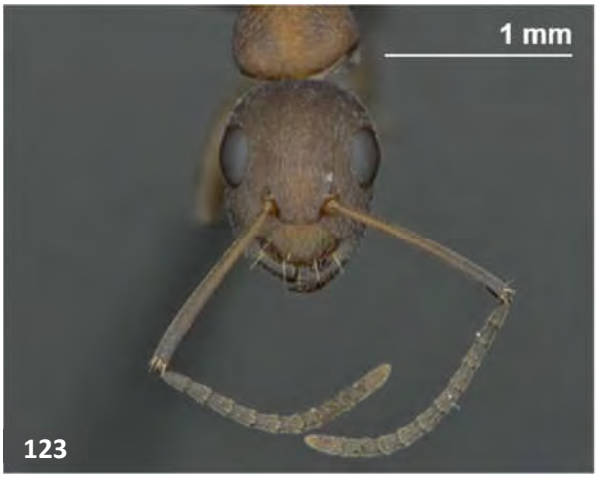


Fig. 123, 124. *Camponotus* sp.103, Z02.HymFrm415.rn. Worker.

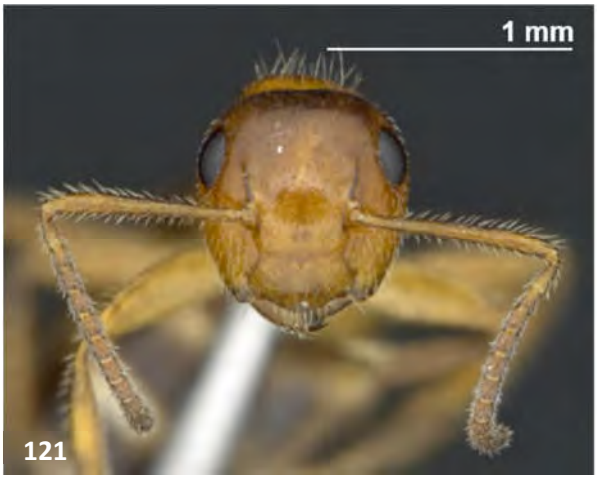


Fig. 121, 122. *Camponotus* sp.29, Z02.HymFrm417.rn. Worker.

Fig. 125, 126. *Cladomyrma* cf. *nudidorsalis*, Z02.HymFrm218.rn. Worker.

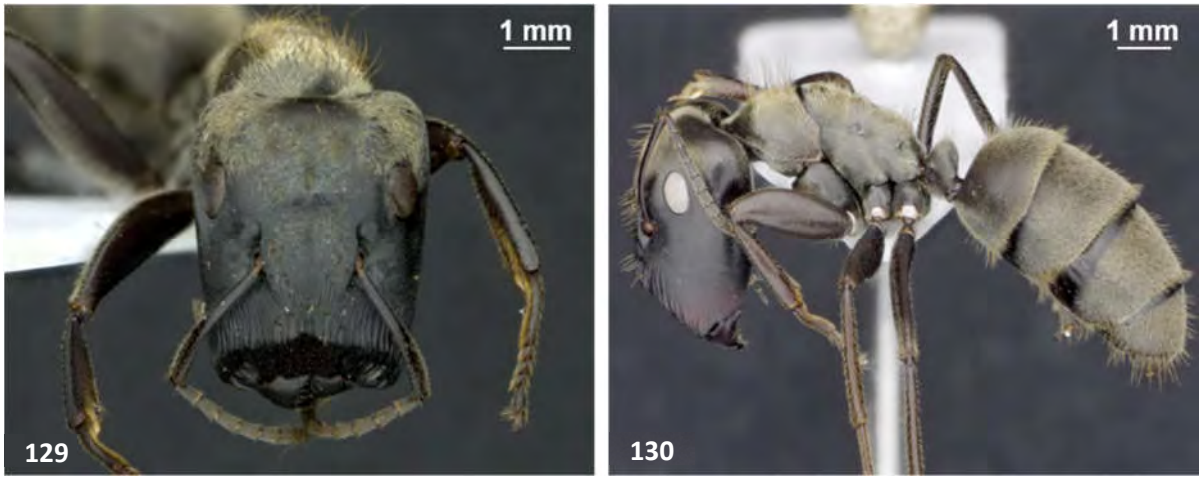


Fig. 129, 130. *Colobopsis leonaldi* group sp.01, Z02.HymFrm032.rn. Major worker.

Fig. 127, 128. *Colobopsis leonaldi* group sp.01, Z02.HymFrm032.rn. Minor worker.

Fig. 131, 132. *Colobopsis saundersi* group sp.01, Z02.HymFrm155.rn. Worker.

Fig. 133, 134. *Colobopsis saundersi* group sp.02, Z02.HymFrm048.rn. Worker.

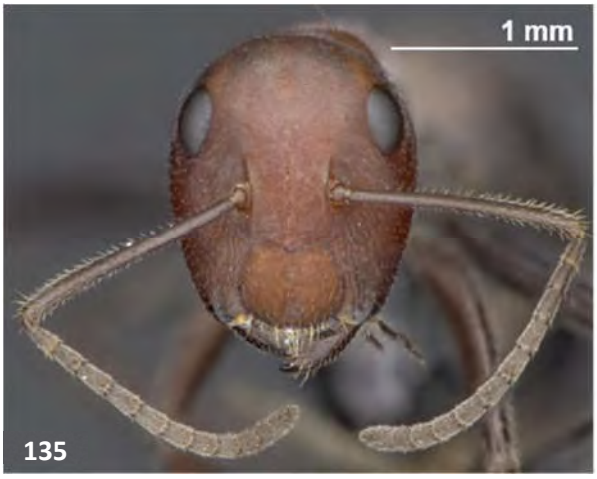


Fig. 135, 136. *Colobopsis saundersi* group sp.03, Z02.HymFrm219.rn. Worker.

Fig. 137, 138. *Colobopsis saundersi* group sp.04, Z02.HymFrm090.rn. Worker.

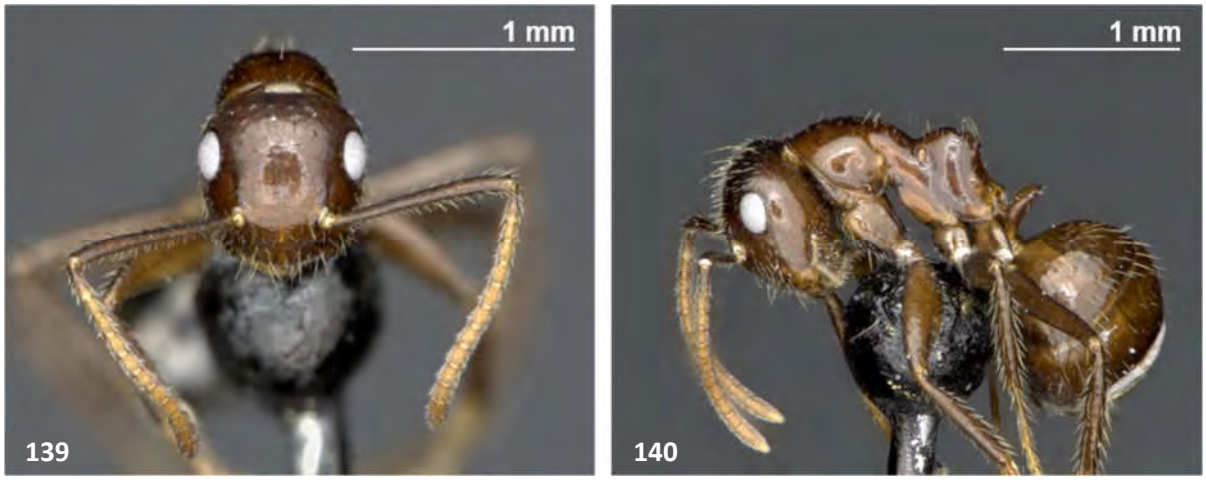


Fig. 139, 140. *Colobopsis vitrea praerufa*, Z02.HymFrm187.rn. Worker.

Fig. 141, 142. *Colobopsis* sp. (Camponotus sp.28 of SKY), Z02.HymFrm186.rn. Worker.

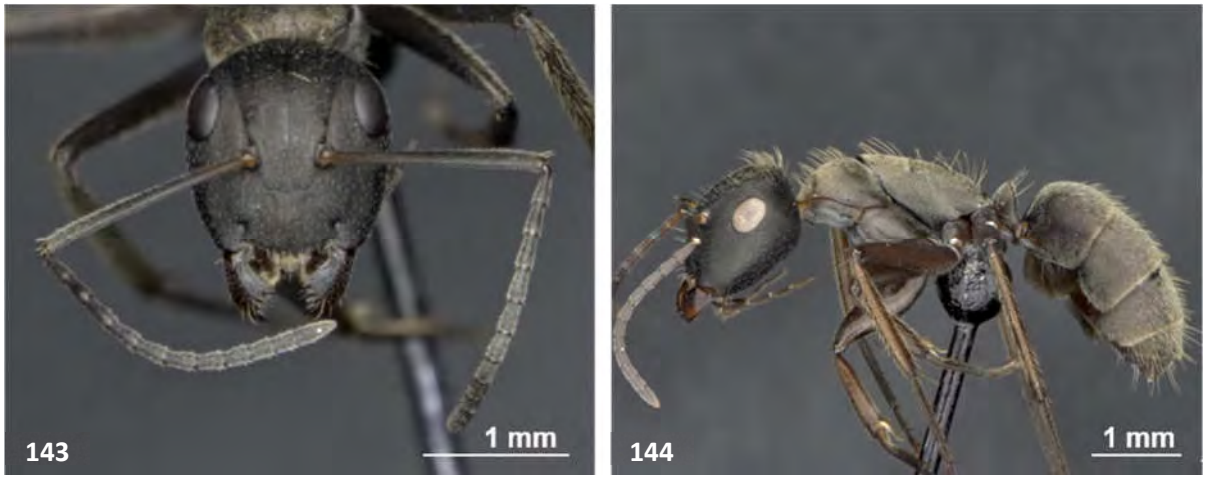


Fig. 143, 144. *Colobopsis* sp. (Camponotus sp.65 of SKY), Z02.HymFrm195.rn. Worker.

Fig. 145, 146. *Dinomyrmex gigas*, Z02.HymFrm063.rn. Minor worker.

Fig. 147, 148. *Dinomyrmex gigas*, Z02.HymFrm063.rn. Major worker.

Fig. 149, 150. *Echinopla lineata*, Z02.HymFrm143.rn. Worker.

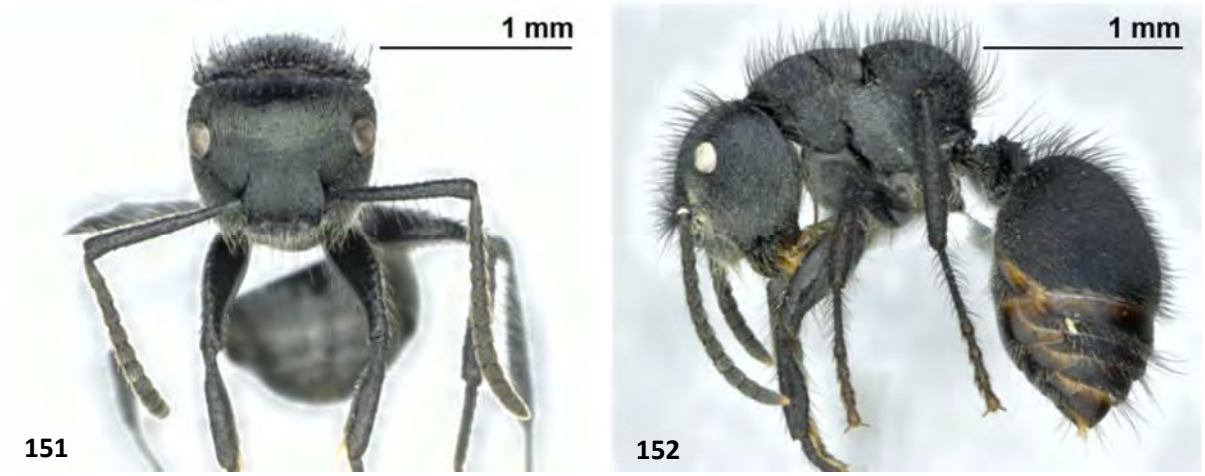


Fig. 151, 152. *Echinopla striata*, Z02.HymFrm013.rn. Worker.

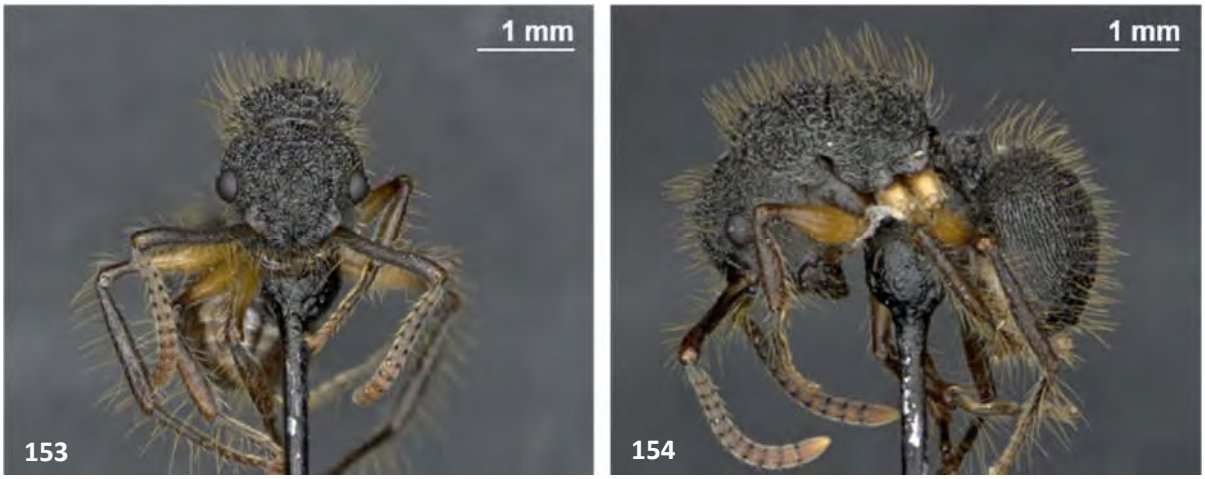


Fig. 153, 154. *Echinopla tritschleri*, Z02.HymFrm334.rn. Worker.

Fig. 155, 156. *Euprenolepis procera*, B01.HymFrm213.jw. Worker.

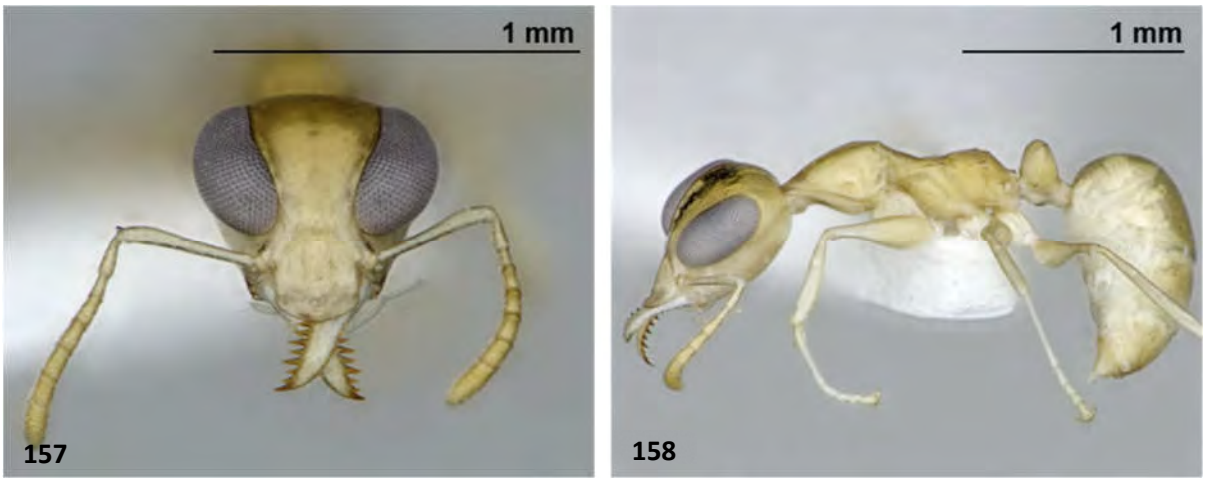


Fig. 157, 158. *Gesomyrmex kalshoveni*, Z02.HymFrm101.rn. Minor worker.

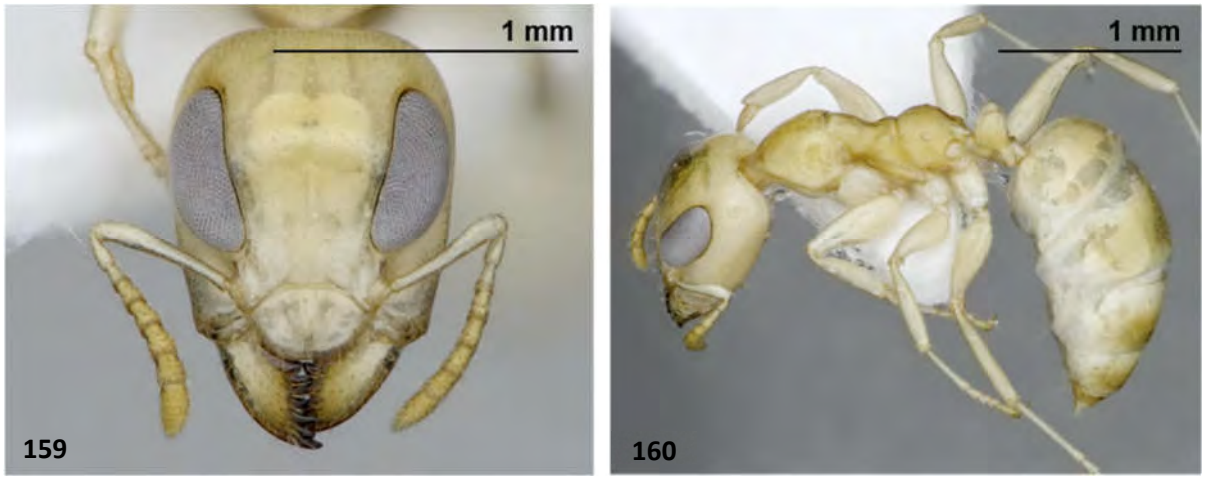


Fig. 159, 160. *Gesomyrmex kalshoveni*, Z02.HymFrm101.rn. Major worker.

Fig. 161, 162. *Lepisiota* sp.01, Z02.HymFrm210.rn. Major worker.

Fig. 163, 164. *Myrmoteras estrudae*, B01.HymFrm210.jw. Worker.

Fig. 165, 166. *Myrmoteras* sp.01, Z02.HymFrm046.rn. Worker.

Fig. 167, 168. *Nylanderia bourbonica*, B01.HymFrm304.jw. Worker.

Fig. 169, 170. *Nylanderia kraepelini*, Z02.HymFrm115.rn. Worker.

Fig. 171, 172. *Nylanderia* cf. *kraepelini*, B01.HymFrm241.jw. Worker.

Fig. 173, 174. *Nylanderia* cf. *vaga*, Z02.HymFrm207.rn. Worker.

Fig. 175, 176. *Nylanderia* cf. *vividula*, Z02.HymFrm281.rn. Worker.

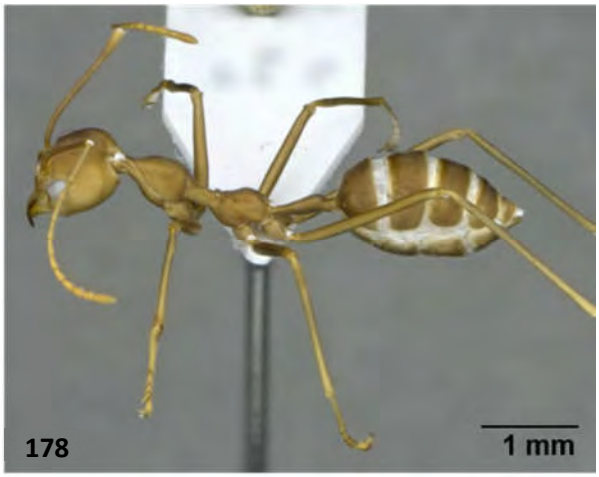


Fig. 177, 178. *Oecophylla smaragdina*, Z02.HymFrm062.rn. Worker.

Fig. 179-180. *Overbeckia* sp.01, Z02.HymFrm031.rn. Worker.

Fig. 181, 182. *Overbeckia subclavata*, Z02.HymFrm285.rn. Worker.

Fig. 183, 184. *Paraparatrechina dichroa*, Z02.HymFrm001.rn. Worker.

Fig. 185, 186. *Paraparatrechina* cf. *opaca*, Z02.HymFrm068.rn. Worker.

Fig. 187, 188. *Paraparatrechina longicornis*, Z02.HymFrm208.rn. Worker.

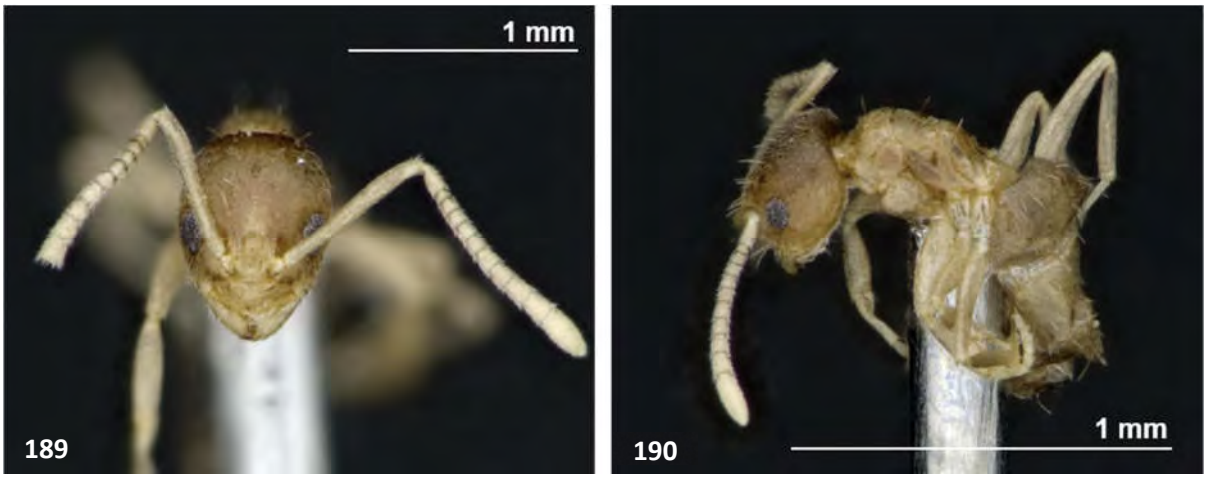


Fig. 189, 190. *Plagiolepis* sp.01, Z02.HymFrm026.rn. Worker.

Fig. 191, 192. *Plagiolepis* sp.02, Z02.HymFrm217.rn. Worker.

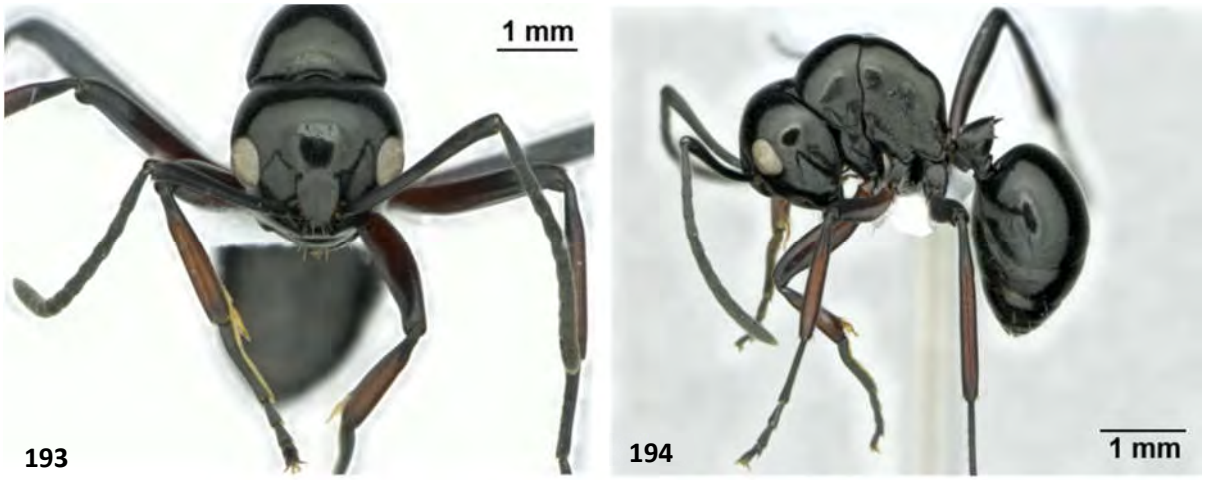


Fig. 193, 194. *Polyrhachis (Cyrtomyrma)* cf. *lepida*, Z02.HymFrm064.rn. Worker.

