

OCCASIONAL PAPER NO. 234

**RECORDS OF THE
ZOOLOGICAL SURVEY OF INDIA**

**Ants (Hymenoptera : Formicidae) of
Rabindra Sarovar, Kolkata**

**S. N. GHOSH
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सत्यमेव जयते

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INTRODUCTION

Ants, the most successful social insects, live in almost all types of habitats. They can withstand various ecological hazards adapting with the situations. Being tiny creatures they have to face all types of anthropogenic activities.

Rabindra Sarovar, situated in the southern part of Kolkata, was made in 1940 by the Calcutta Improvement Trust. This 73 acres water body, mostly filled by rainwater and surrounded by 119 acres of land area covered with greeneries, is considered as the oasis within the concrete desert. Considering its importance, this lake is declared as National Lake in 1997 under National Lake Conservation Programme. Now it has become the place for recreation of the city people. But till date the diversity of faunal wealth (particularly the insects) of this place is not ascertained. This is the first attempt to measure the diversity of ant fauna which survives in this lake area ignoring the anthropogenic pressure.

The ants constitute a single family Formicidae under order Hymenoptera and are cosmopolitan in distribution. They live in almost all ecological niches. Nearly 10,000 species have so far been described from world over. From Kolkata 28 species were reported by Tiwari *et al.* (1998), in which 14 species from Bingham's (1903) 'Fauna of British India' were also included. Out of those 28 species, 4 species were from Rabindra Sarovar area.

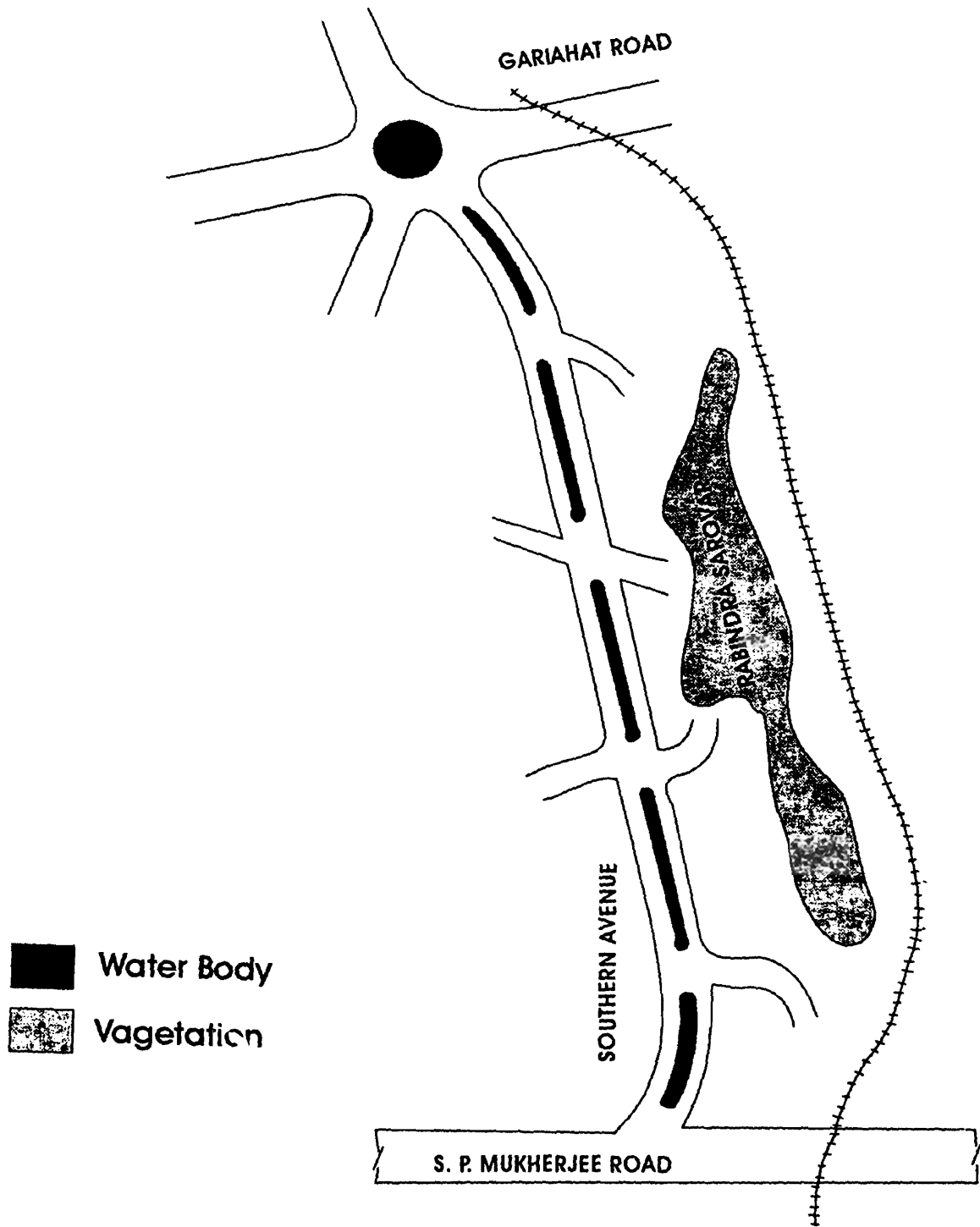
At a glance ants can be distinguished from other aculeate hymenoptera by the presence of petiole and postpetiole which is/are the modification of one or two segments of abdomen immediately following the propodeum.