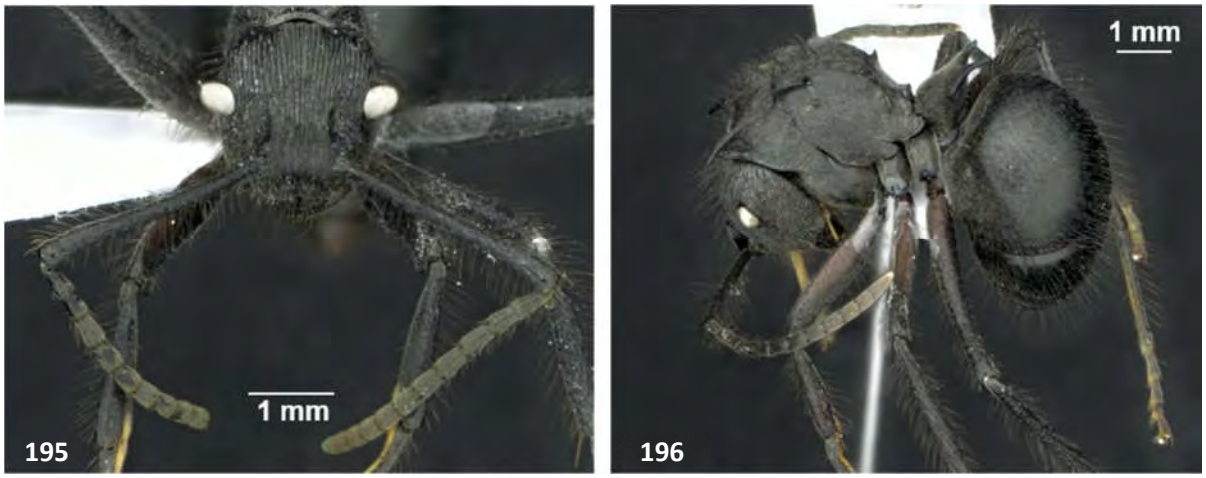


Fig. 195, 196. *Polyrhachis (Myrma) nigropilosa*, Z02.HymFrm130.rn. Worker.

Fig. 197, 198. *Polyrhachis (Myrma) proxima*, Z02.HymFrm070.rn. Worker.

Fig. 199, 200. *Polyrhachis (Myrma)* cf. *inermis*, Z02.HymFrm170.rn. Worker.

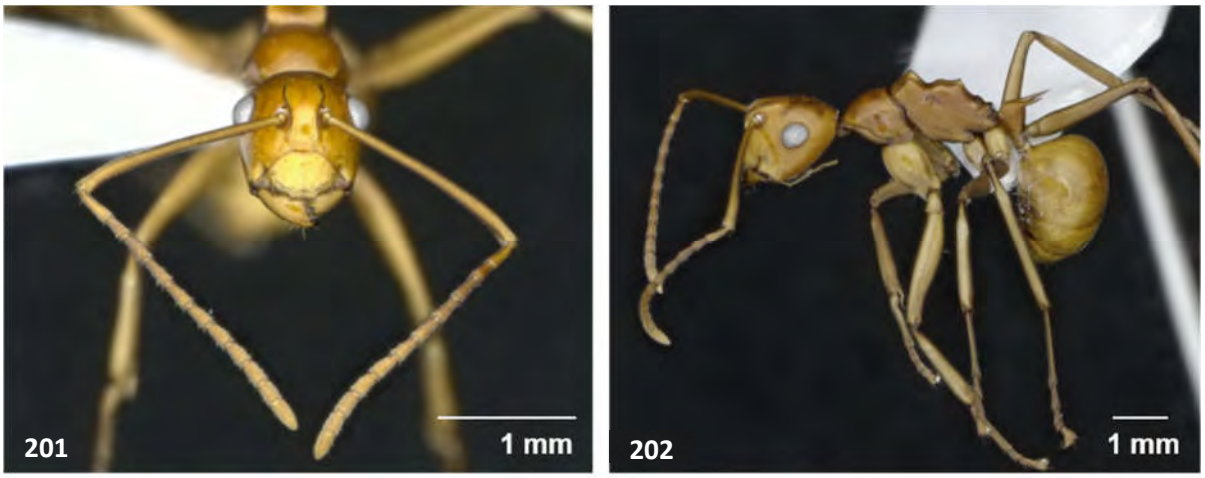


Fig. 201, 202. *Polyrhachis (Myrmatopa) schang*, Z02.HymFrm025.rn. Worker.

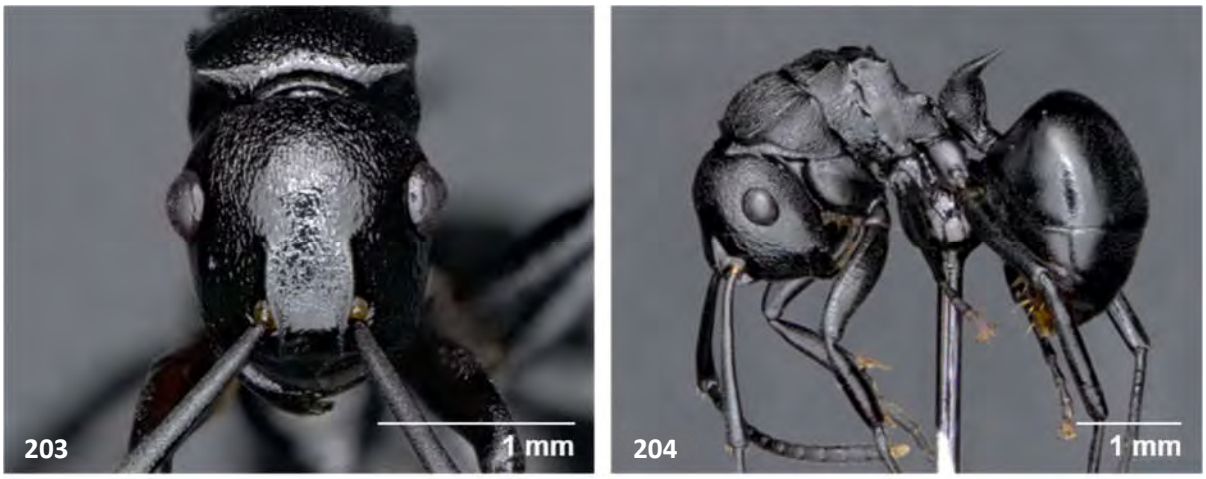


Fig. 203, 204. *Polyrhachis (Myrmatopa) simillima*, Z02.HymFrm166.rn. Worker.

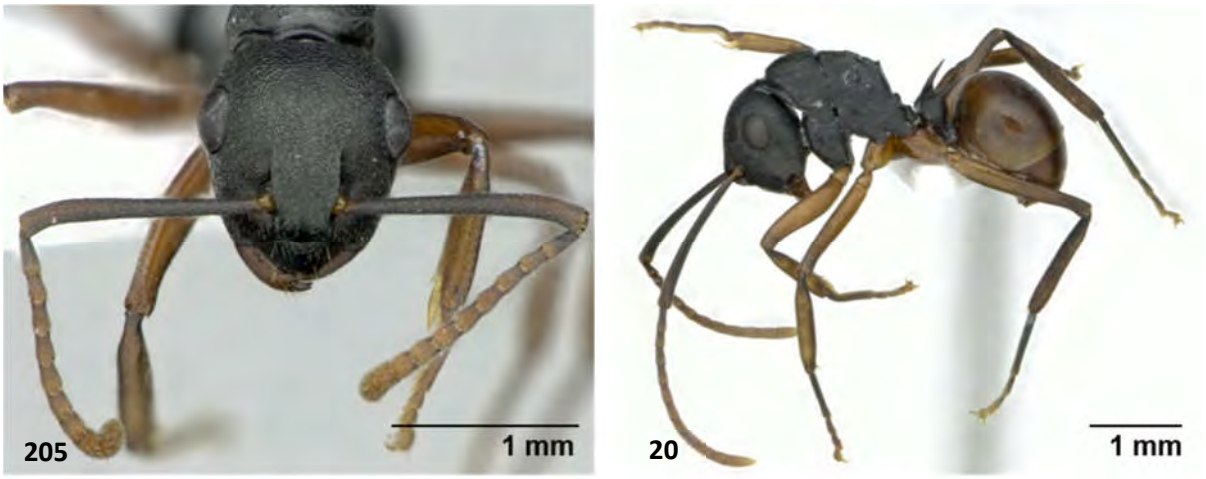


Fig. 205, 206. *Polyrhachis (Myrmatopa)* sp.01, Z02.HymFrm052.rn. Worker.

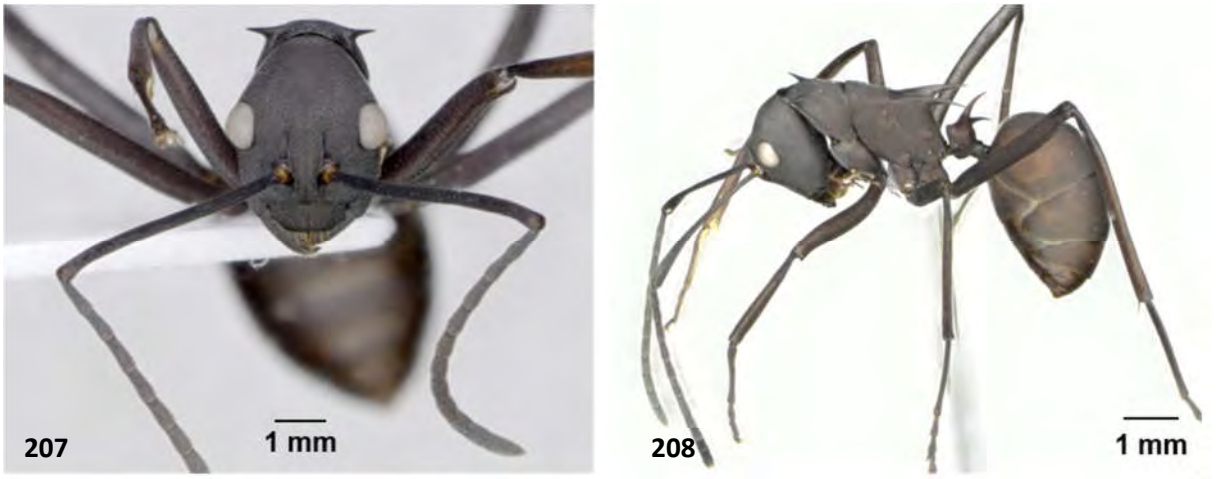


Fig. 207, 208. *Polyrhachis (Myrmhopla) abdominalis*, Z02.HymFrm069.rn. Worker.

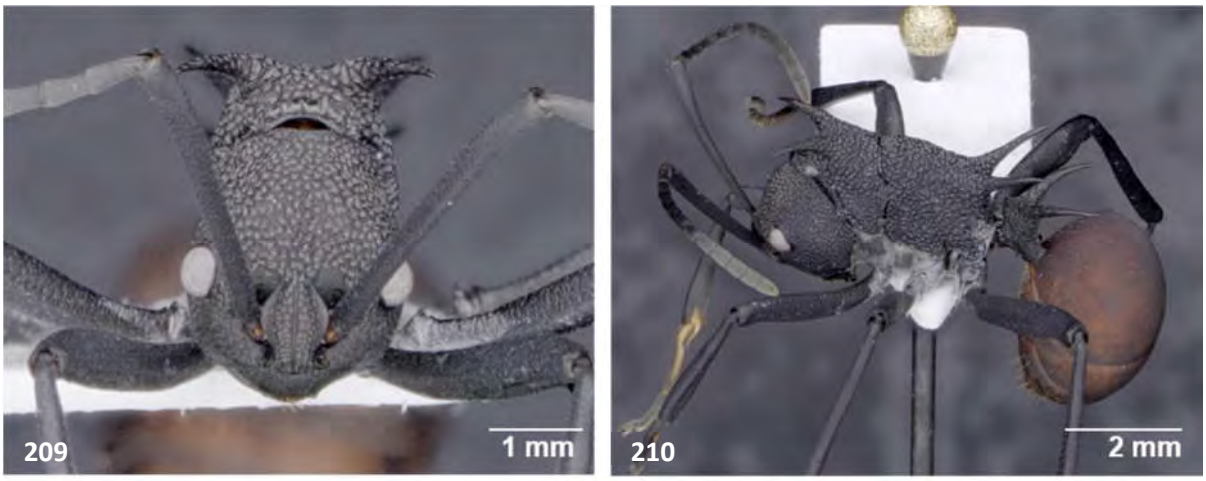


Fig. 209, 210. *Polyrhachis (Myrmhopla) armata*, Z02.HymFrm011.rn. Worker.

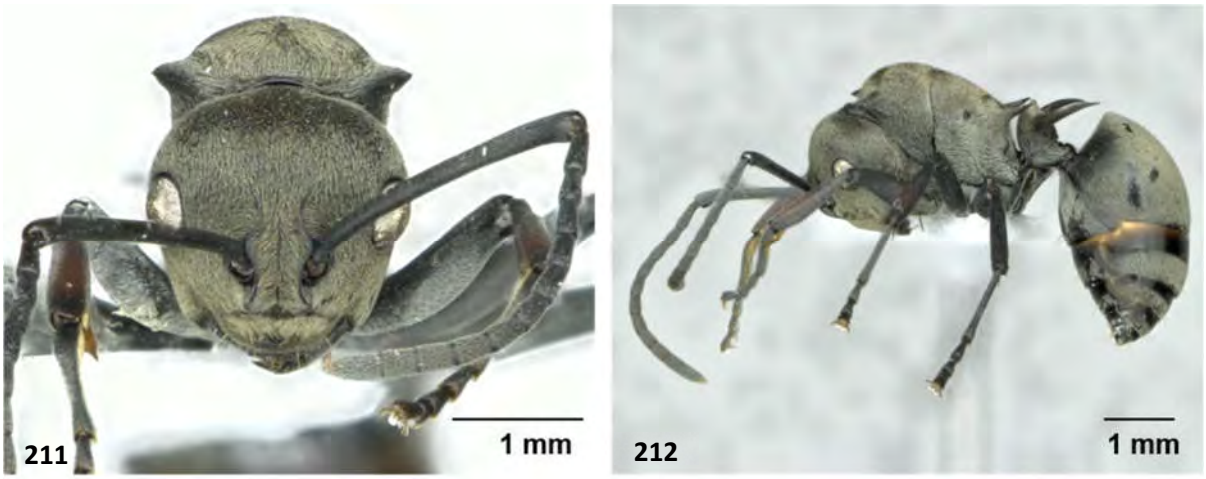


Fig. 211, 212. *Polyrhachis (Myrmhopla) armata* group sp.01, Z02.HymFrm015.rn. Worker

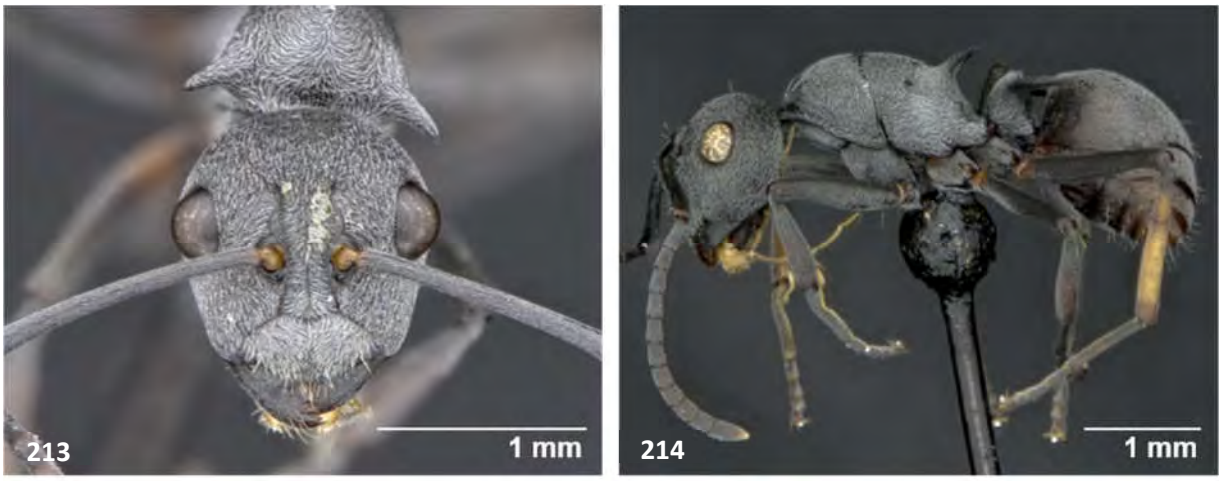


Fig. 213, 214. *Polyrhachis (Myrmhopla) armata* group sp.02, Z02.HymFrm163.rn. Worker.

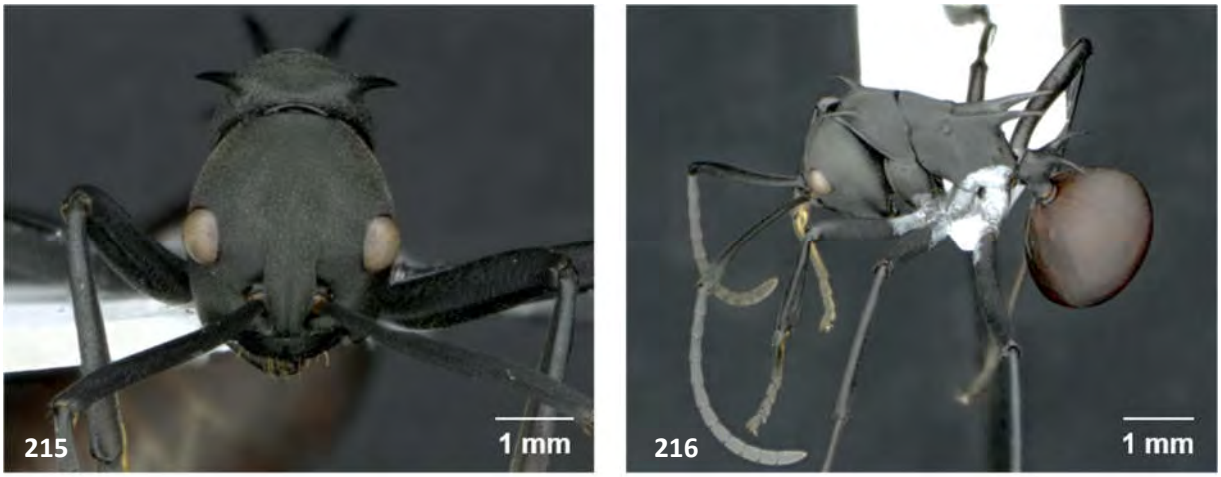


Fig. 215, 216. *Polyrhachis (Myrmhopla) armata* group sp.03, Z02.HymFrm507.jd. Worker.

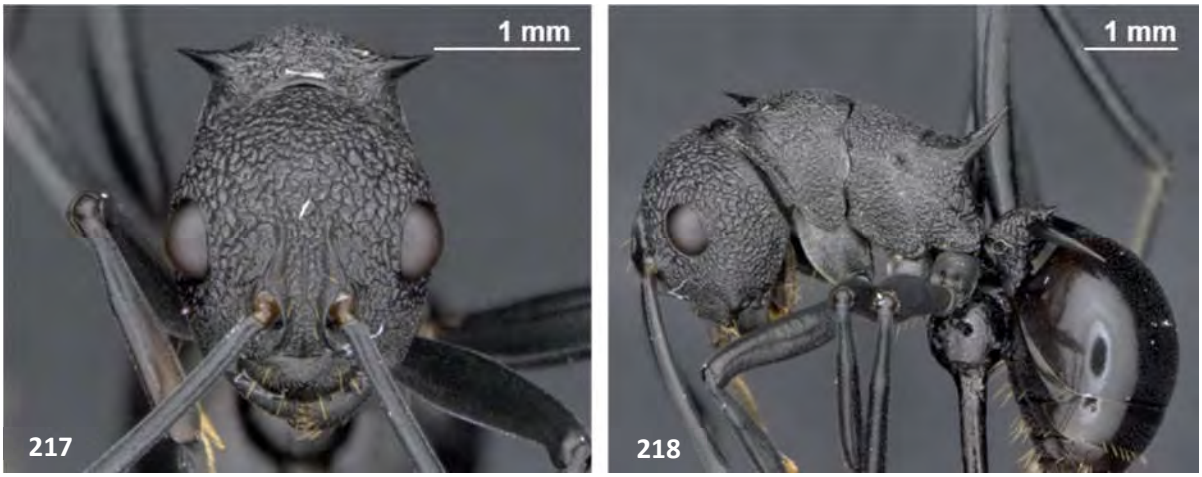


Fig. 217, 218. *Polyrhachis (Myrmhopla) armata* group sp.04, Z02.HymFrm333.rn. Worker.

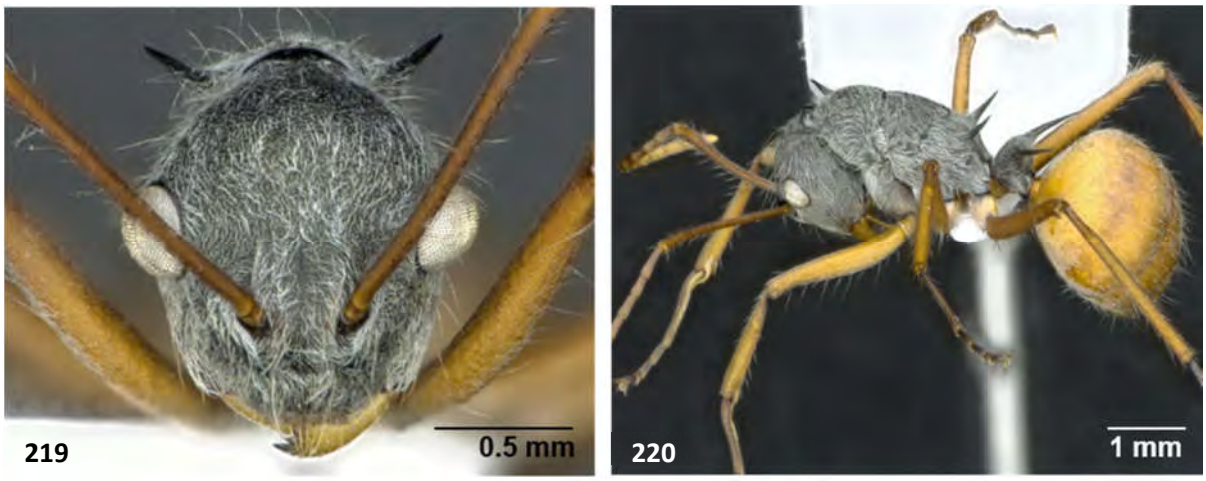


Fig. 211, 212. *Polyrhachis (Myrmhopla) bicolor* group sp.01, Z02.HymFrm024.rn. Worker.

Fig. 213, 214. *Polyrhachis (Myrmhopla) bicolor* group sp.02, Z02.HymFrm078.rn. Worker.

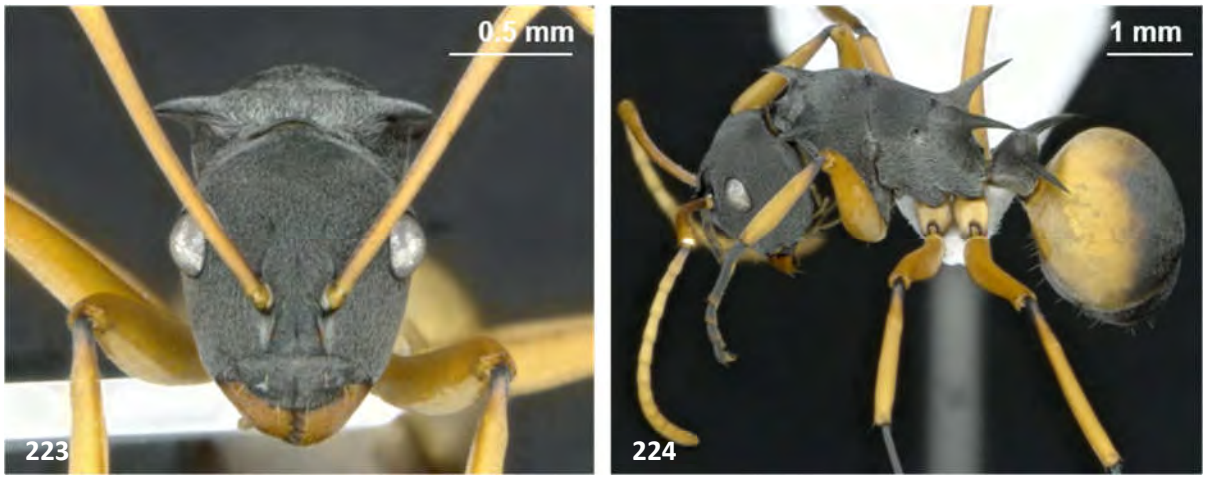


Fig. 223, 224. *Polyrhachis (Myrmhopla) bicolor* group sp.03, Z02.HymFrm508.jd. Worker.

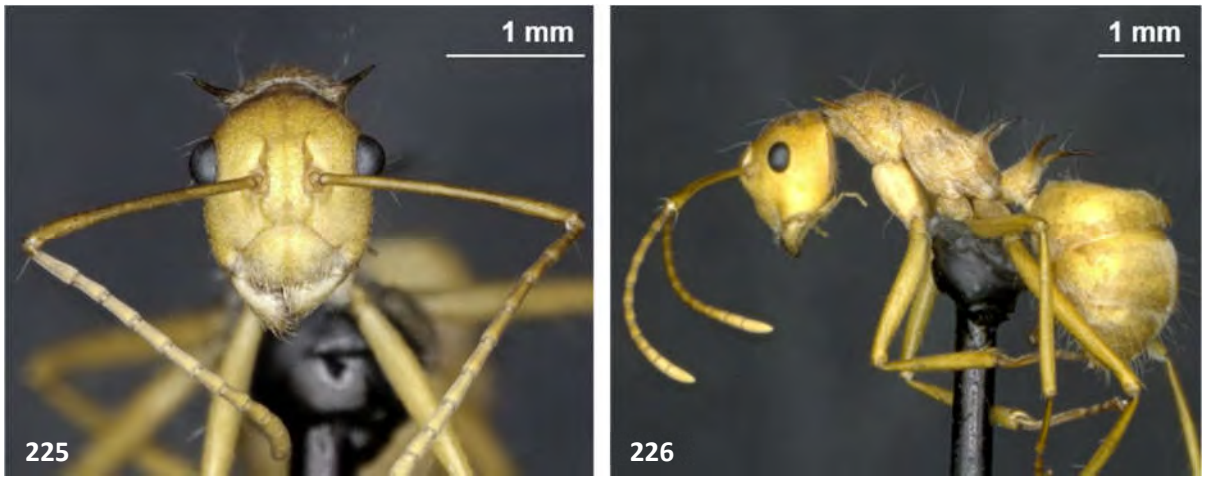


Fig. 225, 226. *Polyrhachis (Myrmhopla) bicolor* group sp.04, Z02.HymFrm291.rn. Worker.

Fig. 227, 228. *Polyrhachis (Myrmhopla) bicolor* group sp.05, Z02.HymFrm221.rn. Worker.

Fig. 229, 230. *Polyrhachis (Myrmhopla) bicolor* group sp.06, Z02.HymFrm509.jd. Worker.

Fig. 231, 232. *Polyrhachis (Myrmhopla) bicolor* group sp.07, Z02.HymFrm510.jd. Worker.

Fig. 233, 234. *Polyrhachis (Myrmhopla) flavoflagellata* group sp.01, Z02.HymFrm200.rn. Worker.

Fig. 235, 236. *Polyrhachis (Myrmhopla) mucronata* gr.sp.01, Z02.HymFrm023.rn. Worker

Fig. 237, 238. *Polyrhachis (Myrmhopla) rufipes*, Z02.HymFrm138.rn. Worker

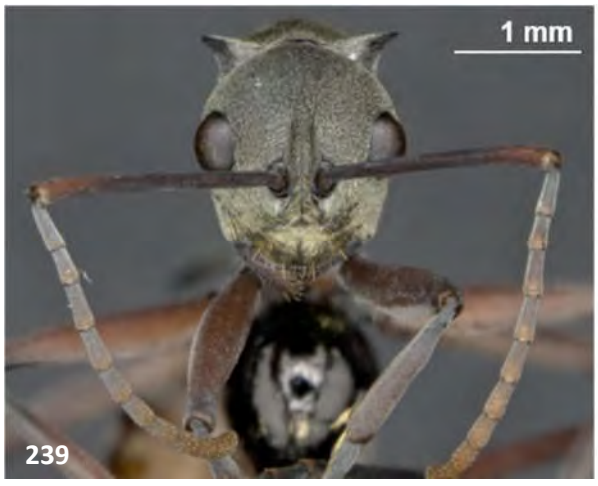


Fig. 239, 240. *Polyrhachis (Myrmhopla)* sp. near *basirufa*, Z02.HymFrm172.rn. Worker

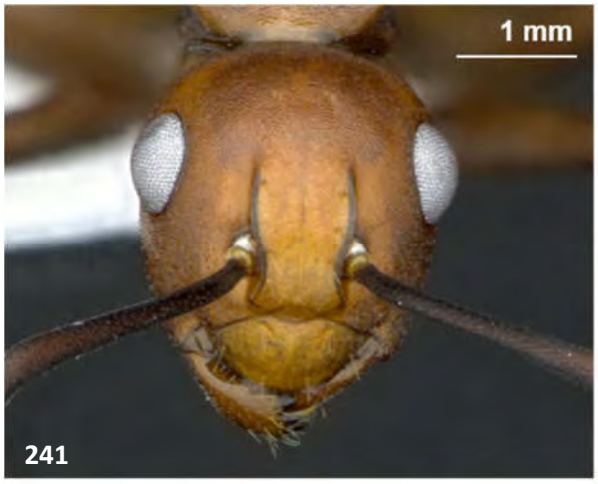


Fig. 241, 242. *Polyrhachis (Myrmothrinax)* near *thrinax* sp.01, Z02.HymFrm071.rn. Worker

Fig. 243, 244. *Polyrhachis (Myrmothrinax)* near *thrinax* sp.02, Z02.HymFrm124.rn. Worker

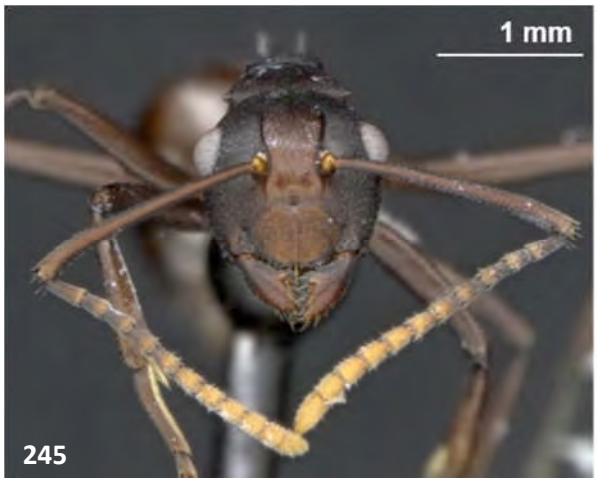


Fig. 245, 246. *Polyrhachis (Myrmothrinax)* near *thrinax* sp.03, Z02.HymFrm222.rn. Worker

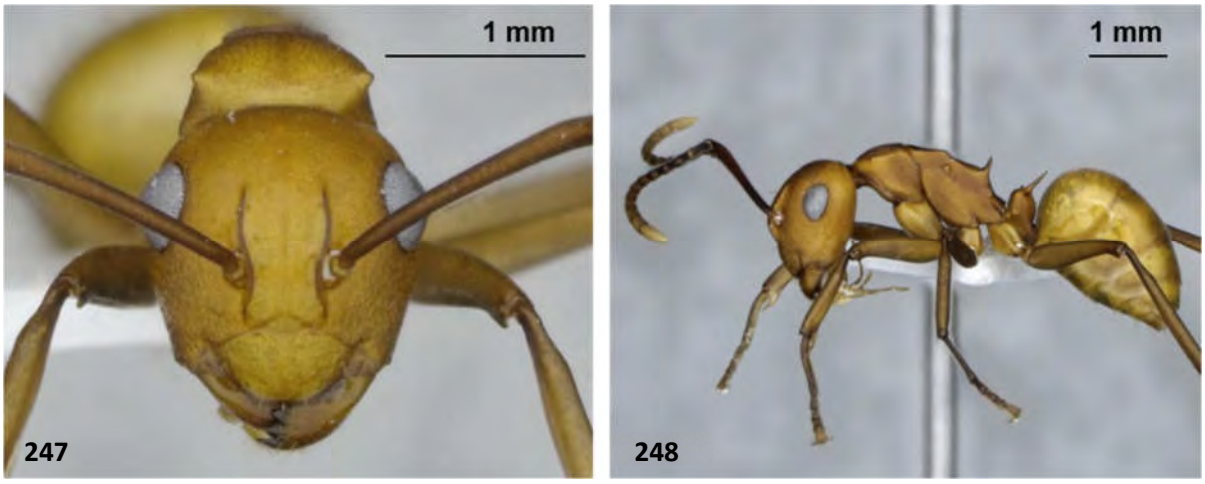


Fig. 247, 248. *Polyrhachis (Myrmothrinax)* near *thrinax* sp.05, Z02.HymFrm080.rn. Worker

Fig. 247, 248. *Polyrhachis (Polyrhachis) olybria*, Z02.HymFrm267.rn. Worker

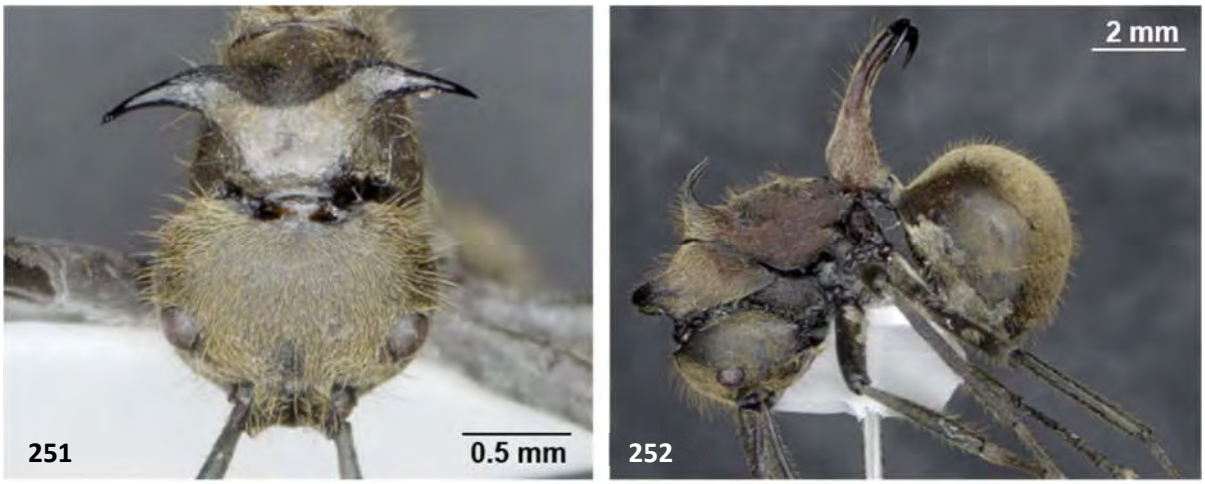


Fig. 251, 252. *Polyrhachis (Polyrhachis) ypsilon*, Z02.HymFrm184.rn. Worker

Fig. 253, 254. *Polyrhachis* sp.101, Z02.HymFrm113.rn. Worker

Fig. 255, 256. *Polyrhachis* sp.103, Z02.HymFrm413.rn. Worker

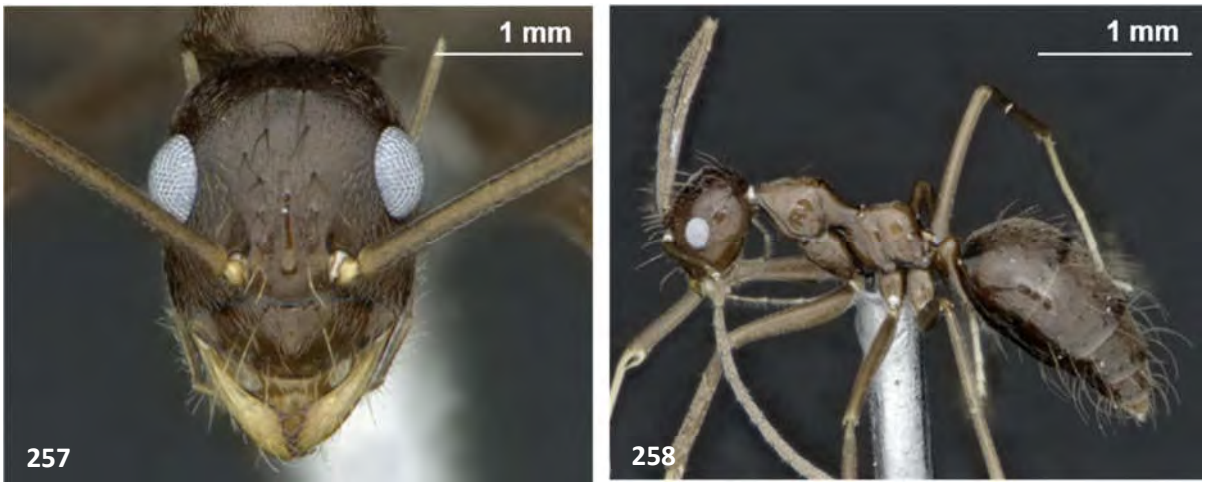


Fig. 257, 258. *Prenolepis* sp.01, Z02.HymFrm066.rn. Worker

Fig. 259, 260. *Prenolepis subopaca*, B01.HymFrm286.jw. Worker

7. Myrmicinae

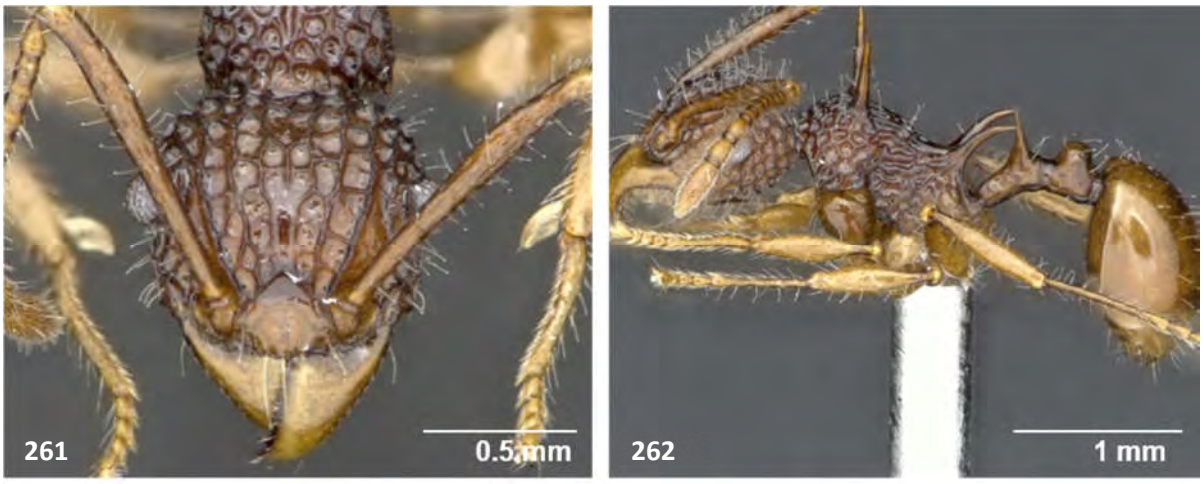


Fig. 261, 262. *Acanthomyrmex ferox,* B01.HymFrm220.jw. Minor worker.

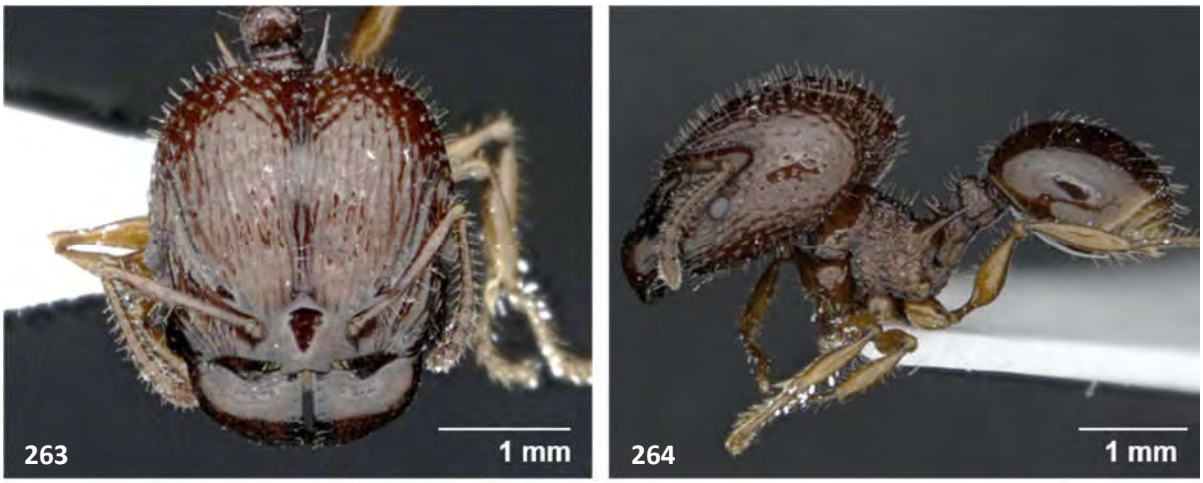


Fig. 263, 264. *Acanthomyrmex ferox,* B01.HymFrm220.jw. Major worker.

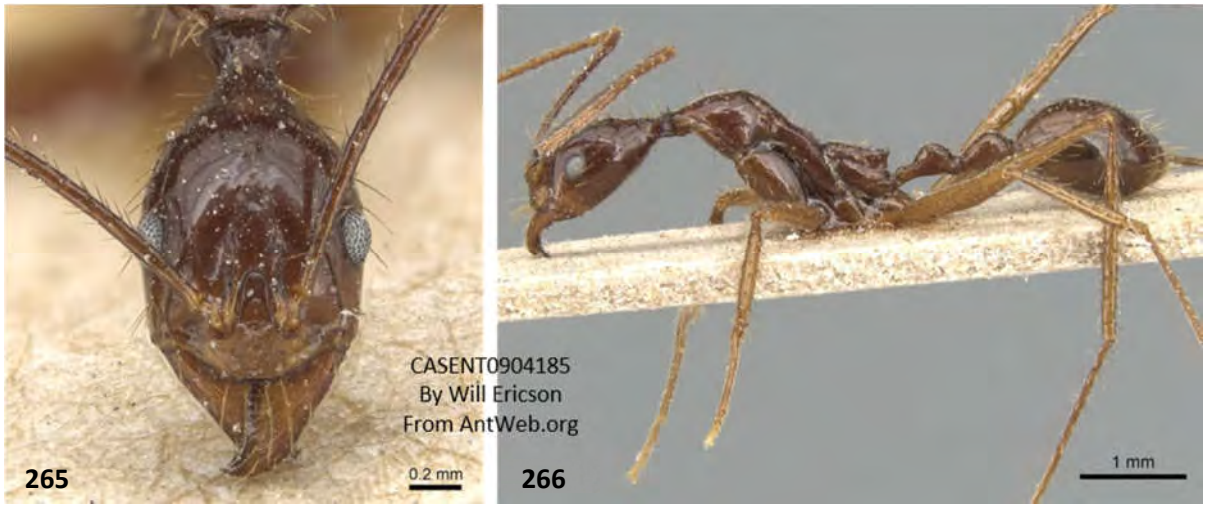


Fig. 265, 266. *Aphaenogaster feae,* B01.HymFrm211.jw. Worker.

Fig. 267, 268. *Aphaenogaster* sp.01*,* Z02.HymFrm161.rn. Worker.

Fig. 269, 270. *Cardiocondyla wroughtonii,* Z02.HymFrm021.rn. Worker.

Fig. 271, 272. *Cardiocondyla* sp.01*,* Z02.HymFrm206.rn. Worker.

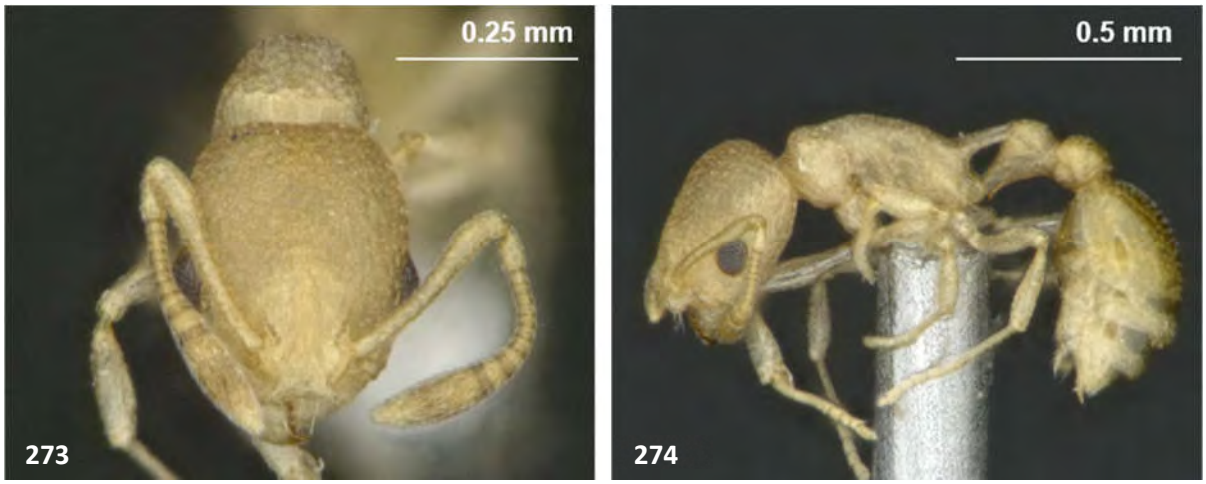


Fig. 273, 274. *Cardiocondyla* sp.02*,* B01.HymFrm227.jw. Worker.

Fig. 275, 276. *Carebara pygmea*, Z02.HymFrm141.rn. Minor worker.

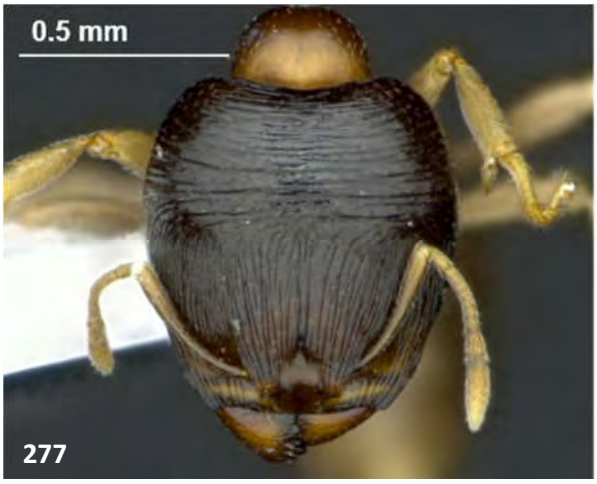


Fig. 277, 278. *Carebara pygmea*, Z02.HymFrm141.rn. Major worker.