Abbreviation : The abbreviations used in the text are : M = male, F = female, W = worker and S = soldier.

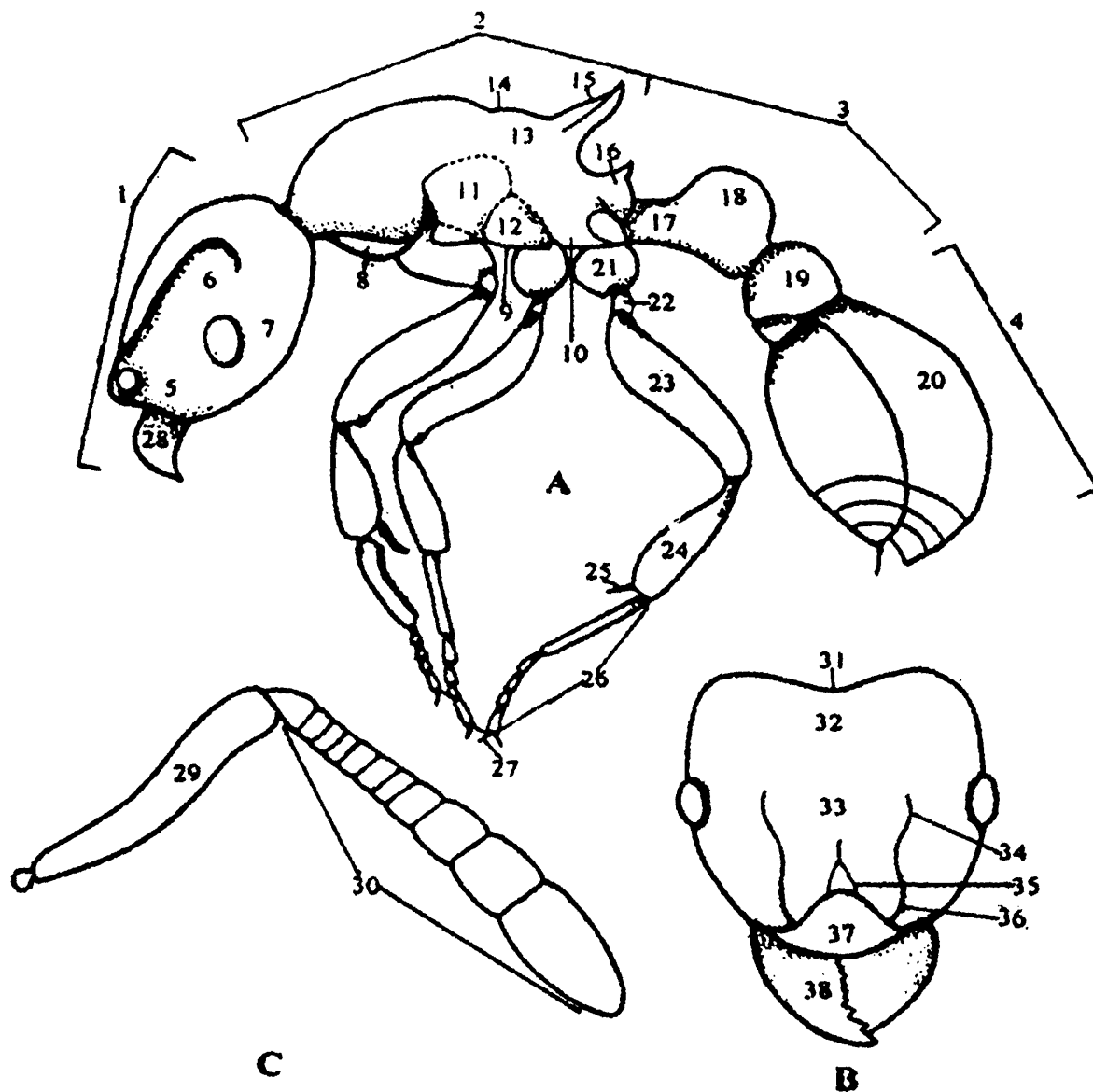
MATERIAL AND METHODS

Ants were collected mostly by hand picking. Sometimes baits like sugar, jaggary and other eatables were used. Some ants were collected extracting soil samples using Berlese Funnel in standard methods. Collected ants were kept in 70% alcohol and studied.

Ants were collected periodically from December, 2001 to November, 2002. Collections were made by the authors from inside the lake area, as well as from the divider of the side by road, Southern Avenue, which is one of the main arterial roads of Kolkata, for comparison.



MAP SHOWING THE STUDY SITE



Figs. A-C : General diagram of a typical ant

A : Body profile; B : Head; C : Antennae

- 1 head, 2 alitrunk, 3 waist, 4 gaster, 5 antennal socket, 6 scrobe, 7 eye, 8 propleuron, 9 mesopleuron, 10 metapleuron, 11 anepisternum, 12 katepisternum, 13 propodeum, 14 metanotal groove, 15 propodeal spine, 16 metapleural lobe, 17 peduncle, 18 petiole, 19 post petiole, 20 gastral tergite, 21 coxa, 22 trochanter, 23 femur, 24 tibia, 25 tibial spur, 26 tarsal segments, 27 claw, 28 mandible, 29 scape, 30 funicular segments, 31 occipital margin, 32 vertex, 33 frons, 34- frontal carina, 35 frontal area, 36 frontal lobe, 37 clypeus, 38 mandible.