Fig. 279, 280. *Carebara* sp.01, B01.HymFrm223.jw. Minor worker.

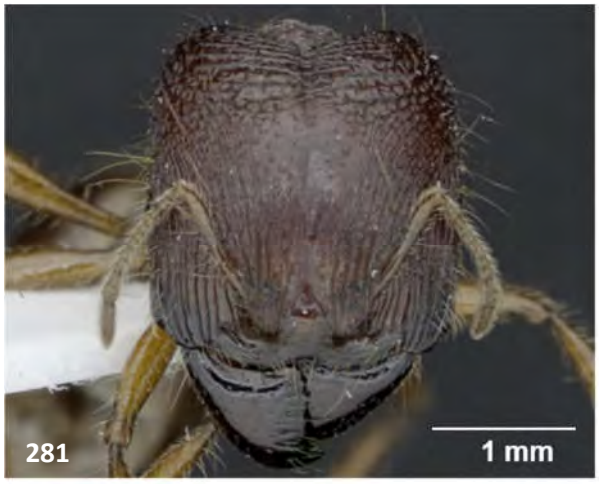


Fig. 281, 282. *Carebara* sp.01, B01.HymFrm223.jw. Major worker.

Fig. 283, 284. *Carebara* sp.02, B01.HymFrm224.jw. Minor worker.

Fig. 285, 286. *Carebara* sp.02, B01.HymFrm224.jw. Major worker.

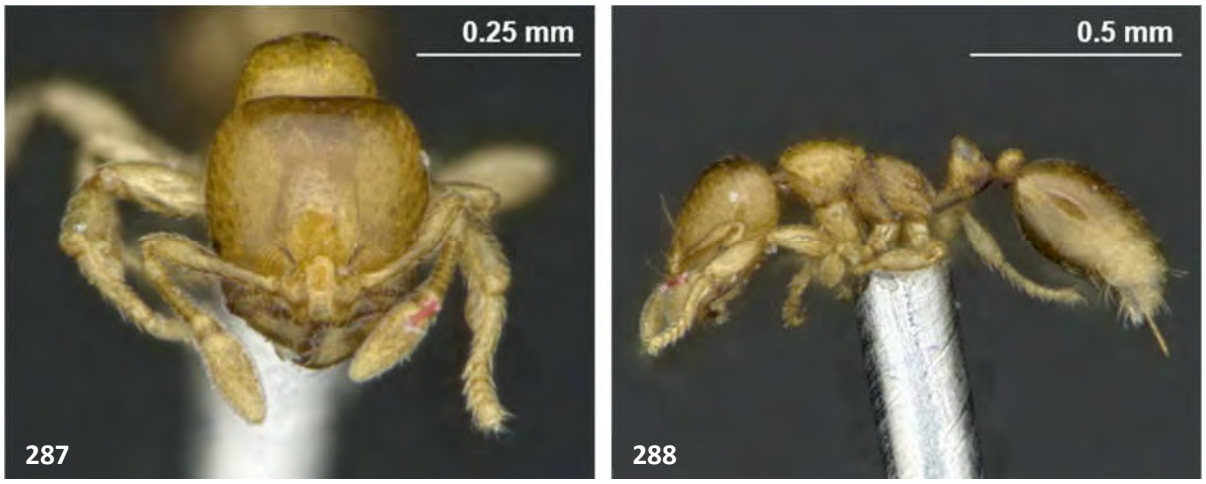


Fig. 287, 288. *Carebara* sp.03, B01.HymFrm225.jw. Minor worker.

Fig. 289, 290. *Carebara* sp.04, B01.HymFrm201.jw. Minor worker.

Fig. 291, 292. *Carebara* sp.61, Z01.HymFrm061.rn. Minor worker.

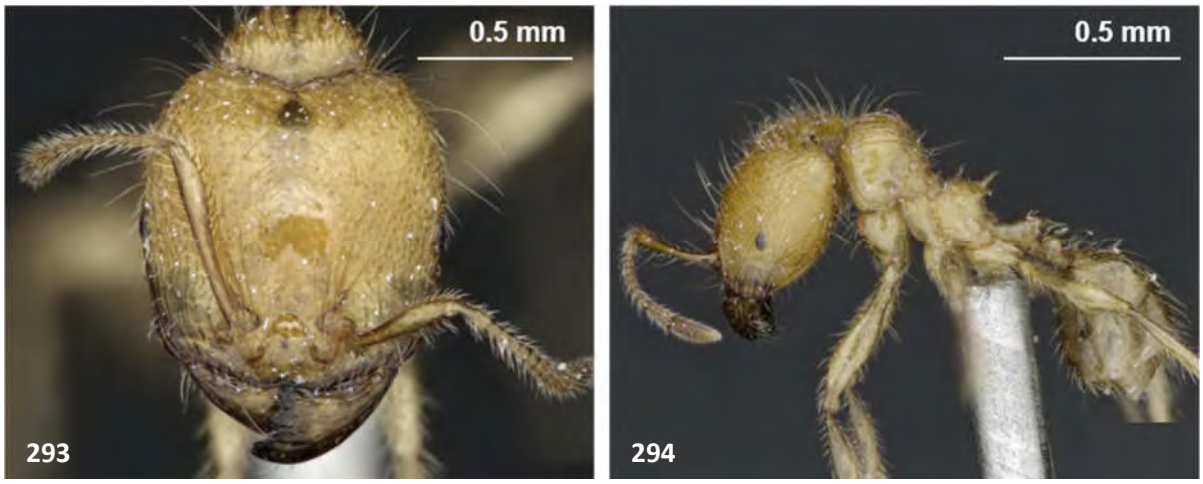


Fig. 293, 294. *Carebara* sp.104, B01.HymFrm226.jw. Minor worker.

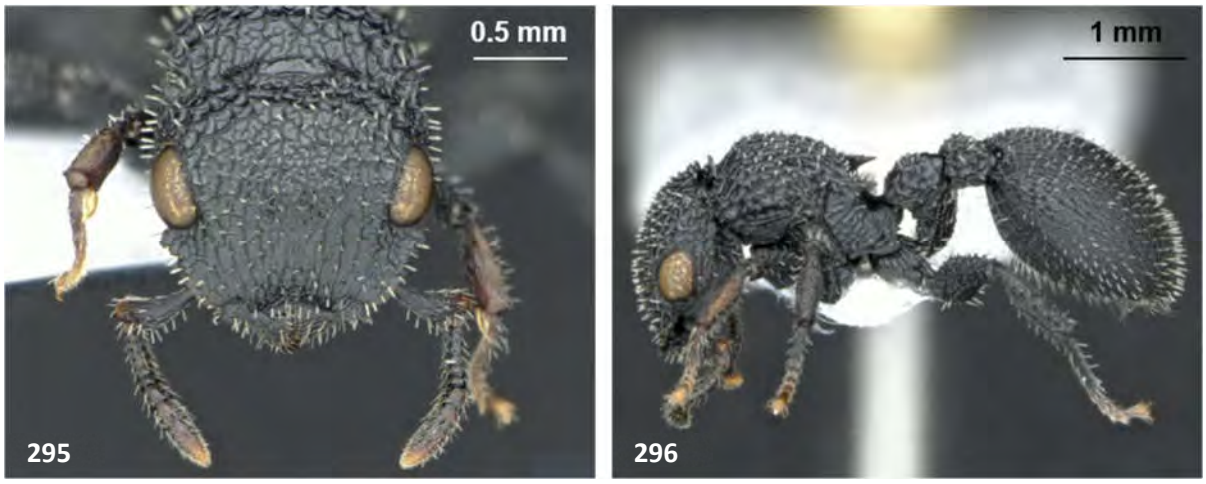


Fig. 295, 296. *Cataulacus hispidulus*, Z02.HymFrm091.rn. Worker.

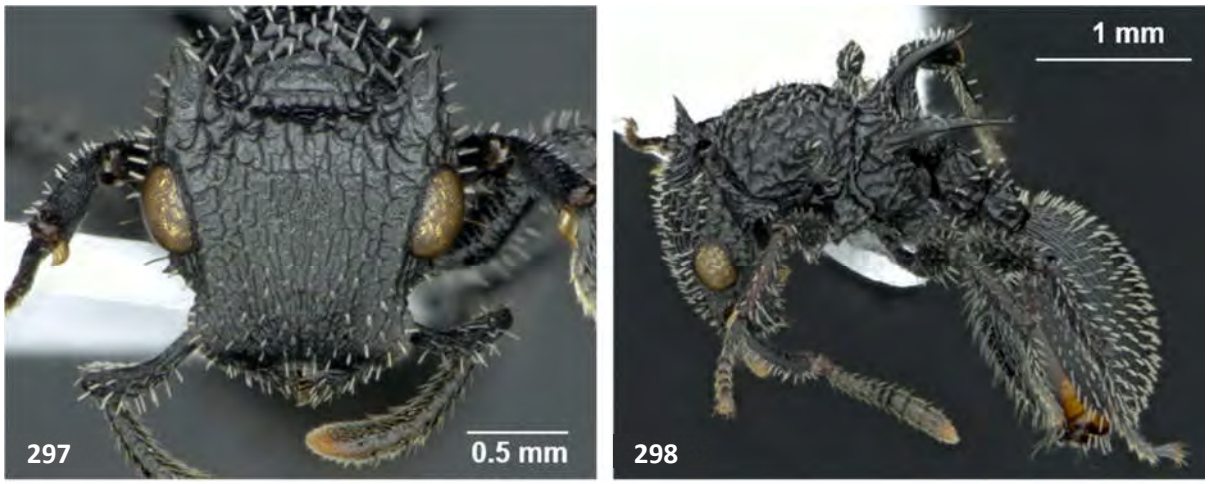


Fig. 297, 298. *Cataulacus horridus*, Z02.HymFrm159.rn. Worker.

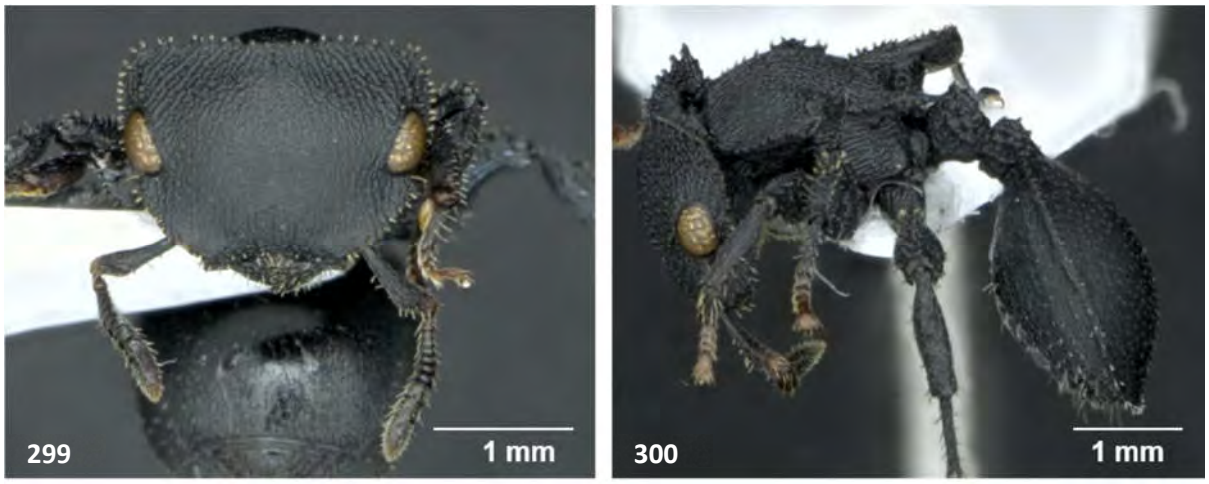


Fig. 299, 300. *Cataulacus latissimus*, Z02.HymFrm030.rn. Worker.

Fig. 301, 302. *Cataulacus praetextus*, Z02.HymFrm004.rn. Worker.

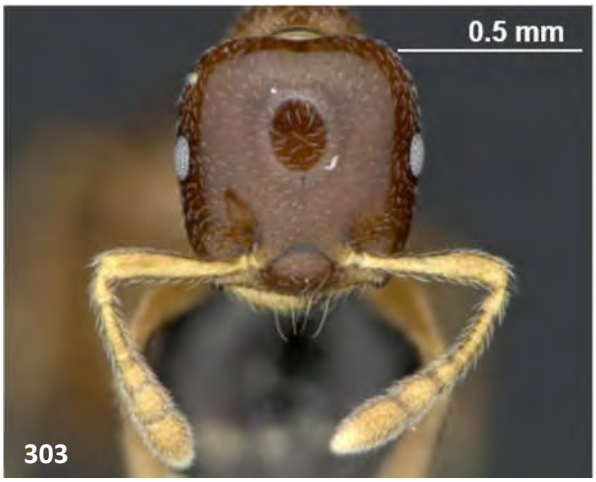


Fig. 303, 304. *Crematogaster borneensis* group sp.01, Z02.HymFrm239.rn. Worker.

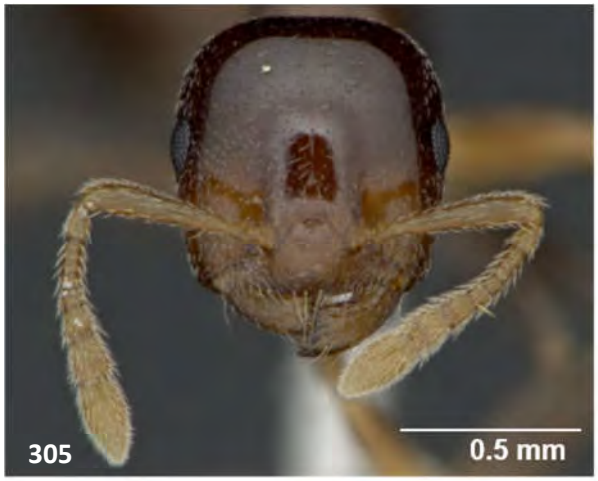


Fig. 305, 306. *Crematogaster borneensis* group sp.02, Z02.HymFrm252.rn. Worker.

Fig. 307, 308. *Crematogaster borneensis* group sp.03, Z02.HymFrm256.rn. Worker.

Fig. 309, 310. *Crematogaster borneensis* group sp.04, Z02.HymFrm407.rn. Worker.

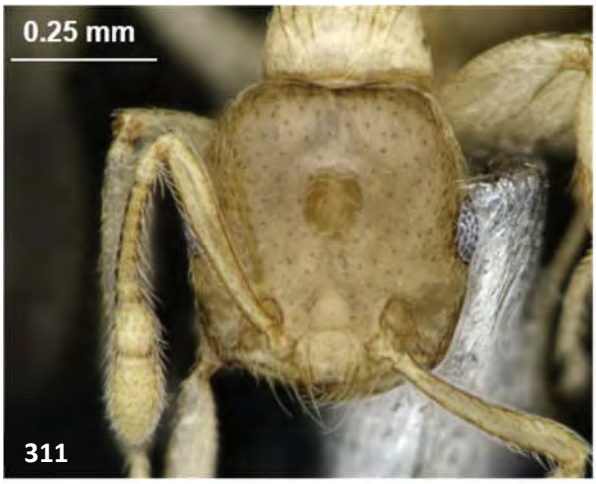


Fig. 311, 312. *Crematogaster* cf. *cylindriceps*, Z02.HymFrm074.rn. Worker.

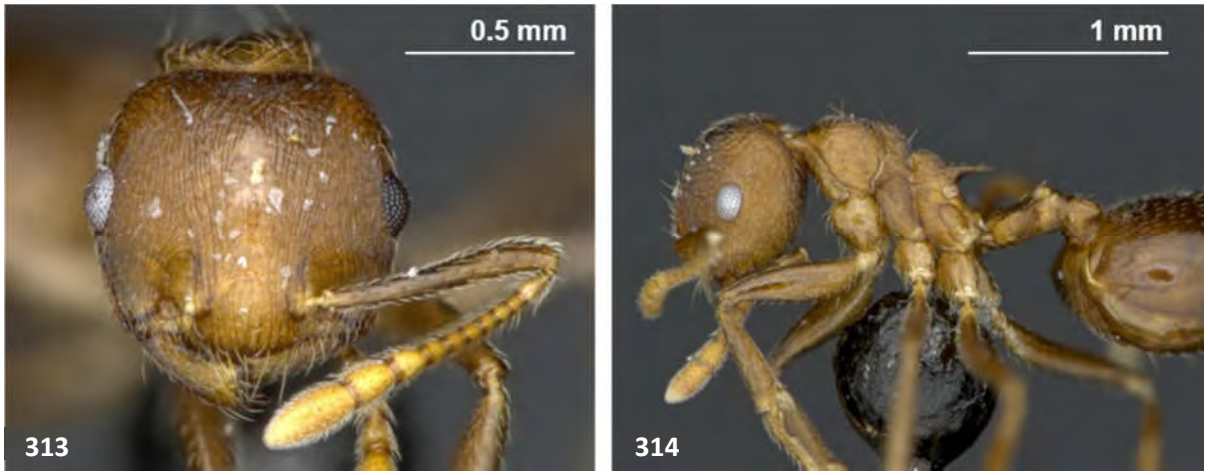


Fig. 313, 314. *Crematogaster* cf. *discinodis*, Z02.HymFrm226.rn. Worker.

Fig. 315, 316. *Crematogaster* cf. *indosinensis*, Z02.HymFrm242.rn. Worker.

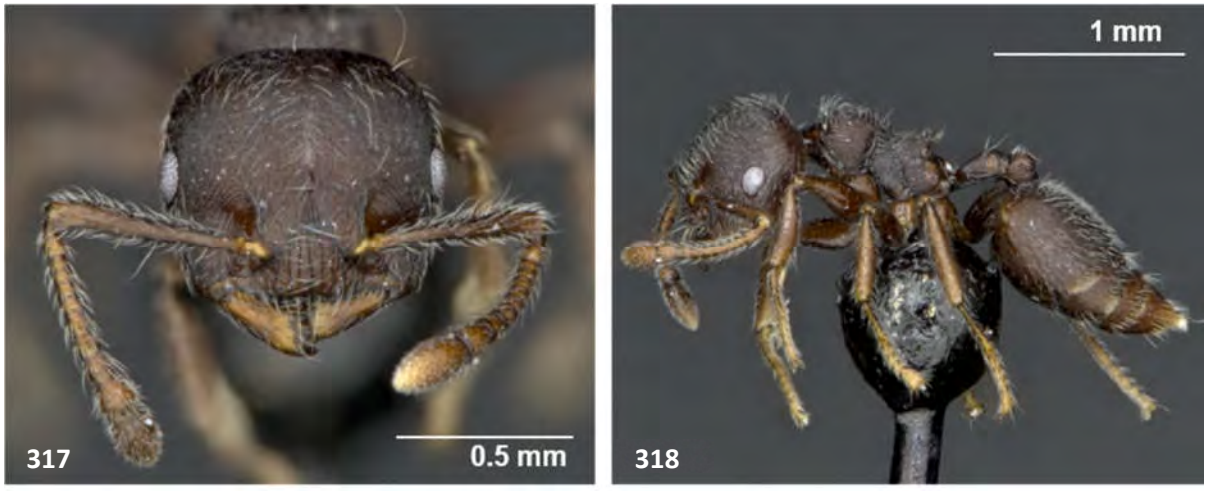


Fig. 317, 318. *Crematogaster* cf. *pfeifferi*, Z02.HymFrm242.rn. Worker.

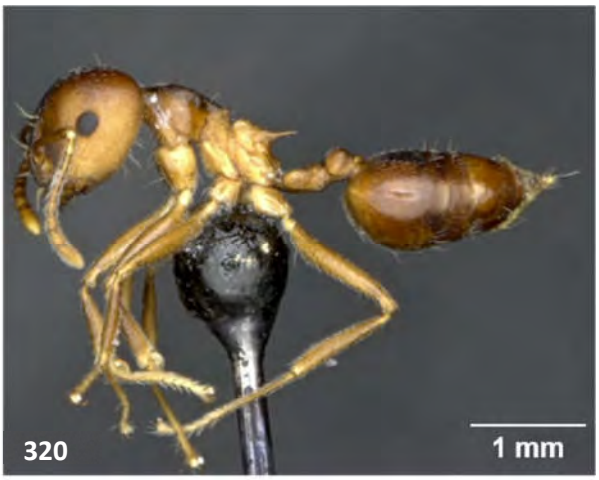


Fig. 319, 320. *Crematogaster coriaria*, Z02.HymFrm225.rn. Worker.

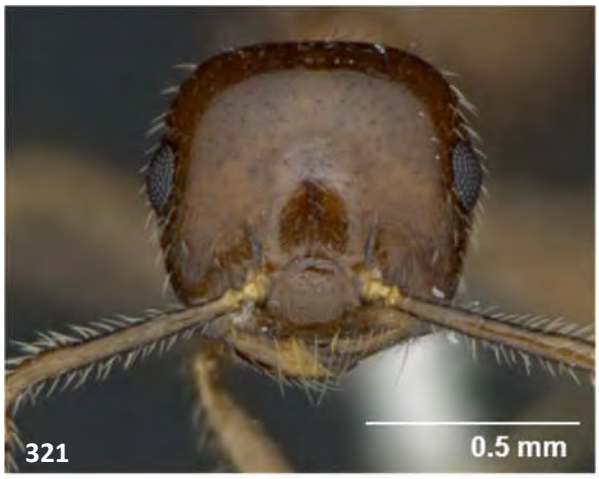


Fig. 321, 322. *Crematogaster ferrarii*, Z02.HymFrm237.rn. Worker.

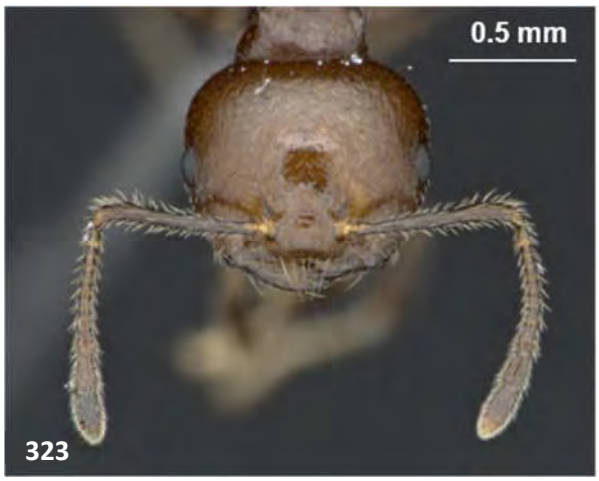


Fig. 323, 324. *Crematogaster fraxatrix*, Z02.HymFrm254.rn. Worker.

Fig. 325, 326. *Crematogaster fraxatrix* gr. *simboloni* sp.01, Z02.HymFrm244.rn. Worker.

Fig. 327, 328. *Crematogaster inflata*, Z02.HymFrm313.rn. Worker.

Fig. 329, 330. *Crematogaster modiglianii*, Z02.HymFrm301.rn. Worker.

Fig. 331, 332. *Crematogaster reticulata*, Z02.HymFrm234.rn. Worker.

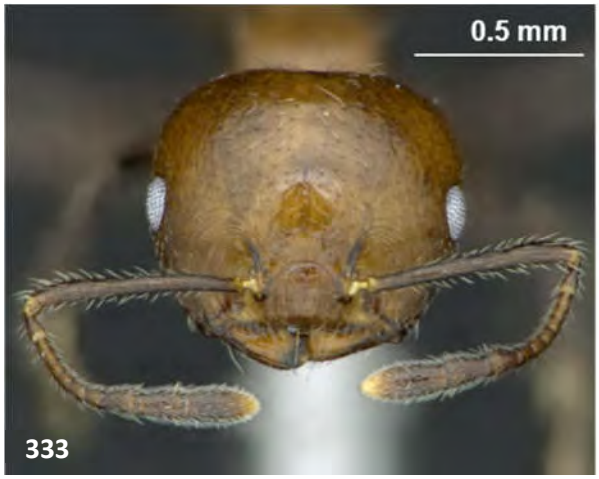


Fig. 333, 334. *Crematogaster rogenhoferi* gr. sp.01, Z02.HymFrm017.rn. Worker.

Fig. 335, 336. *Crematogaster rogenhoferi* gr. sp.02, Z02.HymFrm117.rn. Worker.

Fig. 337, 338. *Crematogaster rogenhoferi* gr. sp.03, Z02.HymFrm229.rn. Worker.

Fig. 339, 340. *Crematogaster sewardi*, Z02.HymFrm245.rn. Worker.

Fig. 341, 342. *Crematogaster treubi*, Z02.HymFrm238.rn. Worker.

Fig. 343, 344. *Crematogaster treubi* gr. sp.01, Z02.HymFrm248.rn. Worker.

Fig. 345, 346. *Crematogaster treubi* gr. sp.02, Z02.HymFrm295.rn. Worker.

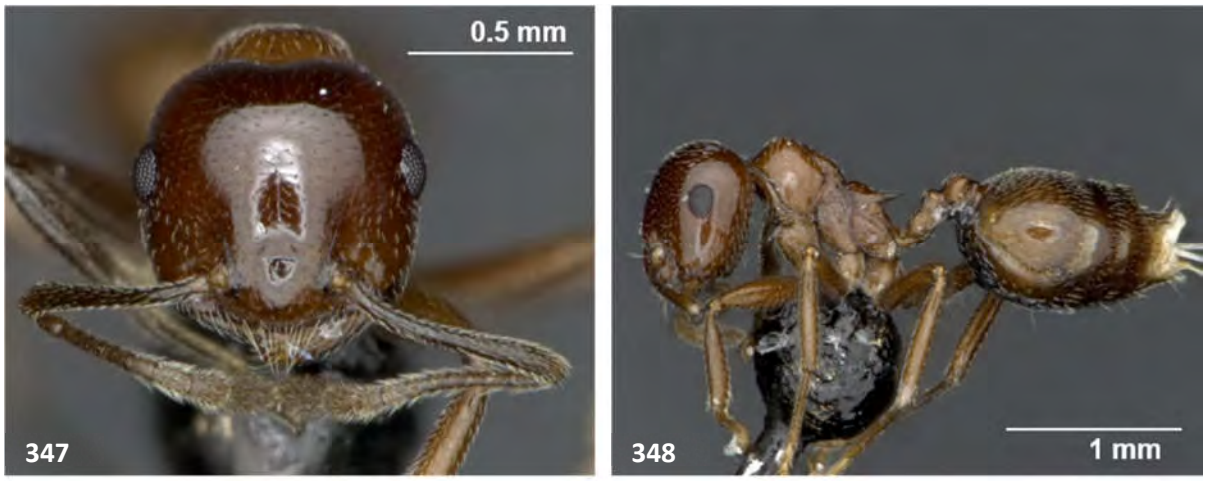


Fig. 347, 348. *Crematogaster tumidula*, Z02.HymFrm253.rn. Worker.

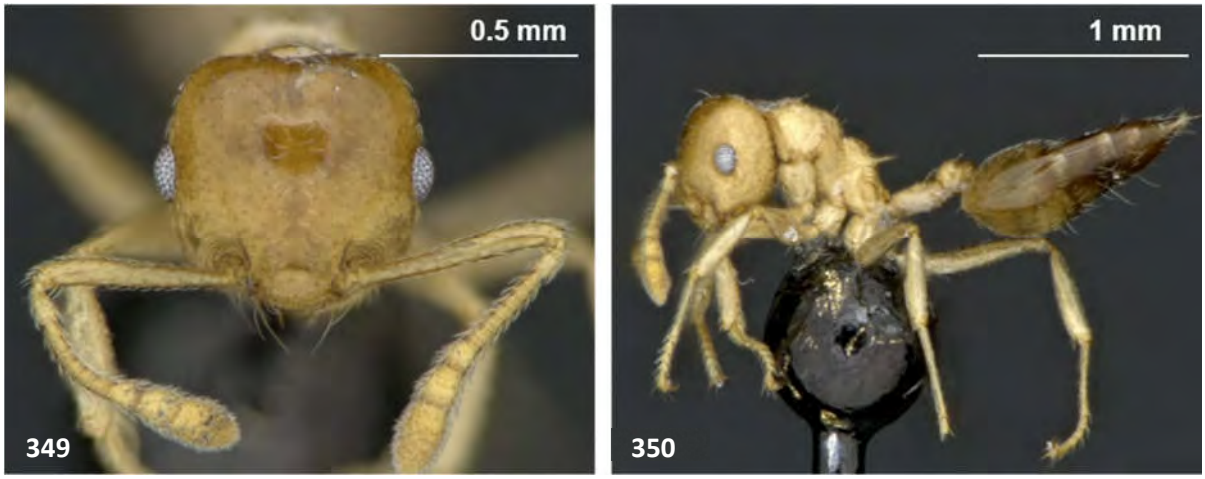


Fig. 349, 350. *Crematogaster* sp.02 of SH, Z02.HymFrm236.rn. Worker.

Fig. 351, 352. *Crematogaster* sp.02, Z02.HymFrm044.rn. Worker.

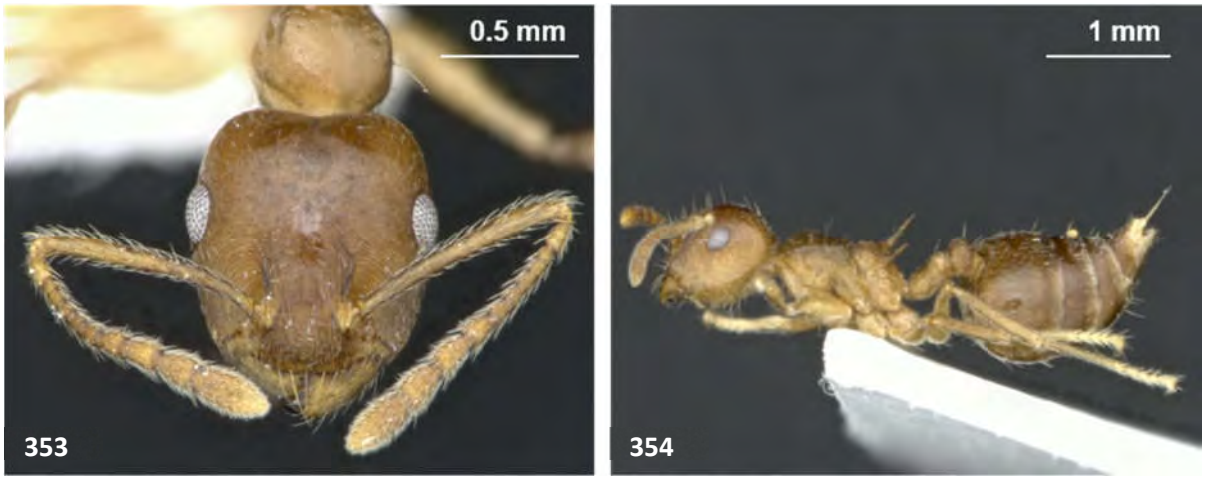


Fig. 353, 354. *Crematogaster* sp.06, B01.HymFrm232.jw. Worker.

Fig. 355, 356. *Crematogaster* sp.07, B01.HymFrm233.jw. Worker.

Fig. 357, 358. *Crematogaster* sp.10, B01.HymFrm236.jw. Worker.

Fig. 359, 360. *Crematogaster* sp.12, B01.HymFrm238.jw. Worker.

Fig. 361, 362. *Crematogaster* sp.13, B01.HymFrm239.jw. Worker.

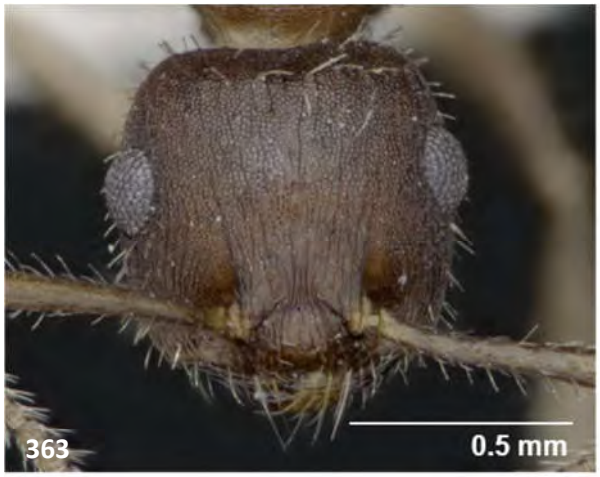


Fig. 363, 364. *Crematogaster* sp.14, B01.HymFrm305.jw. Worker.

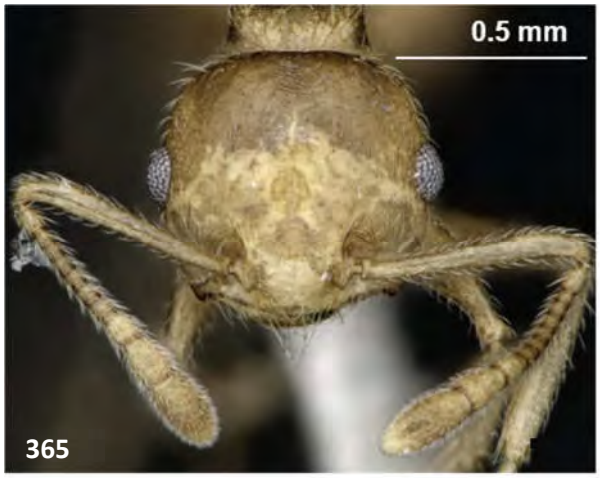


Fig. 365, 366. *Crematogaster* sp.16, B01.HymFrm307.jw. Worker.

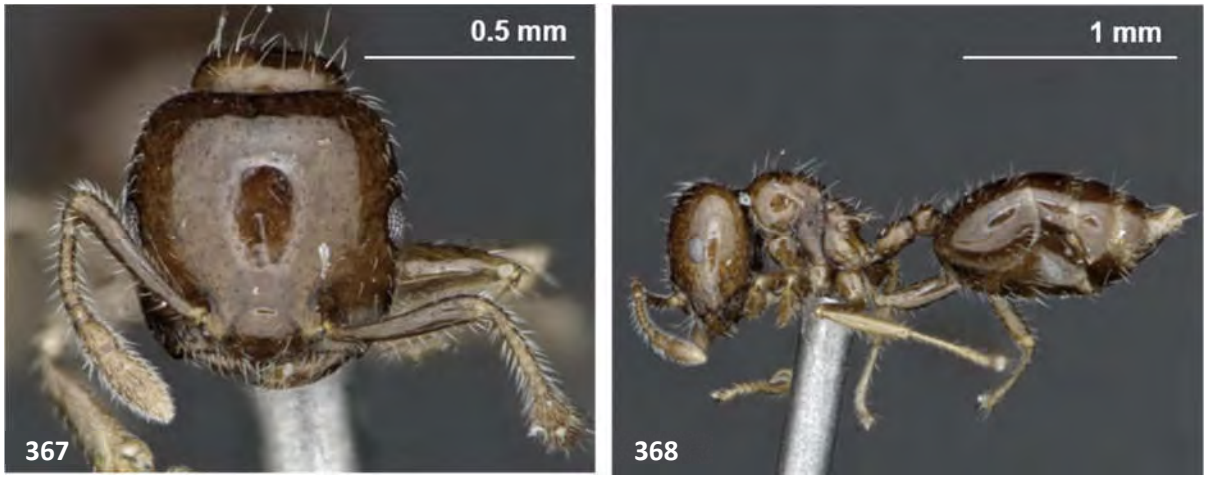


Fig. 367, 368. *Crematogaster* sp.18, B01.HymFrm309.jw. Worker.

Fig. 369, 370. *Crematogaster* sp.30, Z02.HymFrm249.rn. Worker.

Fig. 371, 372. *Crematogaster* sp.47, Z02.HymFrm303.rn. Worker.

Fig. 373, 374. *Crematogaster* sp.77, Z02.HymFrm409.rn. Worker.

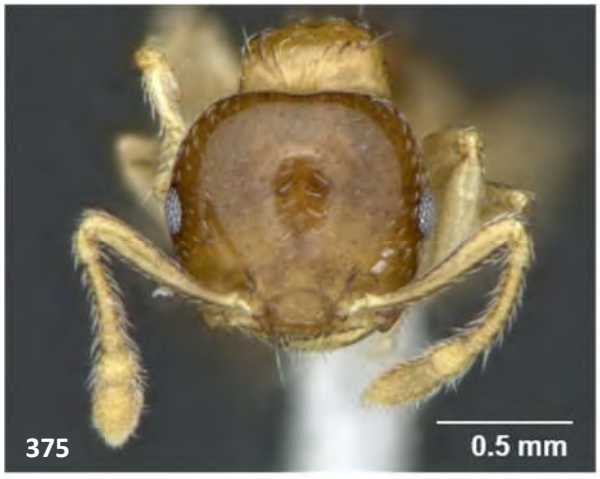


Fig. 375, 376. *Crematogaster* sp.78, Z02.HymFrm410.rn. Worker.

Fig. 377, 378. *Crematogaster* sp.79, Z02.HymFrm411.rn. Worker.

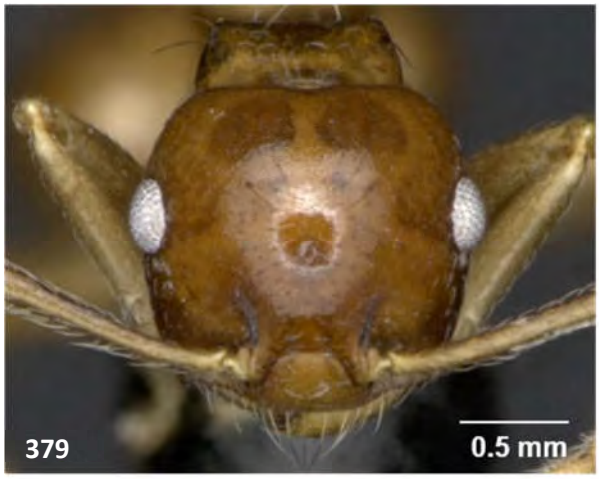


Fig. 379, 380. *Crematogaster* sp.101, Z02.HymFrm235.rn. Worker.

Fig. 381, 382. *Crematogaster* sp.102, Z02.HymFrm246.rn. Worker.

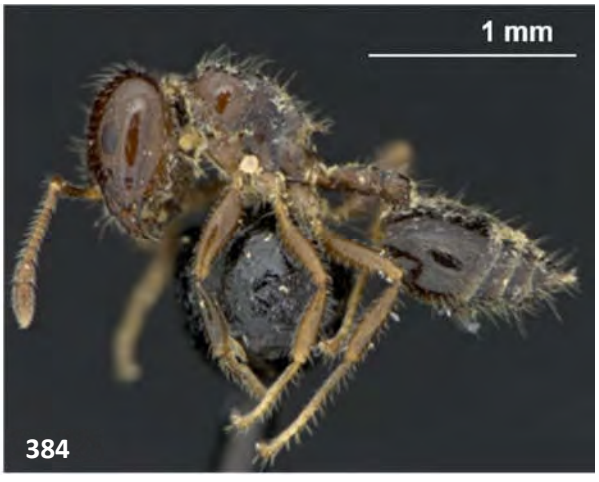


Fig. 383, 384. *Crematogaster* sp.103, Z02.HymFrm251.rn. Worker.

Fig. 385, 386. *Crematogaster* sp.104, Z02.HymFrm307.rn. Worker.

Fig. 387, 388. *Crematogaster* sp.105, Z02.HymFrm321.rn. Worker.

Fig. 389, 390. *Crematogaster* sp.106, Z02.HymFrm327.rn. Worker.

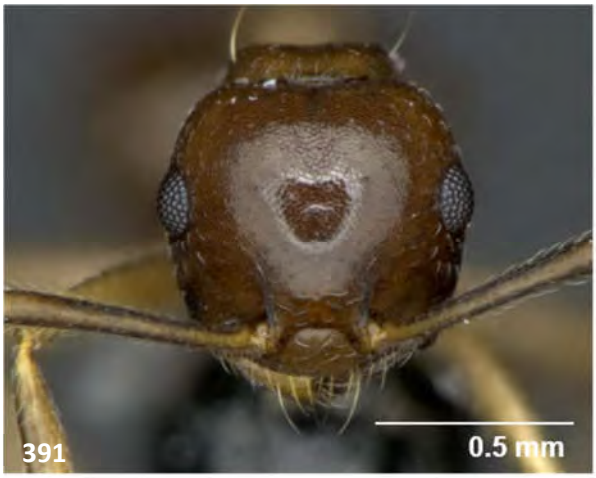


Fig. 391, 392. *Crematogaster* sp.107, Z02.HymFrm404.rn. Worker.

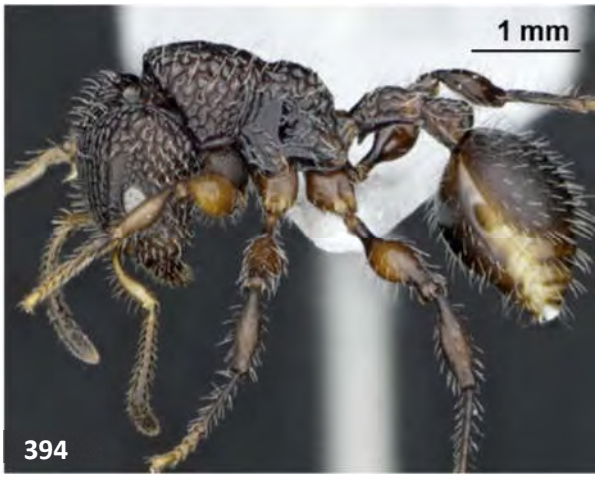


Fig. 393, 394. *Dilobocondyla borneensis*, Z02.HymFrm093.rn. Worker.

Fig. 395, 396. *Dilobocondyla* sp.01, Z02.HymFrm054.rn. Worker.

Fig. 397, 398. *Dilobocondyla* sp.02, Z02.HymFrm153.rn. Worker.

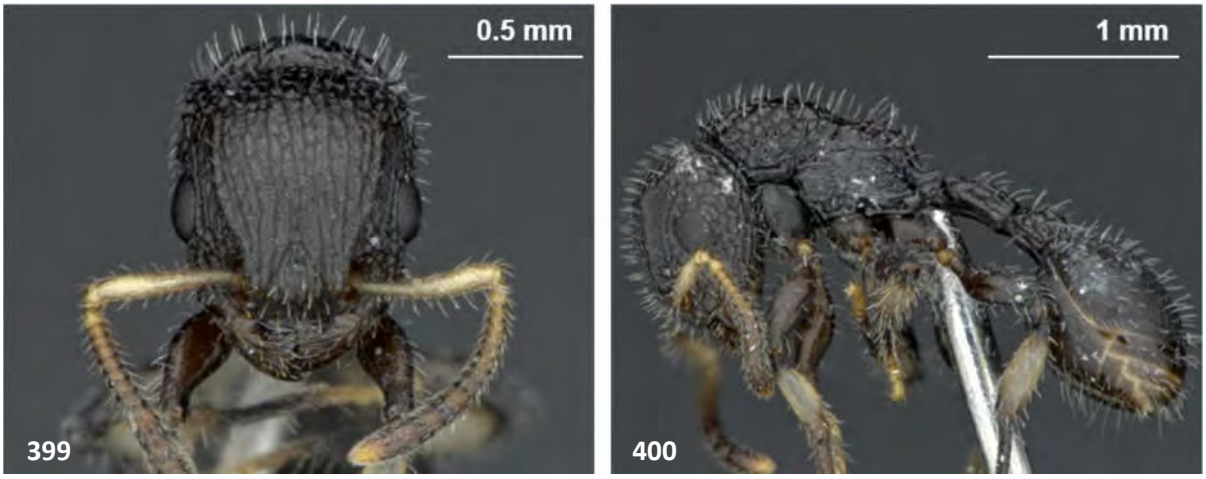


Fig. 399, 400. *Dilobocondyla* sp.03, Z02.HymFrm401.rn. Worker.

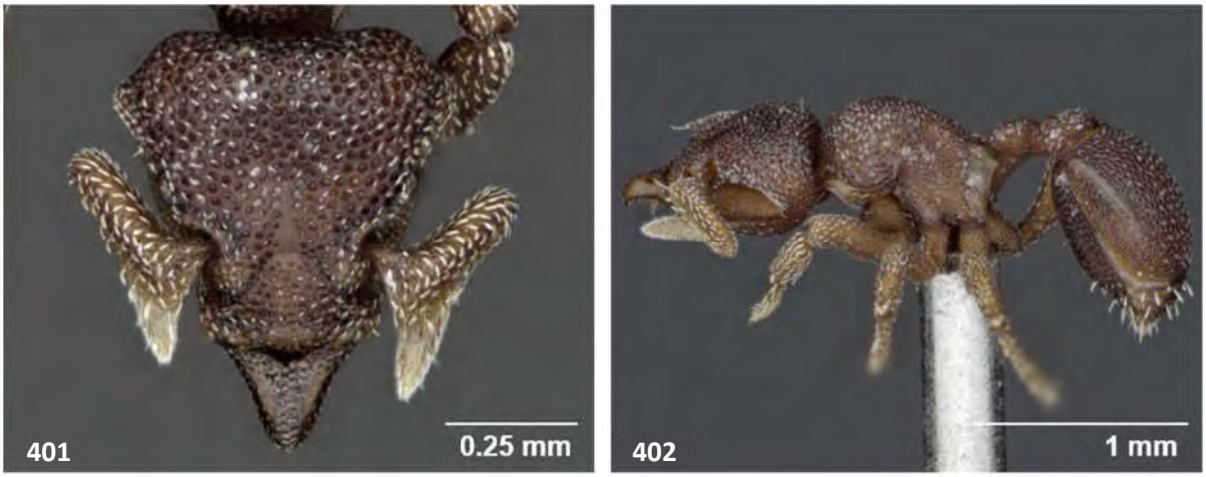


Fig. 401, 402. *Eurhopalothrix* sp.01, B01.HymFrm301.jw. Worker.

Fig. 403, 404. *Gauromyrmex* sp.01, Z02.HymFrm037.rn. Worker.

Fig. 405, 406. *Gauromyrmex* sp.02, Z02.HymFrm338.rn. Worker.

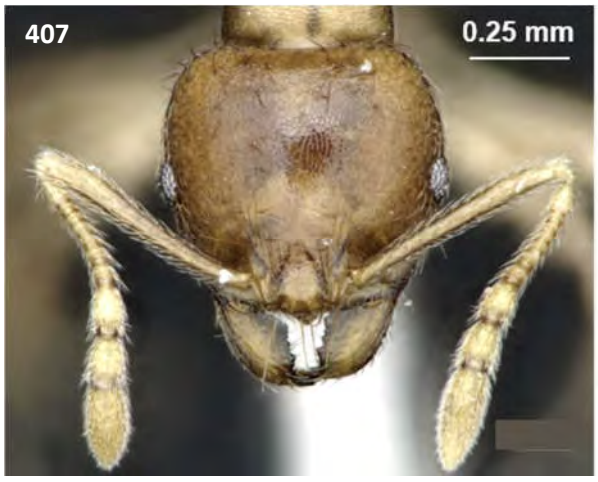


Fig. 407, 408. *Lophomyrmex bedoti*, B01.HymFrm209.jw. Worker.

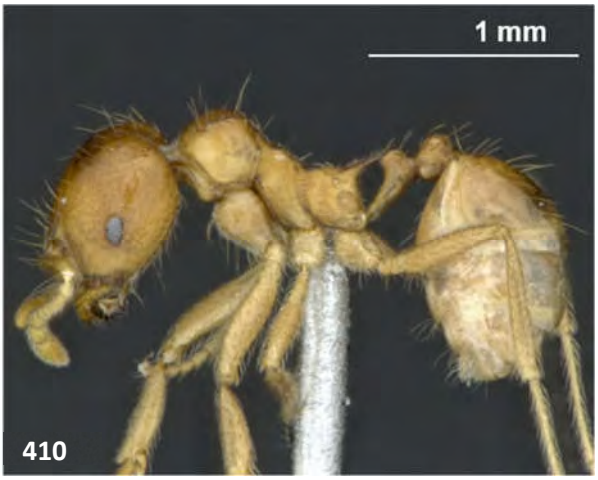


Fig. 409, 410. *Lophomyrmex* sp.01, Z02.HymFrm418.rn. Worker.