SYSTEMATIC ACCOUNT**List of the taxa**

Family FORMICIDAE

I. Subfamily PONERINAE Lepeletier

Genus 1. *Diacamma* Mayr1. *Diacamma rugosum* (Le Guillou)Genus 2. *Pachycondyla* Smith2. *Pachycondyla rufipes* (Jerdon)Genus 3. *Platythyrea* Roger3. *Platythyrea parallela* (Smith)

II. Subfamily DOLICHODERINAE Forel

Genus 4. *Tapinoma* Foerster*4. *Tapinoma melanocephalum* (Fabricius)Genus 5. *Technomyrmex* Mayr*5. *Technomyrmex albipes* (Smith)

III. Subfamily FORMICINAE Lepeletier

Genus 6. *Camponotus* Mayr*6. *Camponotus compressus* (Fabricius)7. *Camponotus dolendus* ForelGenus 7. *Oecophylla* Smith8. *Oecophylla smaragdina* (Fabricius)Genus 8. *Paratrechina* Motschoulsky*9. *Paratrechina longicornis* (Latreille)Genus 9. *Plagiolepis* Mayr*10. *Plagiolepis jerdonii* Forel

IV. Subfamily PSEUDOMYRMECINAE Emery

Genus 10. *Tetraponera* Smith

*11. *Tetraponera allaborans* (Walker)

*12. *Tetraponera rufonigra* (Jerdon)

V. Subfamily MYRMICINAE Lepeletier

Genus 11. *Cardiocondyla* Emery

*13. *Cardiocondyla nuda* (Mayr)

14. *Cardiocondyla tiwari* sp.nov.

Genus 12. *Carebara* Westwood

*15. *Carebara lignata* Westwood

Genus 13. *Crematogaster* Lund

*16. *Crematogaster rothneyi* Mayr

Genus 14. *Meranoplus* Smith

*17. *Meranoplus bicolor* (Guér.)

Genus 15. *Monomorium* Mayr

18. *Monomorium destructor* (Jerdon)

*19. *Monomorium floricola* (Jerdon)

20. *Monomorium latinode* Mayr

21. *Monomorium monomorium* Bolton

22. *Monomorium pharaonis* (Linnaeus)

Genus 16. *Pheidole* Westwood

*23. *Pheidole roberti* Forel

24. *Pheidole* sp.

Genus 17. *Pheidologeton* Mayr

*25. *Pheidologeton diversus* (Jerdon)

Genus 18. *Recurvidris* Bolton

*26. *Recurvidris recurvispinosa* (Forel)

Genus 19. *Solenopsis* Westwood

*27. *Solenopsis geminata* (Fabricius)

Genus 20.. *Tetramorium* Mayr*28. *Tetramorium walshi* (Forel)29. *Tetramorium* sp.

Species marked with single asterisk (*) are also found from the divider of the Southern Avenue.

Key to the Subfamilies

- 1 Propodeum followed by petiole 2
- Propodeum followed by petiole and post petiole 4
2. A more or less marked constriction between basal two segments of gaster PONERINAE
- No constriction between basal two segments of gaster 3
3. Opening at posterior end of gaster (acidopore) terminal, circular and usually surrounded by a fringe of hairs FORMICINAE
- Opening at posterior end of gaster (acidopore) transverse, slit-like..... DOLICHODERINAE
4. Elongate, often very slender, eyes very large and elongate; clypeus with a rounded upper margin, not prolonged between frontal carinae; frontal carinae usually narrow and not expanded laterally to cover the antennal insertions PSEUDOMYRMECINAE
- Without these combinations of characters; frontal carinae usually large, nearly always covering the antennal insertions MYRMICINAE

I. Subfamily PONERINAE Lepeletier

Key to the genera

- 1 Posterior margin of clypeus not distinctly defined *Platythyrea*
- Posterior margin of clypeus defined by a suture 2
2. Petiole bispinous posteriorly *Diacamma*
- Petiole not spinous, denticulate posteriorly *Pachycondyla*

1. Genus *Diacamma* Mayr1862. *Diacamma* Mayr, *Verh. Zool-Bot. Ges. Wien*, 12 : 718, W.Type-species : *Ponera rugosa* Le Guillou, 1841.

1. *Diacamma rugosum* (Le Guillou)

1842. *Ponera rugosa* Le Guillou, *Ann. Soc. Ent. France*, **10** : 318, W.

1995. *Diacamma rugosum*, Bolton, *A New Genl. Cat. Ants World*, : 170.



Diacamma rugosum

Diagnostic characters : W. TL 8 – 9.5 mm. Black; mandibles, scape of antennae and legs castaneous red; short erect reddish hairs and pubescence moderately present. Head oval; punctured mandibles strongly dentate; median lobe of tectiform clypeus rounded at apex; more or less deep and regular striae on head above antennae. Thorax slender and elongate; pronotum with concentric striae surrounding few transverse striae; mesonotum with shallow punctures; striae on metanotum running obliquely forward from a medial impressed line. Concentricly striate petiole truncate posteriorly with backwardly pointed spines in continuation of its upper surface; elongate abdomen with striae in concentric arches from back to front on basal segment.

Material examined : 8 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001 – November 2002.

Distribution : India : West Bengal, Maharashtra, Orissa, Sikkim.

2. Genus *Pachycondyla* Smith

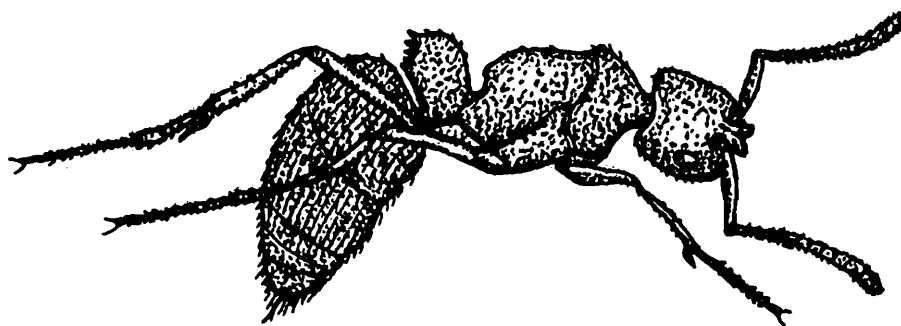
1858. *Pachycondyla* Smith, *Cat. Hym. Brit. Mus.*, **6** : 105.

Type-species : *Formica crassinoda* Latreille, 1802.

2. *Pachycondyla rufipes* (Jerdon)

1851. *Ponera rufipes* Jerdon, *Madras J. Lit. Sci.*, 17 : 119, W.

2003. *Pachycondyla rufipes*, Tiwari et al., *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim, (Part 4)* : 478.



Pachycondyla rufipes

Diagnostic characters : W. TL 13–15 mm. Dull black; mandibles, antennae, legs and apical two abdominal segments castaneous red; whole body covered with abundant reddish-yellow pilosity which are long and thick on apical abdominal segments. Head, thorax and petiole coarsely punctured; abdominal segments rugose with coarse longitudinal ridges. Head quadrangular; faintly longitudinally striate mandibles with obsolete teeth on masticatory margin; occiput slightly emarginate. Thorax massive; pro-mesonotal suture well marked, meso-metanotal suture obsolete; apical face of metanotum truncate and concave, smooth and shining, strongly margined above and on sides. Petiole twice as broad as long, convex, rounded above, posterior margin with number of blunt processes, posterior face deeply concave; abdomen massive, cylindrical.

Material examined : 6 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001 – November 2002.

Distribution : India : Andaman and Nicobar Islands, Karnataka, Kerala, Meghalaya, Orissa, Sikkim, West Bengal, Western India, Himalayas from Siwaliks to Assam (Bingham, 1903).

Elsewhere : Myanmar, Sri Lanka.

3. Genus *Platythyrea* Roger

1863. *Platythyrea* Roger, *Berl. Ent. Zeits.*, 7 : 172.

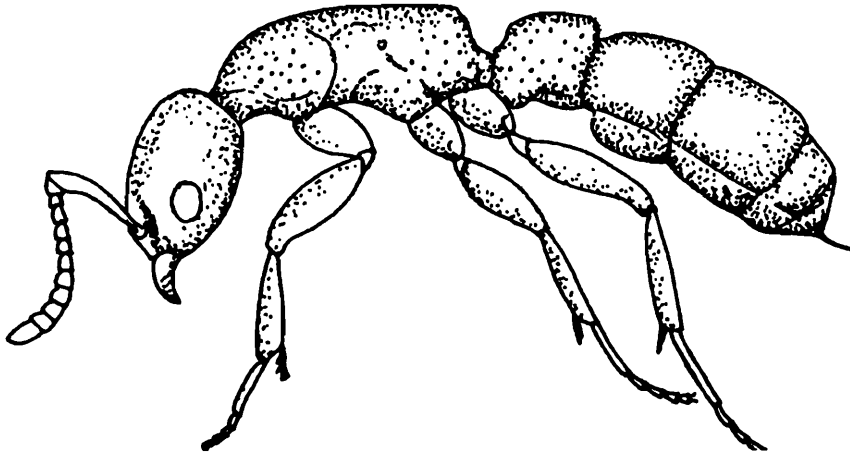
Type-species : *Pachycondyla punctata* Smith, 1858.

3. *Platythyrea parallela* (Smith)

1859. *Ponera parallela* Smith, *J. Proc. Linn. Soc. London Zool.*, **3** : 143, W.

1932. *Platythyrea parallela*, Donisthorpe, *Ann. Mag. Nat. Hist.*, **10** : 454.

1995. *Platythyrea parallela*, Bolton, *A New Genl. Cat. Ants World.* : 337.



Platythyrea parallela

Diagnostic characters : W. TL 3–4.5 mm. Black with silky pruinosity, opaque; mandibles, antennae, legs and apex of abdomen brownish yellow. Head broadly rectangular, broader posteriorly than in front; triangular mandibles with broad, dentate masticatory margin; transverse clypeus without distinct posterior margin; antennal carinae laminate but rather narrow, antennae 12-segmented. Thorax elongate, broad and strongly convex in front, promesonotal suture fine but distinct; meso-metanotal suture obsolete; metanotum emarginate posteriorly. Cylindrical petiole twice as long as broad, truncate on both sides; abdomen massive.

Material examined : 16 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka, Tamil Nadu.