Fig. 411, 412. *Meranoplus castaneus*, Z02.HymFrm133.rn. Worker.

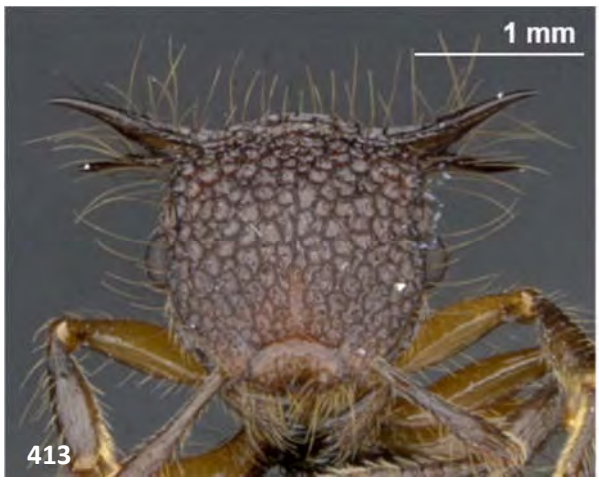


Fig. 413, 414. *Meranoplus* sp.02, Z02.HymFrm332.rn. Worker.

Fig. 415, 416. *Monomorium floricola*, Z02.HymFrm006.rn. Worker.

Fig. 417, 418. *Monomorium* sp.02, Z02.HymFrm019.rn. Worker.

Fig. 419, 420. *Monomorium* sp.03, Z02.HymFrm111.rn. Worker.

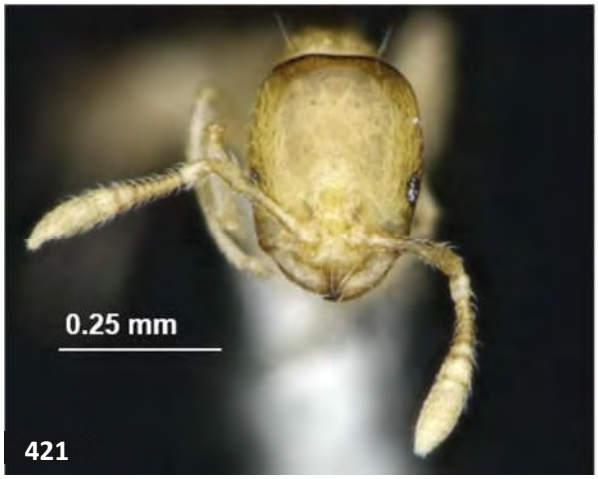


Fig. 421, 422. *Monomorium* sp.04, Z02.HymFrm036.rn. Worker.

Fig. 423, 424. *Monomorium* sp.05, B01.HymFrm244.jw. Worker.

Fig. 425, 426. *Monomorium* sp.06, B01.HymFrm245.jw. Worker.

Fig. 427, 428. *Myrmica* sp.02, Z02.HymFrm203.rn. Worker.

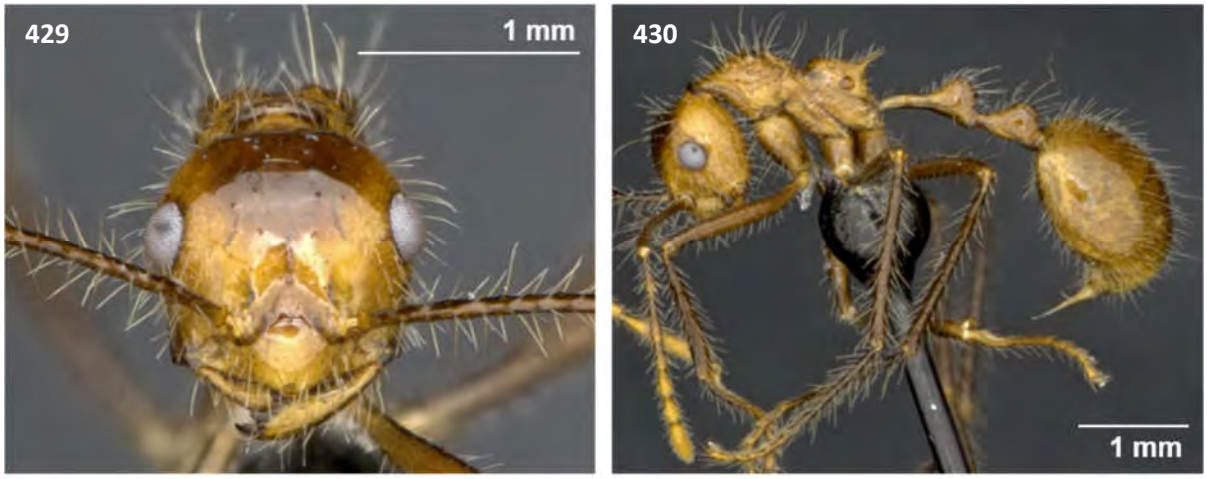


Fig. 429, 430. *Myrmicaria adpressipilosa*, Z02.HymFrm339.rn. Worker.

Fig. 431, 432. *Myrmicaria luteiventris*, Z02.HymFrm416.rn. Worker.

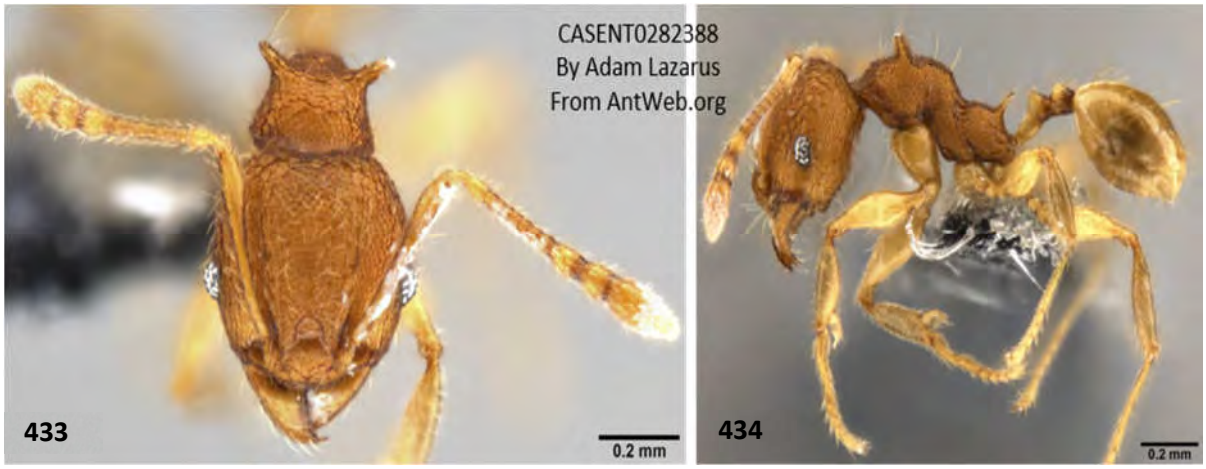


Fig. 433, 434. *Pheidole aristotelis*, B01.HymFrm262.jw. Minor worker.

Fig. 435, 436. *Pheidole aristotelis*, B01.HymFrm262.jw. Major worker.

Fig. 437, 438. *Pheidole* cf. *annexa*, B01.HymFrm255.jw. Major worker.

Fig. 439, 440. *Pheidole* cf. *poringensis*, B01.HymFrm314.jw. Minor worker.

Fig. 441, 442. *Pheidole* cf. *poringensis*, B01.HymFrm314.jw. Major worker.

Fig. 443, 444. *Pheidole* cf. *rugifera*, B01.HymFrm312.jw. Minor worker.

Fig. 445, 446. *Pheidole* cf. *rugifera*, B01.HymFrm312.jw. Major worker.

Fig. 447, 448. *Pheidole* cf. *sauberi*, B01.HymFrm311.jw. Minor worker.

Fig. 449, 450. *Pheidole* cf. *sauberi*, B01.HymFrm311.jw. Major worker.

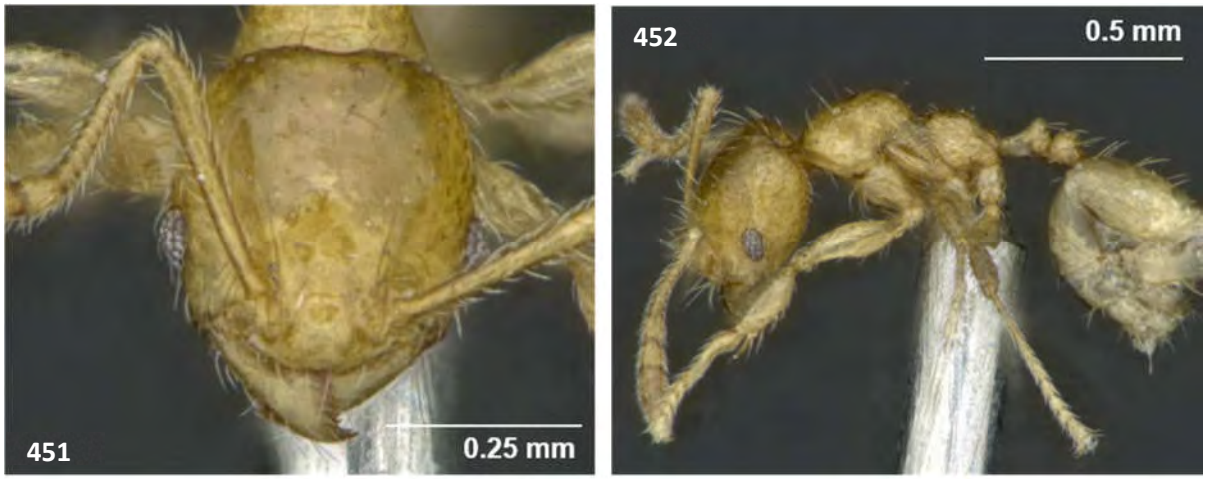


Fig. 451, 452. *Pheidole clypeocornis*, B01.HymFrm261.jw. Minor worker.

Fig. 453, 454. *Pheidole clypeocornis*, B01.HymFrm261.jw. Major worker.

Fig. 455, 456. *Pheidole ghigii*, B01.HymFrm313.jw. Minor worker.

Fig. 457, 458. *Pheidole ghigii*, B01.HymFrm313.jw. Major worker.

Fig. 459, 460. *Pheidole hortensis*, B01.HymFrm264.jw. Minor worker.

Fig. 461, 462. *Pheidole hortensis*, B01.HymFrm264.jw. Major worker.

Fig. 436, 464. *Pheidole huberi*, B01.HymFrm315.jw. Minor worker.

Fig. 465, 466. *Pheidole huberi*, B01.HymFrm315.jw. Major worker.

Fig. 467, 468. *Pheidole jacobsoni*, B01.HymFrm259.jw. Minor worker.

Fig. 469, 470. *Pheidole jacobsoni*, B01.HymFrm259.jw. Major worker.

Fig. 471, 472. *Pheidole parvicorpus*, B01.HymFrm256.jw. Minor worker.

Fig. 473, 474. *Pheidole parvicorpus*, B01.HymFrm256.jw. Major worker.

Fig. 475, 476. *Pheidole plagiaria*, B01.HymFrm257.jw. Minor worker.

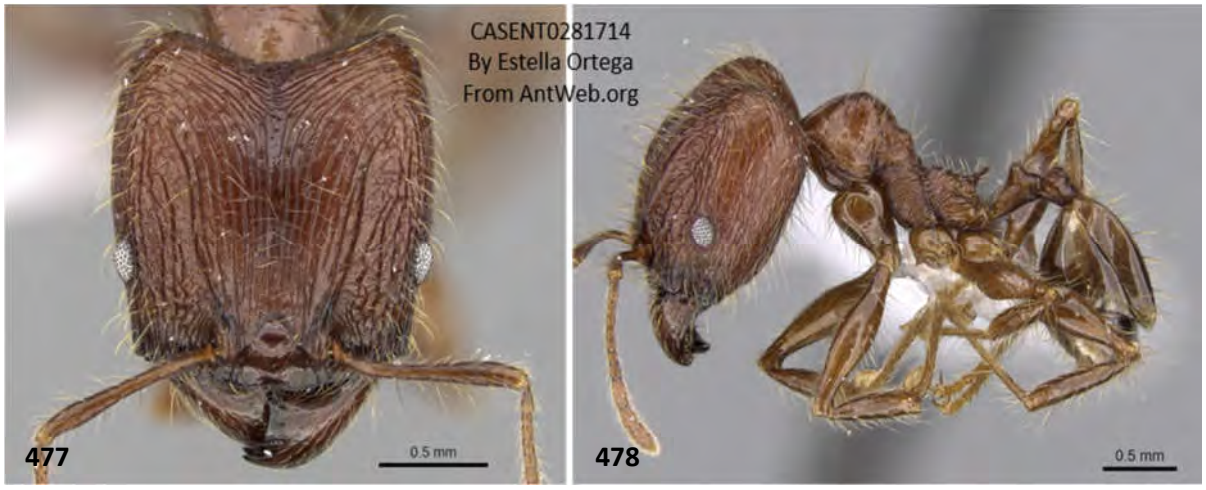


Fig. 477, 478. *Pheidole plagiaria*, B01.HymFrm257.jw. Major worker.

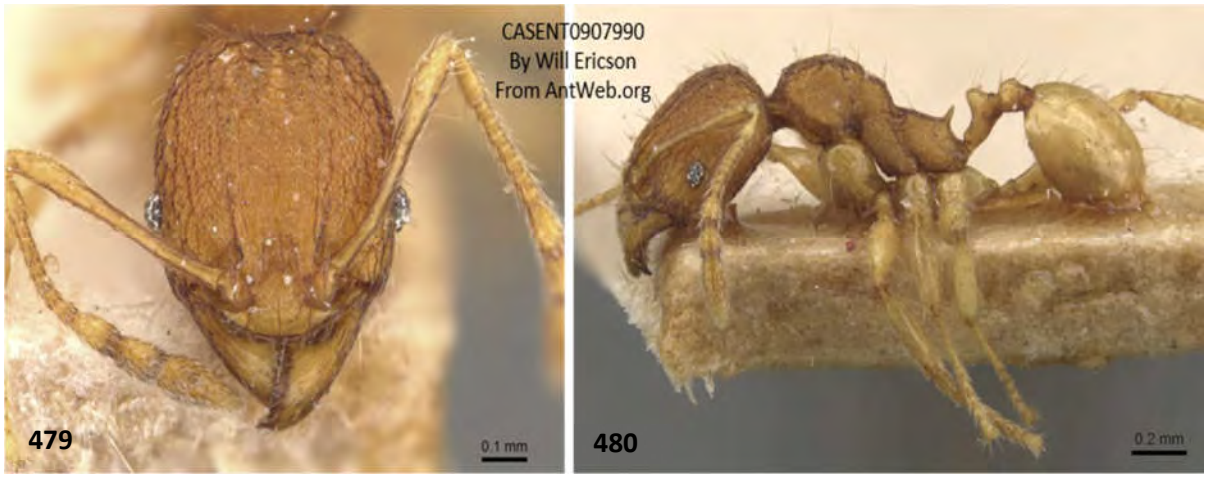


Fig. 479, 480. *Pheidole rabo*, B01.HymFrm263.jw. Minor worker.

Fig. 481, 482. *Pheidole rabo*, B01.HymFrm263.jw. Major worker.

Fig. 483, 484. *Pheidole retivertex*, B01.HymFrm252.jw. Minor worker.

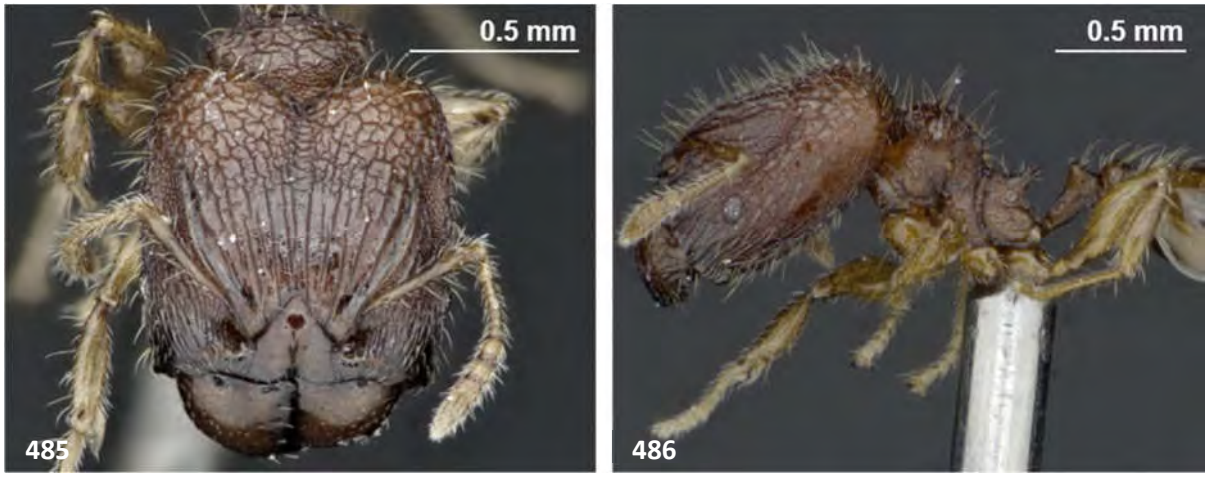


Fig. 485, 486. *Pheidole retivertex*, B01.HymFrm252.jw. Major worker.

Fig. 487, 488. *Pheidole submonticola*, B01.HymFrm316.jw. Minor worker.

Fig. 489, 490. *Pheidole tjibodana*, B01.HymFrm253.jw. Minor worker.

Fig. 491, 492. *Pheidole tjibodana*, B01.HymFrm253.jw. Major worker.

Fig. 493, 494. *Pheidole upeneci*, B01.HymFrm258.jw. Minor worker.

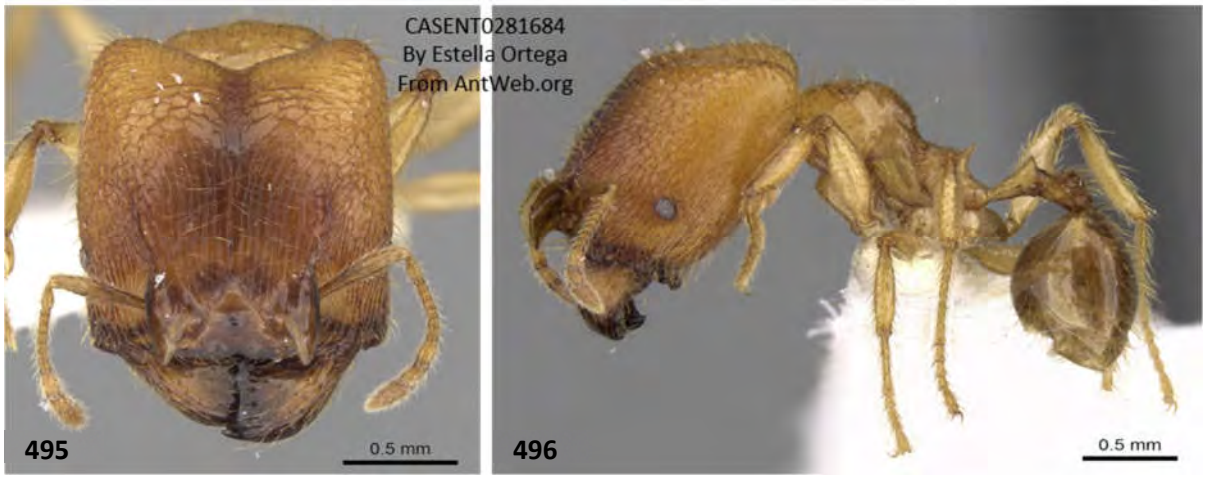


Fig. 495, 496. *Pheidole upeneci*, B01.HymFrm258.jw. Major worker.

Fig. 497, 498. *Pheidole* sp.01, Z02.HymFrm038.rn. Minor worker.

Fig. 499, 500. *Pheidole* sp.02, Z02.HymFrm067.rn. Minor worker.

Fig. 501, 502. *Pheidole* sp.03, Z02.HymFrm081.rn. Major worker.

Fig. 503, 504. *Pheidole* sp.04, Z02.HymFrm122.rn. Major worker.

Fig. 505, 506. *Pheidole* sp.05, Z02.HymFrm197.rn. Minor worker.

Fig. 507, 508. *Pheidole* sp.06, Z02.HymFrm292.rn. Minor worker.

Fig. 509, 510. *Pheidole* sp.07, Z02.HymFrm254.rn. Minor worker.

Fig. 511, 512. *Pheidole* sp.07, Z02.HymFrm254.rn. Major worker.

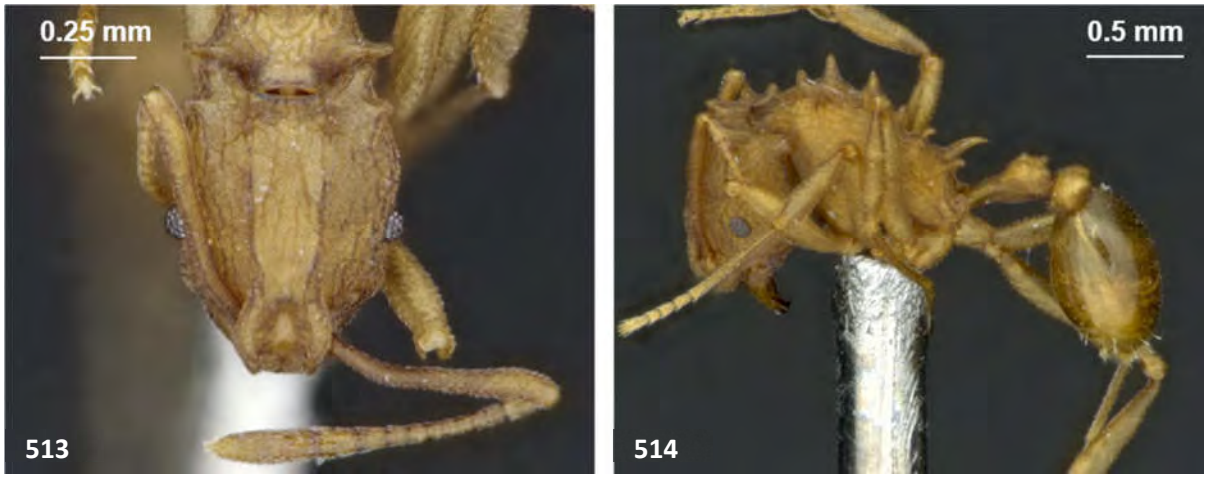


Fig. 513, 514. *Proatta butteli*, Z02.HymFrm116.rn. Worker.

Fig. 515, 516. *Proatta butteli*, Z02.HymFrm116.rn. Alate queen.

Fig. 517, 518. *Recurvidris kemneri*, B01.HymFrm200.jw. Worker.

Fig. 519, 520. *Rhopalomastix* sp.01, Z02.HymFrm042.rn. Worker.

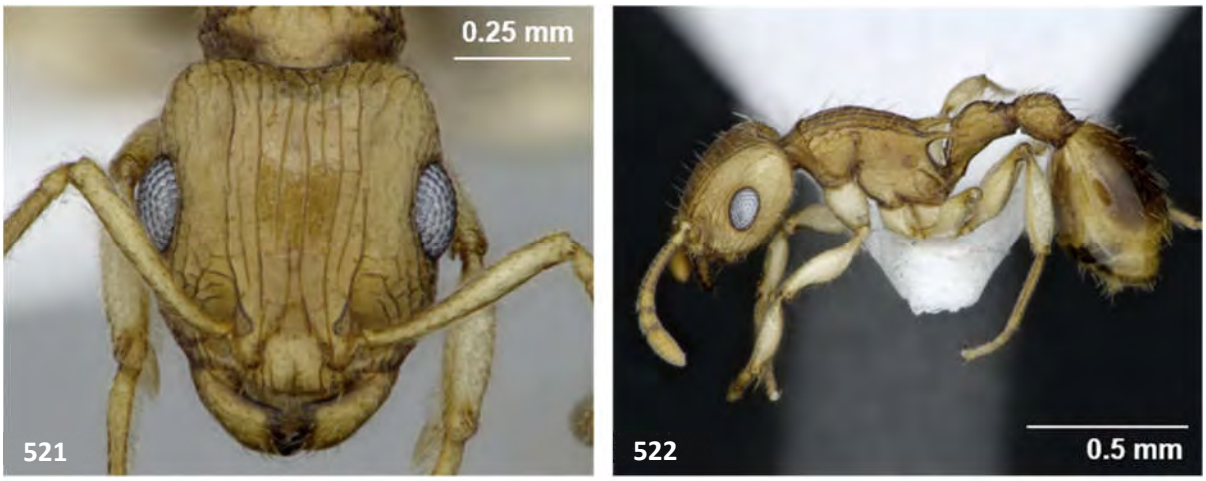


Fig. 521, 522. *Rotastruma* sp.01, Z02.HymFrm029.rn. Worker.

Fig. 523, 524. *Strumigenys* sp.01, Z02.HymFrm060.rn. Worker.

Fig. 525, 526. *Strumigenys* sp.02, Z02.HymFrm271.rn. Worker.

Fig. 527, 528. *Strumigenys* sp.03, B01.HymFrm250.jw. Worker.

Fig. 529, 530. *Strumigenys* sp.04, B01.HymFrm297.jw. Worker.

Fig. 531, 532. *Strumigenys* sp.05, Z02.HymFrm107.rn. Worker.

Fig. 533, 534. *Tetramorium* cf. *curtulum*, B01.HymFrm206.jw. Worker.

Fig. 535, 536. *Tetramorium* cf. *noratum*, B01.HymFrm268.jw. Worker.

Fig. 537, 538. *Tetramorium simillimum*, B01.HymFrm205.jw. Worker.

Fig. 539, 540. *Tetramorium* sp.01, Z02.HymFrm098.rn. Worker.

Fig. 541, 542. *Tetramorium* sp.02, Z02.HymFrm110.rn. Worker.

Fig. 543, 544. *Tetramorium* sp.03, Z02.HymFrm120.rn. Worker.

Fig. 545, 546. *Tetramorium* sp.04, Z02.HymFrm223.rn. Worker.

Fig. 547, 548. *Tetramorium* sp.05, Z02.HymFrm224.rn. Worker.

Fig. 549, 550. *Tetramorium* sp.06, Z02.HymFrm269.rn. Worker.

Fig. 551, 552. *Tetramorium* sp.07, Z02.HymFrm402.rn. Worker.

Fig. 553, 554. *Tetramorium* sp.08, B01.HymFrm207.jw. Worker.

Fig. 555, 556. *Tetramorium* sp.09, B01.HymFrm271.jw. Worker.

Fig. 557, 558. *Tetramorium* sp.08, Z02.HymFrm257.rn. Worker.

Fig. 559, 560. *Tetramorium* sp.11, Z02.HymFrm289.rn. Worker.

Fig. 561, 562. *Tetramorium* sp.101, Z02.HymFrm511.jd. Worker.

Fig. 563, 564. *Tetramorium* sp.101, B01.HymFrm267.jw. Worker.

Fig. 565, 566. *Tetramorium* sp.107, B01.HymFrm208.jw. Worker.

Fig. 567, 568. *Vollenhovia* sp.01, Z02.HymFrm007.rn. Worker.

Fig. 569, 570. *Vollenhovia* sp.02, Z02.HymFrm131.rn. Worker.

Fig. 571, 572. *Vollenhovia* sp.03, Z02.HymFrm202.rn. Worker.

Fig. 573, 574. *Vollenhovia* sp.04, B01.HymFrm248.jw. Worker.

Fig. 575, 576. *Vombisidris* sp.01, Z02.HymFrm204.rn. Worker.

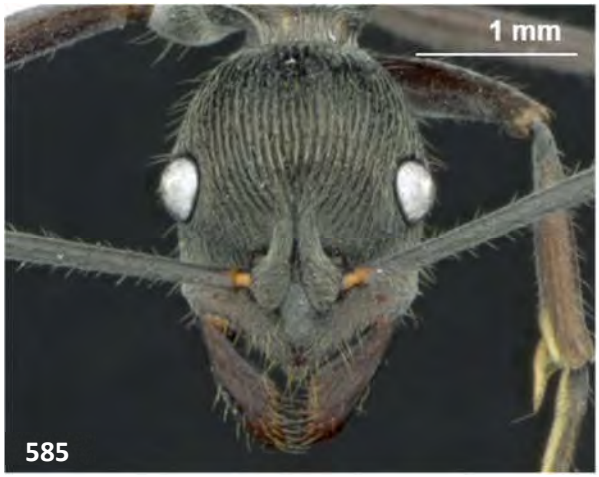
Fig. 577, 578. *Vombisidris* sp.02, Z02.HymFrm205.rn. Worker.

8. Ponerinae

Fig. 579, 580. *Anochetus myops*, B01.HymFrm212.jw. Worker.

Fig. 581, 582. *Anochetus* sp.01, Z02.HymFrm012.rn. Worker.

Fig. 583, 584. *Brachyponera* sp.01, B01.HymFrm281.jw. Worker.



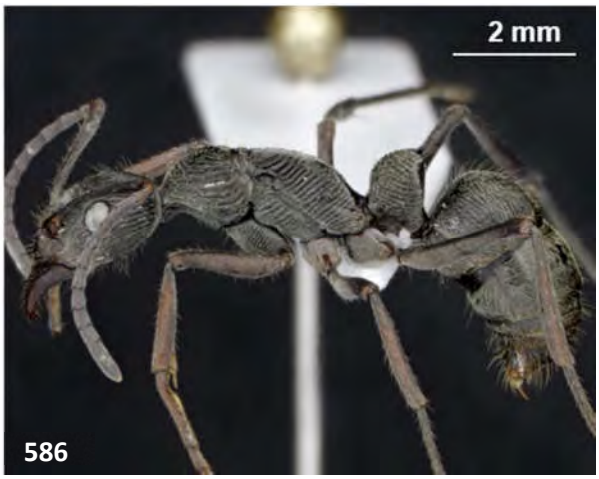


Fig. 585, 586. *Diacamma rugosum*, Z02.HymFrm022.rn. Worker.

Fig. 587, 588. *Diacamma* sp.01, Z02.HymFrm329.rn. Worker.

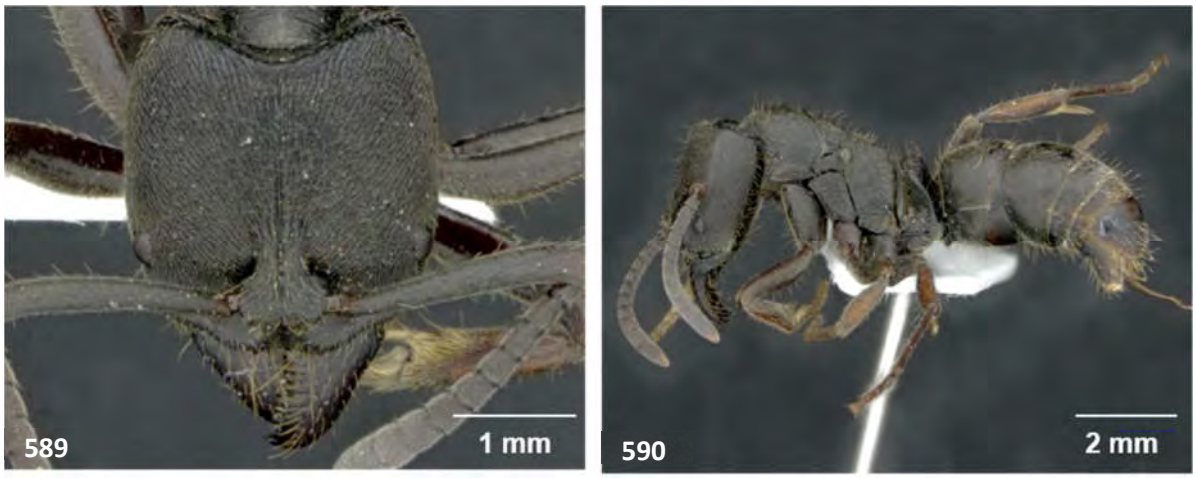


Fig. 589, 590. *Ectomomyrmex* sp.01, B01.HymFrm273.jw. Worker.

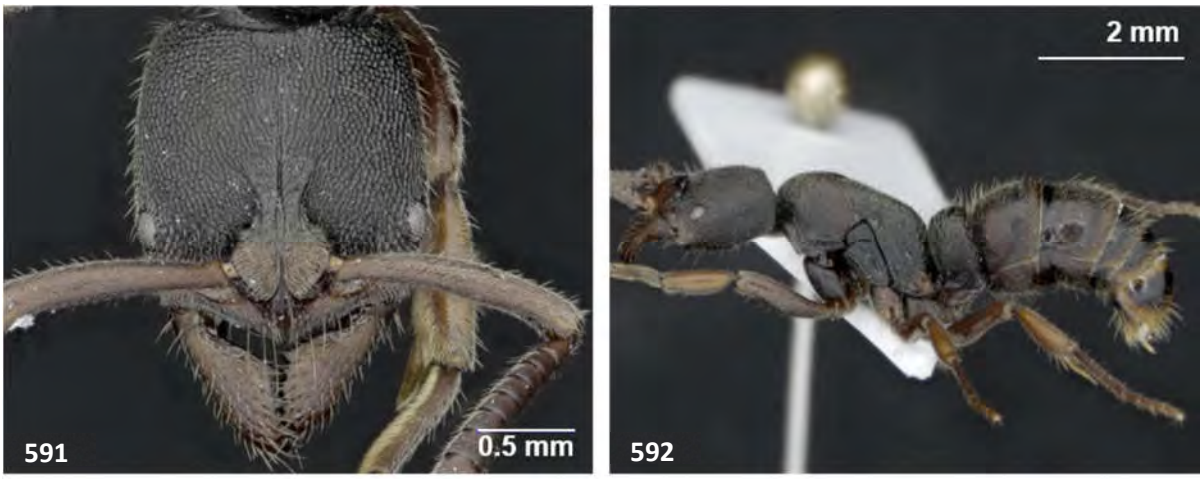


Fig. 591, 592. *Ectomomyrmex* sp.02, B01.HymFrm274.jw. Worker.

Fig. 593, 594. *Emeryopone buttelreepeni*, Z02.HymFrm282.rn. Worker.

Fig. 595, 596. *Emeryopone buttelreepeni*, Z02.HymFrm282.rn. Alate queen.

Fig. 597, 598. *Hypoponera* sp.01, Z02.HymFrm085.rn. Alate queen.

Fig. 599, 600. *Hypoponera* sp.02, B01.HymFrm278.jw. Worker.

Fig. 601, 602. *Hypoponera* sp.03, Z02.HymFrm261.rn. Alate queen.

Fig. 603, 604. *Hypoponera* sp.04, Z02.HymFrm262.rn. Dealate queen.

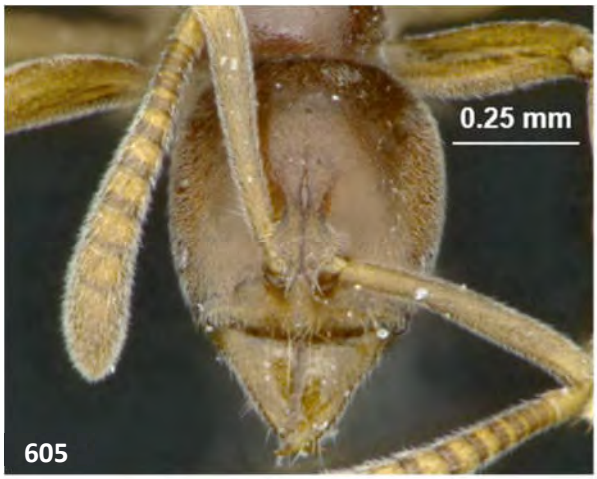


Fig. 605, 606. *Hypoponera* sp.10, B01.HymFrm280.jw. Worker.

Fig. 607, 608. *Leptogenys* sp.01, B01.HymFrm216.jw. Worker.

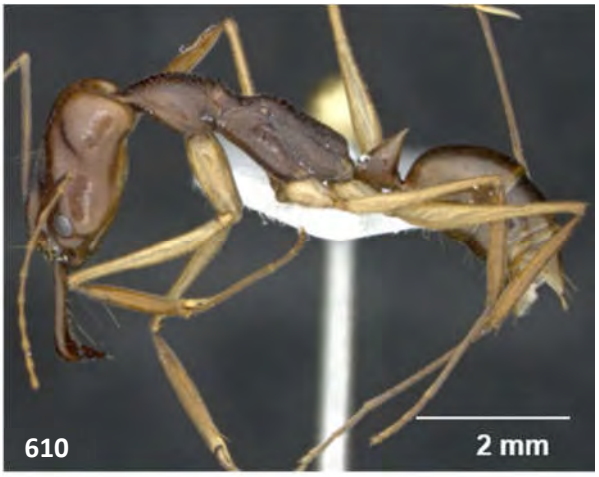


Fig. 609, 610. *Odontomachus rixosus* sp.01, B01.HymFrm219.jw. Worker.

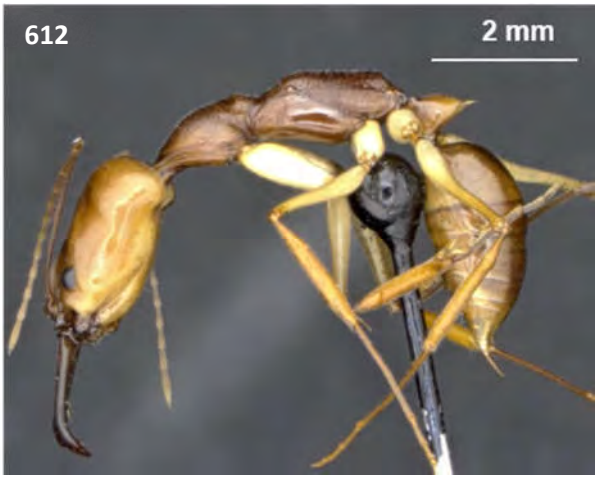


Fig. 611, 612. *Odontomachus* sp.01, Z02.HymFrm260.rn. Worker.

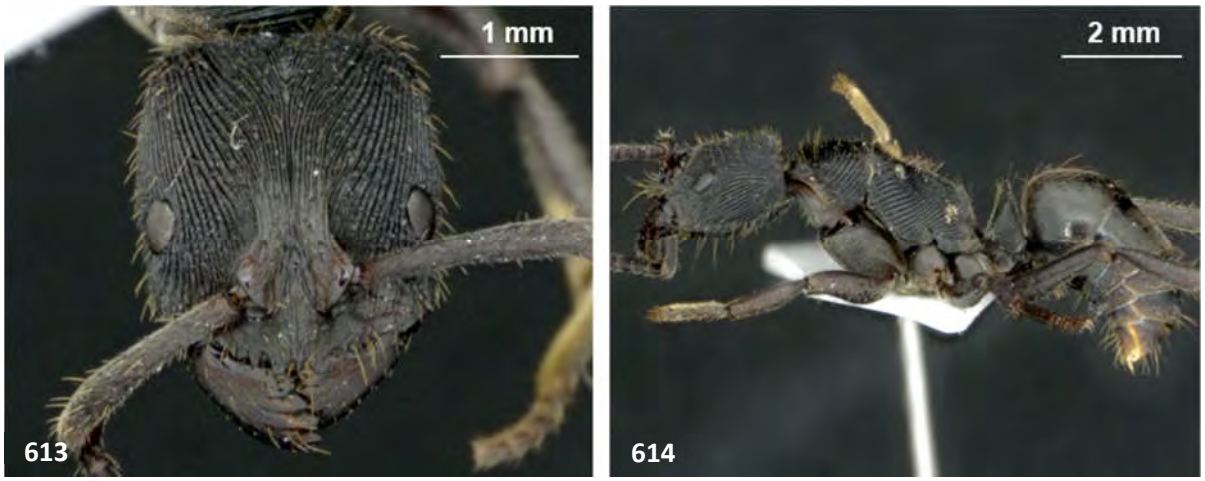


Fig. 613, 614. *Odontoponera denticulata*, B01.HymFrm201.jw. Worker.

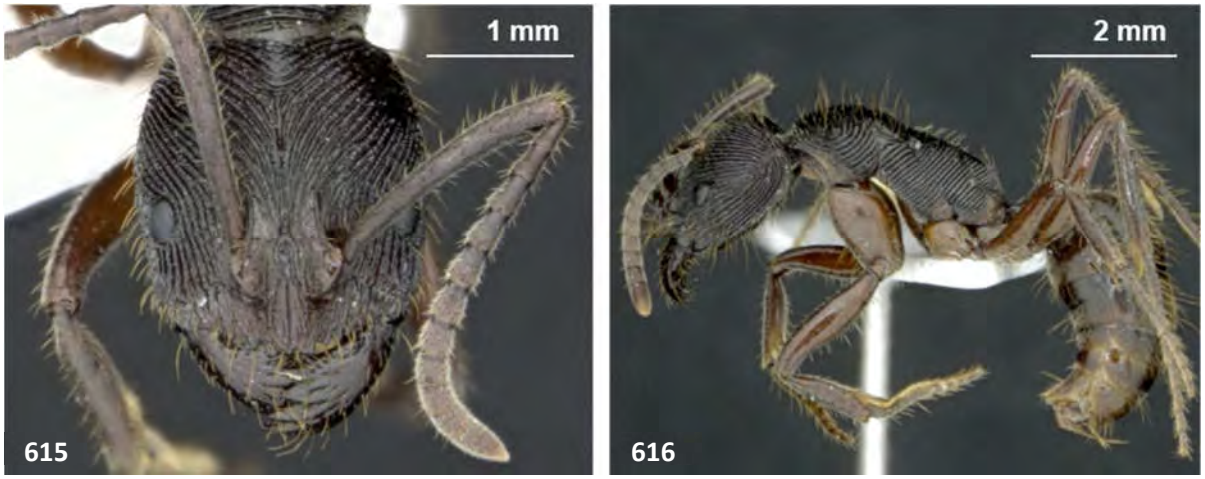


Fig. 615, 616. *Odontoponera transversa*, B01.HymFrm202.jw. Worker.

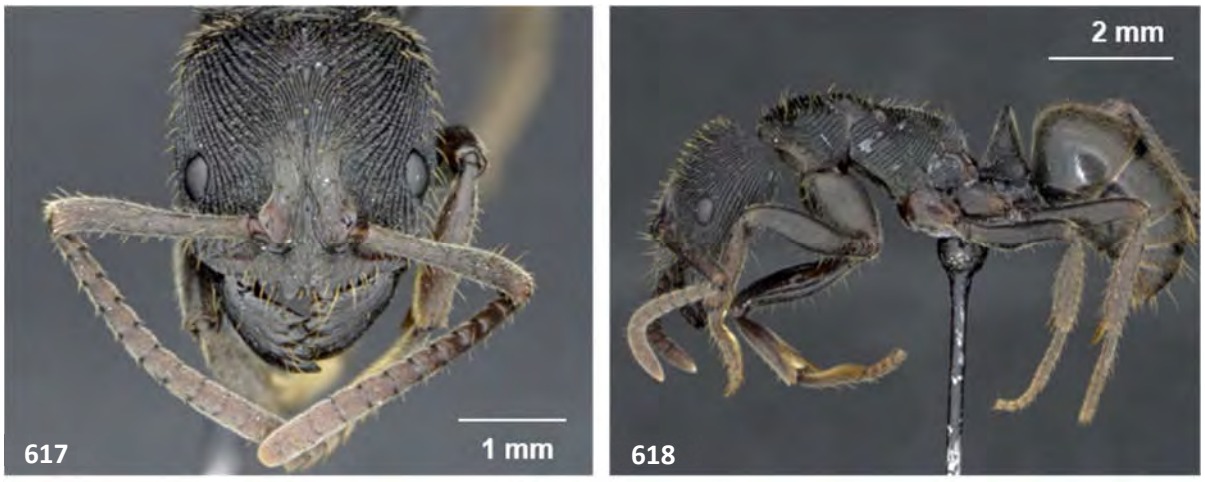


Fig. 617, 618. *Odontoponera* sp.01, Z02.HymFrm196.rn. Worker.

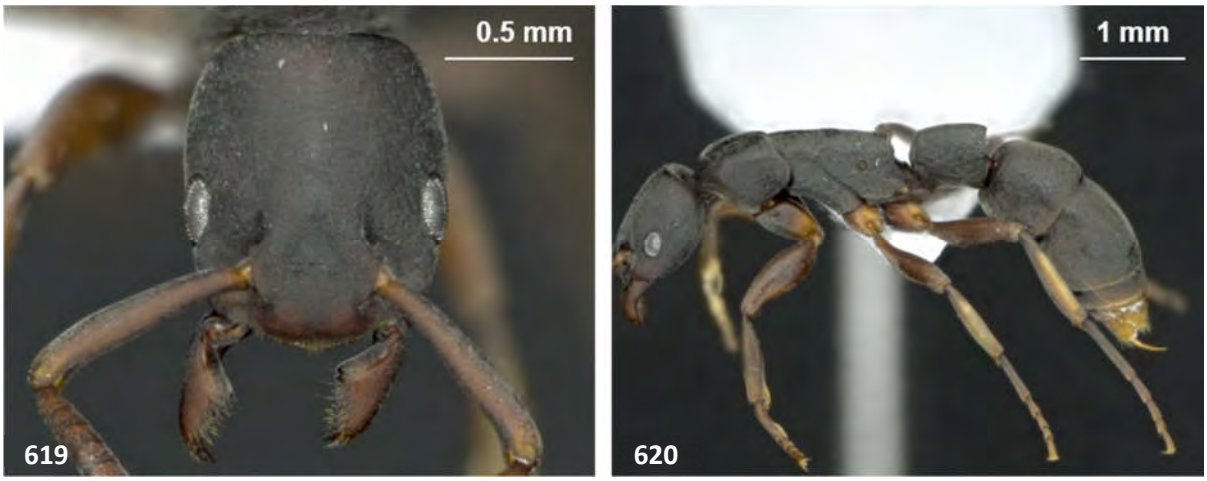


Fig. 619, 620. *Platythyrea* sp.01, Z02.HymFrm065.rn. Worker.

Fig. 621, 622. *Ponera* sp.01, B01.HymFrm282.jw. Worker.

Fig. 623, 624. *Ponera* sp.02, Z02.HymFrm105.rn. Alate queen.

Fig. 625, 626. *Ponera* sp.03, Z02.HymFrm258.rn. Worker.

Fig. 627, 628. *Ponera* sp.04, B01.HymFrm283.jw. Worker.

Fig. 629, 630. *Ponera* sp.04, B01.HymFrm284.jw. Worker.

9. Proceratiinae

Fig. 631, 632. *Discothyrea* sp.01, Z02.HymFrm266.rn. Worker.

10. Pseudomyrmecinae

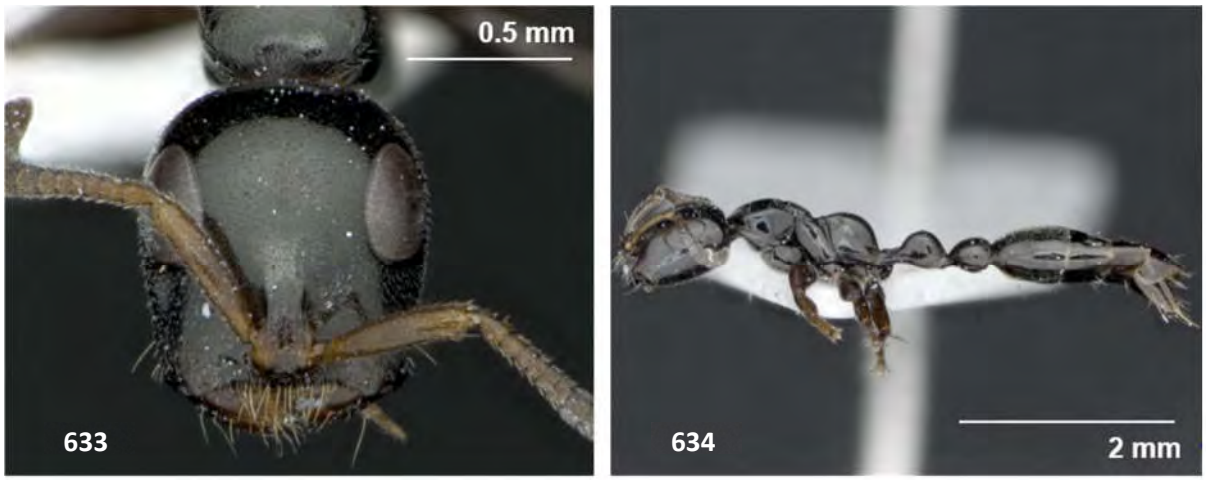


Fig. 633, 634. *Tetraponera alloborans*, B01.HymFrm298.jw. Worker.