II. Subfamily DOLICHODERINAE Forel

Key to the genera

1. In dorsal view 5 gastral tergites visible: the fifth one small but continuing the line of gaster and not bent forward, anal orifice situated apically *Technomyrmex*

In dorsal view only 4 gastral tergites visible; the fifth one bent forward, anal orifice situated ventrally ***Tapinoma***

4. Genus ***Tapinoma*** Foerster

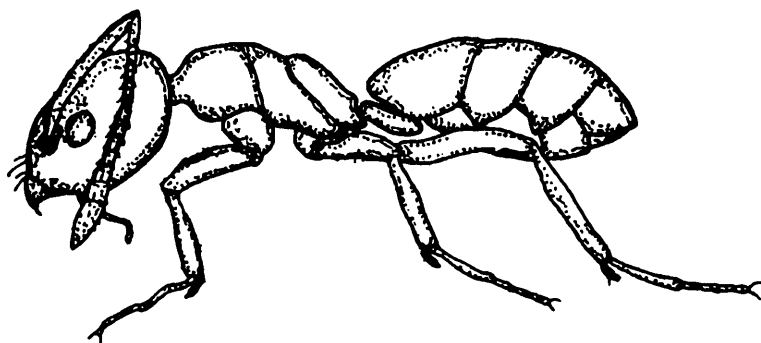
1850. *Tapinoma* Foerster, *Hym. Stud.*, 1 : 43, W, F.

Type-species : *Formica erratica* Latreille, 1798
(=*Tapinoma collina* Foerster, 1850).

4. ***Tapinoma melanocephalum*** (Fabricius)

1793. *Formica melanocephala* Fabricius, *Ent. Syst.*, 2 : 353, W.

1999. *Tapinoma melanocephalum*, Tiwari, *Memoirs Zool. Surv. India*, 18(4) : 83.



Tapinoma melanocephalum

Diagnostic characters W. TL 1.5–2 mm. Head, sometimes thorax also dark brown; thorax and abdomen or abdomen alone yellowish white. Head longer than broad, oval; broad, triangular mandibles armed with numerous minute teeth; antennae long, scape extending beyond top of head. Thorax not emarginate, if viewed from side; sutures distinct, very short basal portion of metanotum passing into much longer obliquely slopping portion by an obtuse angle. Petiole short with overhanging elongate oval abdomen.

Material examined : 48 W. India, West Bengal, Kolkata, Rabindra Saravor, December 2001 – November 2002.

Distribution : India : Arunachal Pradesh, Karnataka, Tamil Nadu, West Bengal and almost throughout the country.

Elsewhere : Oceania, South America and spreaded through the tropics of both hemispheres.

5. Genus *Technomyrmex* Mayr

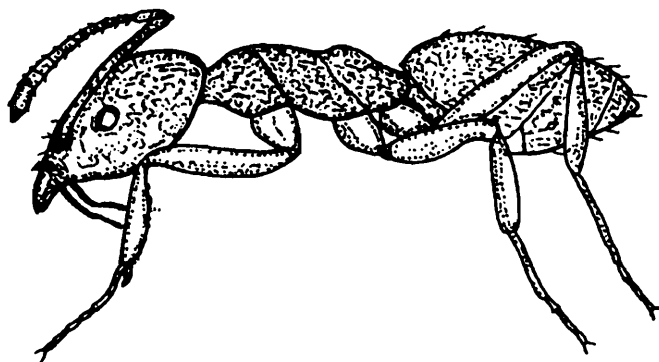
1872. *Technomyrmex* Mayr, *Ann. Mus. Civ. Stor. Nat. Genova*, **2** : 147, W, F.

Type-species : *Technomyrmex strenua* Mayr, 1872.

5. *Technomyrmex albipes* (Smith)

1861. *Tapinoma albipes* Smith, *J. Proc. Linn. Soc. London Zool.*, **6** : 38, W.

2003. *Technomyrmex albipes*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim*, (Part 4) : 494.



Technomyrmex albipes

Diagnostic characters : W. TL 2.5–3 mm. Black, mandibles reddish brown, tarsi white; covered with thin silky-white pubescence. Head longer than broad, widely emarginate posteriorly; broad triangular mandibles with numerous small teeth; clypeus with anterior margin medially and circularly incised. Thorax broad, deeply emarginate at meso-metanotal suture; pro and mesonotum together forming a convex gibbosity with distinct suture in between; convex metanotum with longer apical portion sloping backwards. Petiole is simply an oval flat thickening in the middle; gibbous abdomen posteriorly conical with an apical cloacal aperture overhanging the petiole.

Material examined : 33 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal and almost throughout our limits.

Elsewhere : Java, New Guinea, Oceania, Sulawesi.

III. Subfamily FORMICINAE Lepeletier

Key to the genera

- 1 Antennae 11-segmented..... *Plagiolepis*
 - Antennae 12-segmented... .. 2
2. Head more or less cordiform; eyes large, mandibles trigonal in shape, multidentate; antennae long, scape passing much beyond the occiput, last segment of flagellum much shorter than preceding one *Oecophylla*
 - Different set of characters 3
3. Antennae inserted at a perceptible distance from posterior margin of clypeus..... *Camponotus*
 - Antennae inserted immediately above posterior margin of clypeus, almost touching it..... *Paratrechina*

6. Genus *Camponotus* Mayr

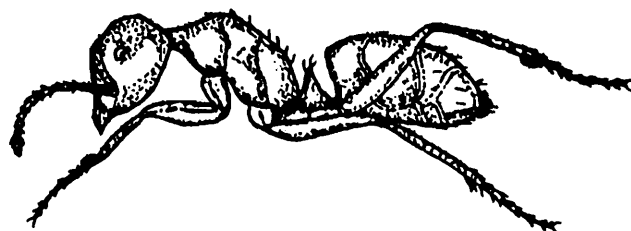
1861. *Camponotus* Mayr, *Europ. Formicid.* : 35.

Type-species : *Formica ligniperda* Latreille, 1802.

6. *Camponotus compressus* (Fabricius)

1787. *Formica compressa* Fabricius, *Mant. Insect.*, 1 : 307, W.

2003. *Camponotus compressus*, Tiwari et al., *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim*, (Part 4) : 500.



Camponotus compressus

Diagnostic characters : W. Major TL 10-15 mm; Black, opaque, finely reticulate and punctate; mandibles, flagellum of antennae and legs castaneous brown; pubescence sparse.

Head triangular, broad posteriorly; mandibles with 7 teeth; clypeus medially vertically carinate, middle portion anteriorly reduced into a lobe; scape of antennae cylindrical. Thorax anteriorly produced into a collar; legs long, tibiae compressed, prism-shaped. Petiole oval, convex in front, flat posteriorly; abdomen broad and massive.

Minor : TL 5-8 mm. Similar, smaller and slender; mandibles with 5 teeth.

Material examined : 13 W (min.), 8 W (maj.). India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu.

Elsewhere : Arabia, Africa, Borneo, Myanmar, Nepal, Philippines, Sri Lanka, U.S.S.R., Malayan subregion.

Remarks : Tiwari *et al.* (1998) reported this species from Lilly Pool (Rabindra Sarovar), Kolkata.

7. *Camponotus dolendus* Forel

1892. *Camponotus rufoglaucus* (Jerdon) race *dolendus* Forel, *J. Bombay Nat. Hist. Soc.*, 7 : 227 & 238, W.

2003. *Camponotus dolendus*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim*, (Part 4) : 500.

Diagnostic characters : W. Major TL. 7–9 mm; Black, mandibles, antennae, legs and posterior margins of abdominal segments testaceous; pubescence entirely wanting. Head subtriangular, sides convex; carinate clypeus with median lobe distinctly rectangularly produced; mandible with 7 teeth. Thorax short and broad; legs with tibiae compressed and with scattered spines on undersides. Petiole broad and flat with silky pilosity; abdomen broadly oval.

Minor : TL 5-7 mm. Slender, head narrower. Pro-meso and basal half of metanotum form a gentle curve, apical half almost truncate. Petiole conical.

Material examined : 7 W (min.), 3 W (maj.). India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India, West Bengal, Andaman and Nicobar, Islands, Sikkim, Tamil Nadu, North West Himalayas.

7. Genus *Oecophylla* Smith

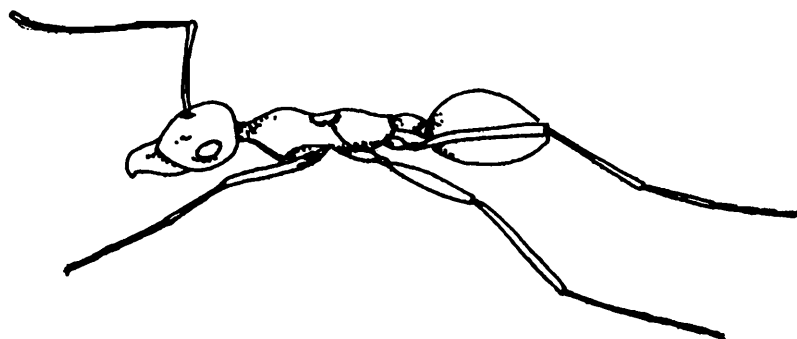
1860. *Oecophylla* Smith, *J. Proc. Linn. Soc. London Zool.*, 5 : 101, W, F.

Type-species : *Formica smaragdina* Fabricius, 1775
(= *Formica virescens* Fabricius, 1975).

8. *Oecophylla smaragdina* (Fabricius)

1775. *Formica smaragdina* Fabricius, *Syst. Ent.* : 828, W, pl., figs.

1999. *Oecophylla smaragdina*, Tiwari, *Memoirs, Zool. Surv. India*, **18**(4) : 66.



Oecophylla smaragdina

Diagnostic characters : W. TL 8–10 mm. Yellowish red. Head quadrangular without mandibles; mandibles long, dentate, apical tooth acute and curved; clypeus strongly convex; antennae 12-segmented. Thorax elongate; pronotum convex, anteriorly narrowed into collar; mesonotum saddle-shaped; metanotum rounded above. Petiole elongate, scarcely nodiform; abdomen short, oval.

Material examined : 14 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : Mostly throughout the country, except desert and treeless areas.

Elsewhere : Australia, China, Java, Myanmar, New Guinea, Sri Lanka.

Remarks : Tiwari *et al.* (1998) also reported this species from Safari Park (Rabindra Sarovar), Kolkata.

8. Genus *Paratrechina* Motschoulsky

1863. *Paratrechina* Motschoulsky, *Bull. Soc. Nat. Moscou*, **36** : 13.