Fig. 635, 636. *Tetraponera attenuata* sp.01, Z02.HymFrm112.rn. Worker.

Fig. 637, 638. *Tetraponera crassiuscula*, Z02.HymFrm193.rn. Worker.

Fig. 639, 640. *Tetraponera difficilis*, Z02.HymFrm043.rn. Worker.

Fig. 641, 642. *Tetraponera extenuata*, Z02.HymFrm128.rn. Worker.

Fig. 643, 644. *Tetraponera modesta*, Z02.HymFrm018.rn. Worker.

Fig. 645, 646. *Tetraponera nitida*, Z02.HymFrm002.rn. Worker.

Fig. 647, 648. *Tetraponera nodosa*, Z02.HymFrm500.jd. Worker.

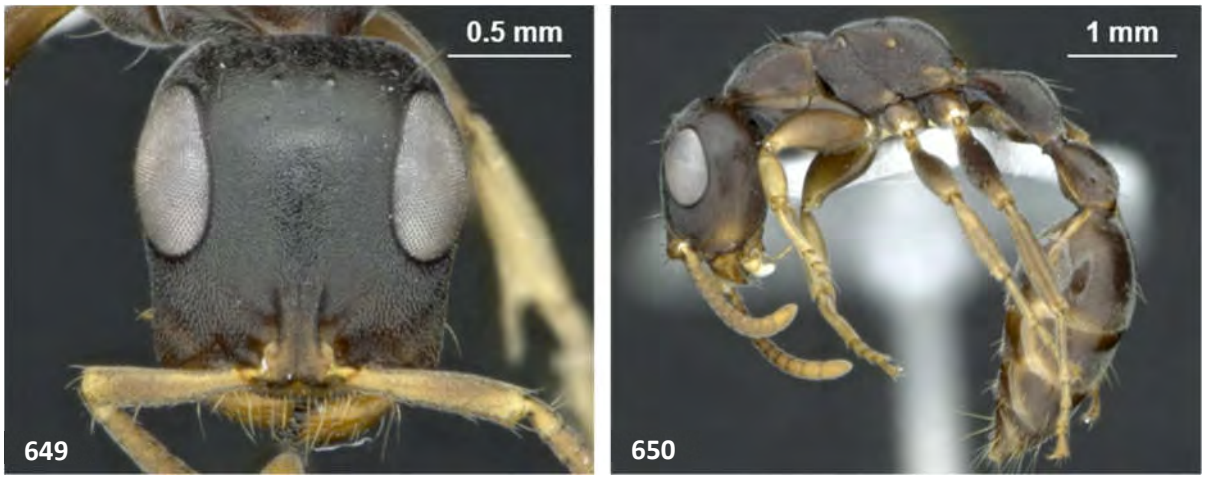


Fig. 649, 650. *Tetraponera pilosa*, Z02.HymFrm072.rn. Worker.

Fig. 651, 652. *Tetraponera polita*, Z02.HymFrm506.jd. Worker.

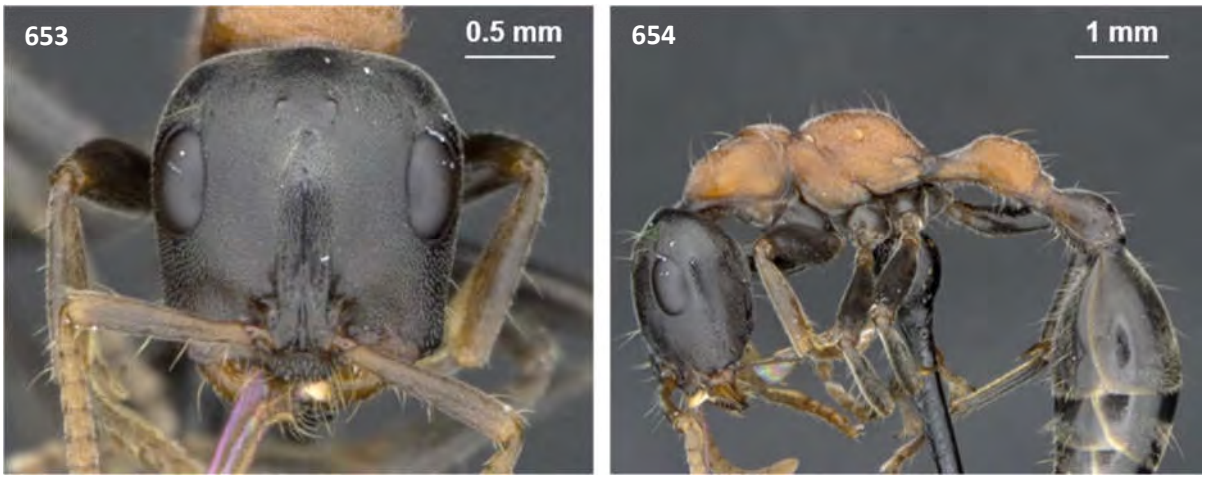
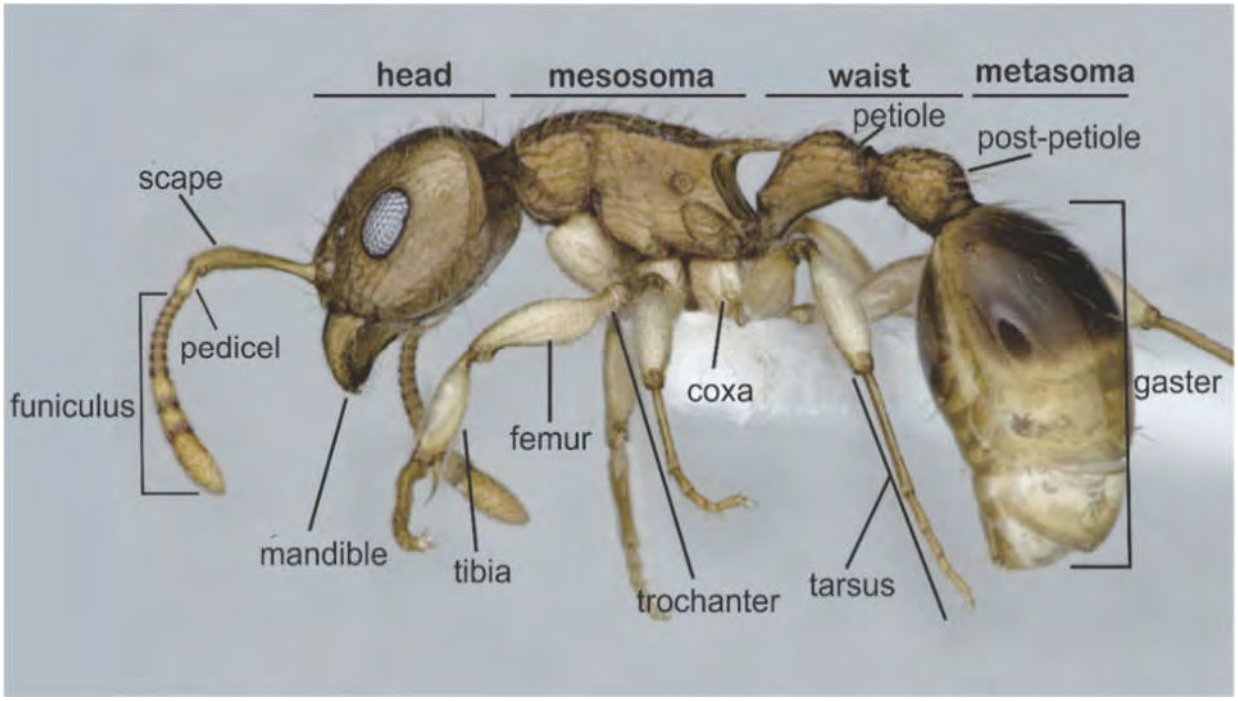


Fig. 653, 654. *Tetraponera rufonigra*, Z02.HymFrm268.rn. Worker.

VII. Glossary of ant morphology

(Adapted from Hashimoto 2003 and Bolton 1994)



Abdomen - The abdomen consists of 7 segments (A1-A7). The first segment is the propodeum (A1), which is incorporated into the thorax. The second segment is petiole (A2), which is usually reduced and forms a node. The third segment (A3) is the first gastral segment when it is full-sized, but when reduced it is called post-petiole. The abdominal segments 3 or 4 through 7 are called gaster. The tergite of the last visible abdominal segment is the pygidium, and the last visible sternite is the hypopygium.

Acidopore - This structure is only present in ants of the subfamily Formicinae. A small hole at the tip of the gaster formed from the apex of the hypopygium, generally projected as a nozzle fringed with short setae through which formic acid and pheromones are released.

Anepisternum - The upper part of the mesopleuron.

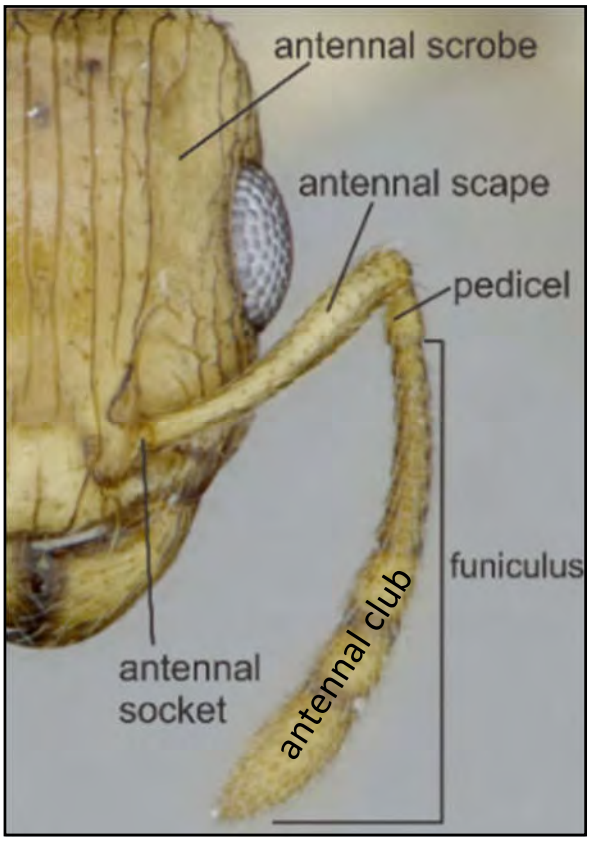
Antenna - A pair of segmented sensory appendages lying anterodorsally on the head between the compound eyes, and close to the clypeus. The antenna consists of three parts: Scape (the first elongated segment), the pedicel and the funiculus (= flagellum). The antenna in ants consists of 4-12 segments. The funicular segments may be filiform and the 1-4 last antennal segments are sometimes enlarged to form an antennal club.

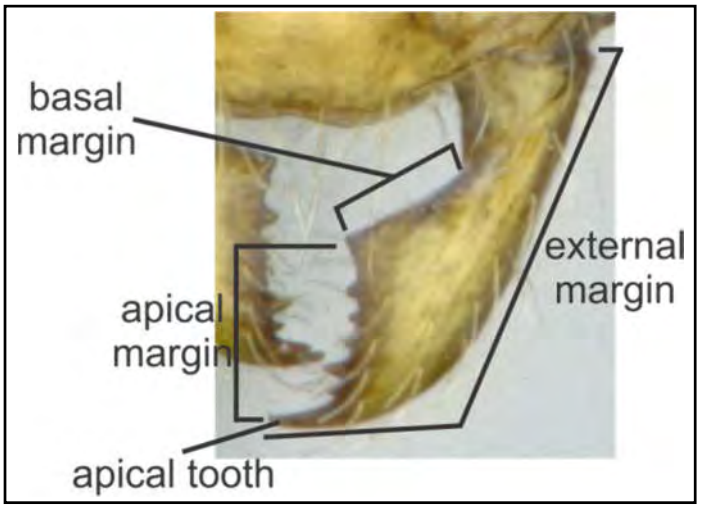
Antennal scape - The elongate basal segment of the antenna.

Antennal scrobe - The groove, located either above or below eye, protects the scape or often the entire antenna when latter is folded.

Antennal club - The antennal funiculus that is enlarged apically relative to the other segments. The structure is restricted to the ants of subfamily Myrmicinae, and composed of two or three segments.

Antennal socket - A cavity on the head, behind the clypeus, usually overhung and often concealed by the frontal lobe.





Anterior clypeal margin - The anterior margin of the clypeus which might be strongly emarginated, flat, convex or in a specialized arrangement.

Apical tooth - The most distal tooth located on the apical margin of the mandible.

Arolium - A pad-like median structure between the pre-tarsal claws.

Clypeus - The anterior clypeal margin usually forms the anterior margin of the head. The posterior clypeal margin usually borders the antennal sockets and frontal carinae or frontal lobes, or may project backwards between them.

Compound eye - The eye is composed of multiple facets or ommatidia. In some ant genera, eyes are absent or reduced to only one facet.

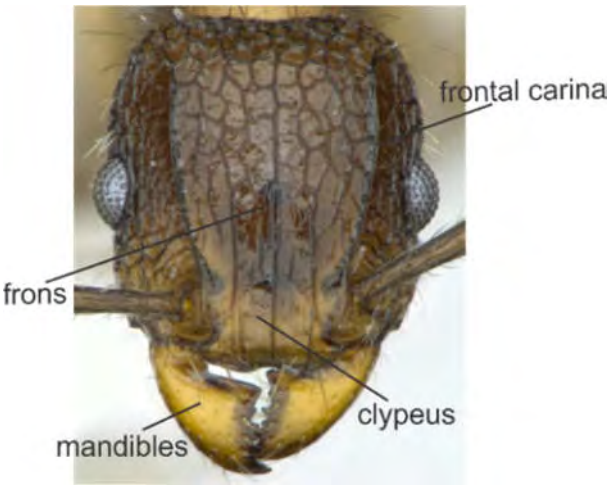
Frons - The area above the clypeus, in the center of the head. It is sometimes called 'frontal area'.

Frontal carina - A pair of longitudinal ridges on the frons, located dorsally behind the clypeus and between or often partly covering the antennal sockets. They are often expanded anterior of the frontal lobes.

Frontal lobe - The frontal lobes commonly are enlarged extensions, which entirely or partially conceal the antennal sockets.

Funiculus - The third part of an antenna or the entire group of antennomeres / flagellomeres (an antennal segment) beyond the scape and pedicel. It is sometimes used as synonym of flagellum.

Leg segments - Legs articulate directly with the pleural sclerites of the thorax and consist of six segments: coxa, trochanter (usually long and swollen), femur, tibia, 5-segmented tarsus (singular: tarsomere) and a pair of claws.



Gaster - The third main body division of the ant body, located immediately beyond the waist and constituted of the abdominal segments 3-7 or the abdominal segments 4-7 when the abdominal segments 3 is differentiated into a postpetiole.

Head - The first main body division of the ant body, consists of the eyes, antennae and mouthparts.

Hypopygium - The sternite of the last abdominal segment.

Katepisternum - The lower part of the mesopleuron.

Labial palpus - The segmented sensory appendages located anterolaterally on the labium. Each labial palp has 3-4 segments.

Mandible - The paired, heavily sclerotized anterior appendages of the mouthparts between the labrum and maxilla. The mandibular margins usually form a triangular or subtriangular shape in full-face view, but in some ant taxa there are elongate-triangular and linear mandibles.

Maxillary palpus - The segmented sensory palps attached to the maxillae. Each maxillary palp may have up to six segments, but often less.

Mesonotum - The second tergite of the mesosoma, which may be separated anteriorly from the pronotum by the promesonotal suture. If the two are fused they are together referred as the promesonotum.

Mesopleuron - The lateral and ventral part of the mesothorax. The mesopleuron may be divided into an upper anepisternum and a lower katepisternum.

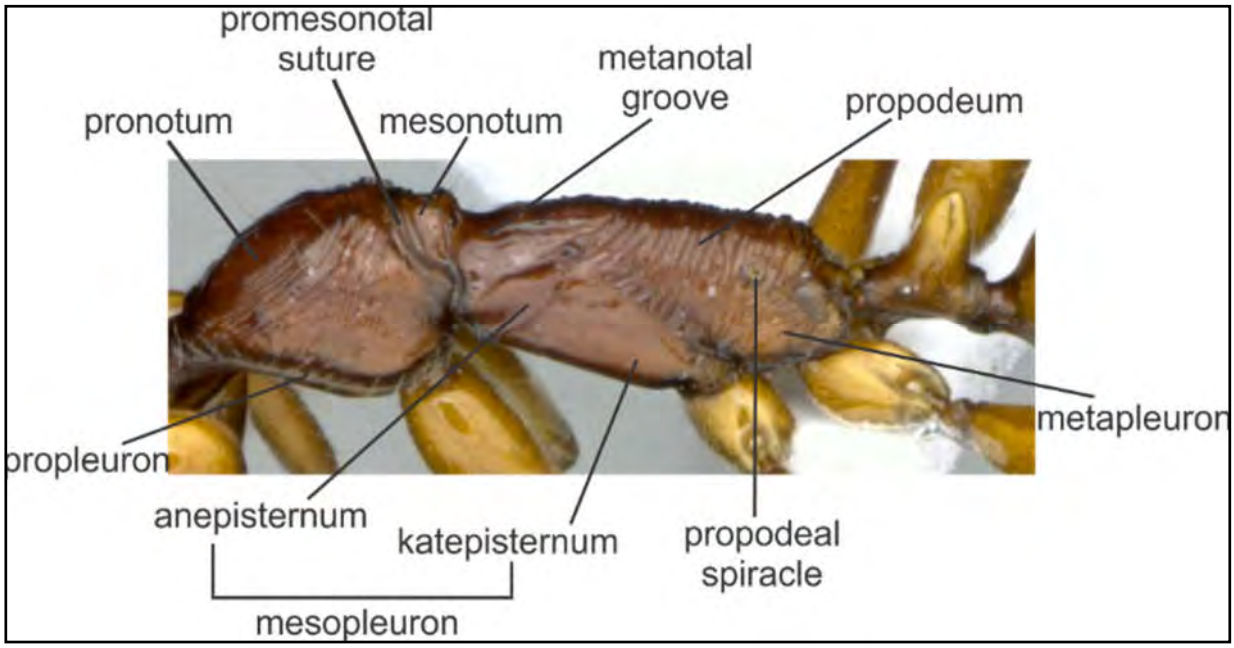
Mesosoma - The second tagma of the three main ant body parts, which the legs are attached to; often referred as the alitrunk. The mesosoma is composed of the three segments of the true thorax (pro-, meso- and metathorax) to which is fused the propodeum (the first abdominal segment).

Metanotal groove - The transverse depression which may separate the mesonotum and propodeum. The metanotal groove represents the last vestige of the metanotum.

Metanotum - The dorsal sclerite of the metathorax.

Metapleural gland - The paired exocrine gland found on the posteroventral side of the mesosoma, above the level of the metacoxa and below the propodeal spiracle.

Metapleuron - The lateral and ventral part of the metathorax. The metapleuron is located posterior on the side of the mesosoma, below the level of the propodeum.



Occipital carina - A ridge on the posterior surface of the head that separated the vertex and gena from occiput.

Palp formula - The number of segments of the maxillary and labial palps. The number of maxillary palp segments is given first, followed by the number of labial palp segments. For instance, "PF 6,4" means that there are six maxillary palp segments and four labial palp segments.

Peduncle - The relatively narrow anterior section of the petiole. When present, the petiole is termed pedunculated. When absent, the petiole is termed sessile.

Petiole - The second segment of the abdomen. This segment is usually reduced and always isolated from the mesosoma anteriorly. It is also isolated from the remaining abdominal segments posteriorly. It is the first and often the only waist segment. The shape of the petiole is often an important character for identification, in most genera it is raised to a *nodiform* or *squamiform* shape.

Postpetiole - The third abdominal segment when it is reduced and separated from the petiole anteriorly and from the gaster. When present, the postpetiole is the second waist segment. The postpetiole is present in subfamily Myrmicinae, but absent in the subfamily Formicinae, Dolichoderinae and Ponerinae.

Preapical teeth - Teeth that precedes the apical teeth of the mandibles, located behind the apical teeth.

Pronotum - The first tergite of the mesosoma. The pronotum might be separated posteriorly from the mesonotum by the promesonotal suture.

Propodeal declivity - The sloping posterior surface of the propodeum. It can be convex, flat or concave.

Propodeal spine - In some ant genera, the pair of spines projecting from the dorsal surface of the propodeum.

Propodeal spiracle - An orifice located on the propodeum that is used for gas exchange.

Promesonotal suture - The transverse suture on the dorsum of the mesosoma that separates pronotum from mesonotum. In some ant genera, the promesonotal suture might be weakly impressed or not exist.

Propodeum - Sometimes referred to as the epinotum. The dorsal posterior plate of the mesosoma. Morphologically, it is the tergite of the first abdominal segment (the sternite has been lost during the Apocrita evolution) fused to the thorax. It may have specializations such as spines, teeth or lobes.

Pygidium - The tergite of the last visible abdominal segment.

Spine - A pointed and unjointed extension on the cuticle.

Sting - The sting is located at the tip of the gaster. It can be used as an injecting toxin, defense against predators or prey.

Sternite - The lower (ventral) sclerite of abdominal segment.

Subpetiolar process - The anteroventral cuticular projection on the lower surface of petiole.

Tergite - The dorsal (upper) sclerite of abdominal segment.

Tibial spur - A socketed spur located on the apex of tibia, often paired and either simple or pectinate. The fore legs have a single pectinate tibial spur, modified into an antennal cleaner (strigil). The middle and hind legs may have two, one, or no tibial spur.

Waist - The portion of the body that connects mesosoma to the gaster. Species in the subfamilies Dolichoderinae, Formicinae and Ponerinae have only one waist segment (petiole). Other ant subfamilies, such as the Myrmicinae and the Pseudomyrmecinae have two waist segments (petiole and postpetiole).

VIII. Acknowledgements

This study was funded (or funded in part) by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – project number 192626868 – SFB 990 (and/or the Ministry of Research, Technology and Higher Education (RISTEKDIKTI)) in the framework of the collaborative German - Indonesian research project CRC990. We thank the following persons and organizations for granting us access to and use of their properties: Village leaders, local plot owners, PT Humusindo, PT REKI, PT Perkebunan Nusantara VI, and Bukit Duabelas National Park. This study was conducted using samples/organisms collected based on Research Permits 204/SIP/FRP/SM/VI/2012, 27/EXT/SIP/FRP/SM/IV/2013 and 131/SIP/FRP/E5/Dit.KI/V/2017 issued by RISTEK / RISTEKDIKTI, Collection Permit Recommendation No. 2122/IPH.1/KS.02/x/2013 by the Indonesian Institute of Sciences (LIPI) and Collection Permit No.S710.KKH-2/2013 issued by the Ministry of Forestry (PHKA), and Export Permit SK.61/KSDAE/SET/KSA.2/3/2019 issued by the Ministry of Environment and Forestry KSDAE. We would like to thank the Indonesian Institute of Science (LIPI), Restorasi Ekosistem Konservasi Indonesia (REKI) and Balai Konservasi Sumber Daya Alam (BKSDA) Jambi for making this research possible. Nop, Yohanes Bayu Suharto, Yohanes Toni Rohaditomo, and Zulfi Kamal are thanked for helping during sample collection in the field. We thank André Junggebauer, Anik Larasati, Naufal Rizqulloh, Ratna Rubiana, Hery Marta Saputra, Leonie Schardt, Katherine Angulo Schipper, Jan Wohlert, for their support during lab work. Dmitry Dubovikoff, Brian Fisher, Shingo Hosoichi, Dirk Mezger, Phil S. Ward and Seiki Yamane provided invaluable taxonomic expertise and help.