Type species : *Formica longicornis* Latreille, 1802

(= *P. currens* Motschoulsky, 1863).

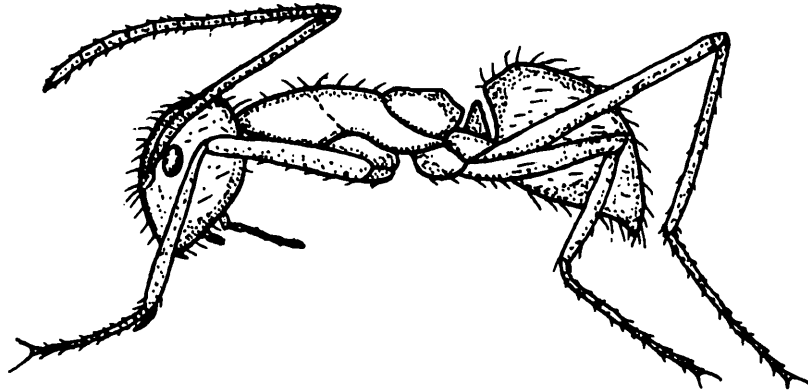
9. *Paratrechina longicornis* (Latreille)

1802. *Formica longicornis* Latreille, *Hist. Nat. Fourm.* : 113, W.

1903. *Prenolepis longicornis*, Bingham, *Fauna Brit. India, Hym.*, **2** : 326, W, F, M.

1921. *Paratrechina longicornis*, Wheeler, *Psyche*, 28 : 112.

1999. *Paratrechina longicornis*, Tiwari, *Memoirs, Zool. Surv. India*, 18(4) : 80.



Paratrechina longicornis

Diagnostic characters : W. 2.5–3.5 mm. Dull coppery brown, mandibles, antennae and legs pale whitish brown; the body with abundant long, erect hairs. Head oval, as broad in front as posteriorly, vertex rounded; eyes large; mandibles with 5–6 teeth on masticatory margin; rounded clypeus convex; antennae filiform, scape extending beyond top of head by more than half its length. Thorax elongate, rounded above, sutures distinct; metanotum rounded; legs remarkably long and slender. Petiole not so broad as high, rounded above; anteriorly gibbous abdomen, oval.

Material examined : 28 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Manipur, Tamil Nadu, Karnataka, Orissa, Andaman & Nicobar Is. and mostly throughout the country.

Elsewhere : Australia, New Caledonia, France, Sri Lanka, Senegal.

9. Genus ***Plagiolepis*** Mayr

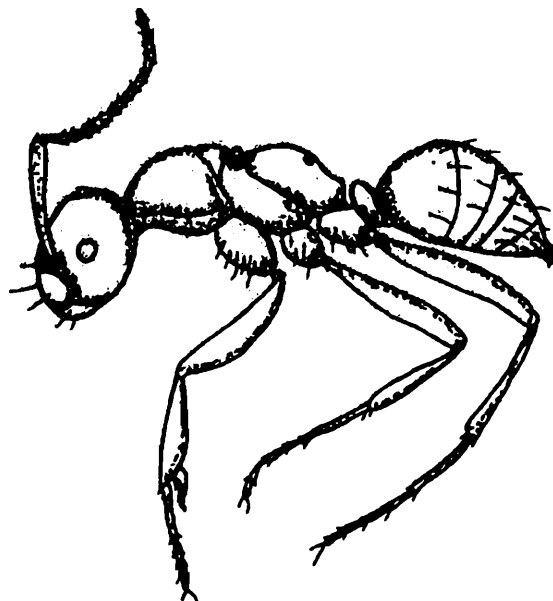
1861. *Plagiolepis* Mayr, *Europ. Formicid.* : 42.

Type-species : *Formica pygmaea* Latreille, 1798.

10. ***Plagiolepis jerdonii*** Forel

1894. *Plagiolepis jerdoni* Forel, *J. Bombay Nat. Hist. Soc.*, 8 : 415, 416, W.

1995. *Plagiolepis jerdonii*, Bolton, *A New Genl. Cat. Ants World* : 335.



Plagiolepis jerdonii

Diagnostic characters : W. TL 1–1.5 mm. Brownish black, antennae, tibiae and tarsi lighter; subopaque; with moderate whitish pubescence; few erect hairs on front of head and apex of abdomen. Head a little longer than broad, transverse, slightly emarginate posteriorly; mandibles subtriangular; clypeus convex and carinate; antennae slender, extended slightly beyond top of head. Thorax short and broad; pronotum and mesonotum convex; meso-metanotal emargination well-marked; basal portion of metanotum very short, less than half the length of oblique apical portion. Petiole transverse above, lower, inclined to the front; abdomen oval.

Material examined : 23 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka, Western India, Kerala, Maharashtra.

IV. Subfamily PSEUDOMYRMECINAE Emery

10. Genus *Tetraponera* Smith

1852. *Tetraponera* Smith, *Ann. Mag. Nat. Hist.*, (2) 9 : 44.

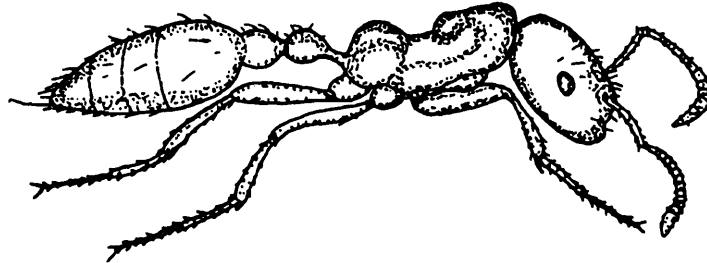
Type-species : *Eciton nigrum* Jerdon, 1851
(= *Tetraponera atrata* Smith, 1852).

11. *Tetraponera allaborans* (Walker)

1859. *Pseudomyrma allaborans* Walker, *Ann. Mag. Nat. Hist.*, (3) 4 : 375, M.

1877. *Tetraoponera allaborans*, Smith, *Trans. Ent. Soc. London*, (4) 10 : 69.

1995. *Tetraoponera allaborans*, Bolton, *A New Genl. Cat. Ants World*, : 417.



Tetraoponera allaborans

Diagnostic characters : W. TL 5–6 mm. Black, polished and shining ; legs lighter in colour; mandibles and antennae reddish yellow; only a few scattered pale hairs, no pubescence. Head longer than broad; posterior lateral angles rounded; mandibles broad; clypeus vertical, anteriorly crenulate, posterior portion produced slightly; antennae short; ocelli not present; eyes lateral and a little to the front. Thorax anteriorly flat and compressed; pronotum nearly square anteriorly produced into a short neck; pro-mesonotal suture distinct; mesonotum longitudinally oval; meso-metanotal suture emarginate; raised metanotum convex and compressed. Petiole elongate; postpetiole broader than petiole, conical; abdomen elongate.

Material examined : 4 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Tamil Nadu, Western India.

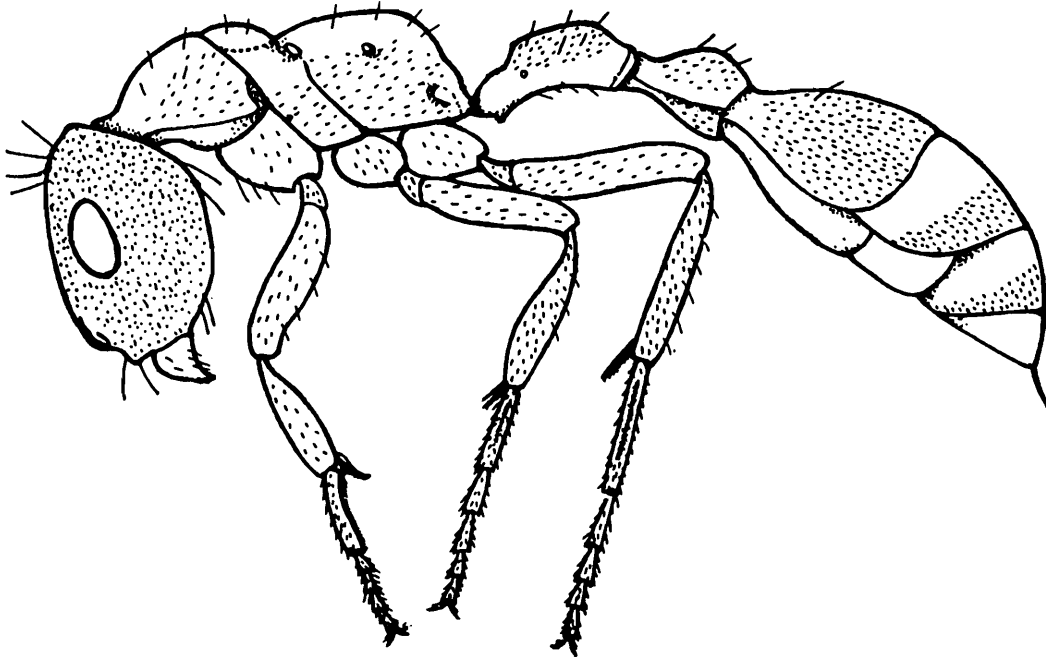
Elsewhere : Myanmar, Sri Lanka, Indonesia (Sumatra), Kalimantan, China.

12. *Tetraoponera rufonigra* (Jerdon)

1851. *Eciton rufonigrum* Jerdon, *Madras J. Lit. Sci.*, 17 : 111, W.

1999. *Tetraoponera (Tetraoponera) rufonigra*, Tiwari, *Memoirs Zool. Surv. India*, 18(4) : 35.

Diagnostic characters : W. TL 10–13 mm. Head, postpetiole and abdomen black; mandibles, antennae, thorax and petiole light brick-red; pilosity and pubescence sparse; shining, closely and minutely punctured. Head little longer than broad; occiput transverse; cheeks straight; broadly linear mandibles with 5 to 6 teeth on masticatory margin; ocelli present. Thorax elongate; broad pronotum with dentate anterior lateral angles; pro-mesonotal suture arched to the front; meso-metanotal suture deeply emarginate; metanotum longer than pro- and mesonotum together. Petiole elongate; abdomen oval, acute at apex; sting exerted.



Tetraponera rufonigra

Material examined : 4 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001 –November 2002.

Distribution : India : West Bengal, Tamil Nadu, Arunachal Pradesh, Karnataka, Kerala and widely distributed throughout the country.

Elsewhere : China, Indonesia, Myanmar, Singapore, Sri Lanka.

V. Subfamily MYRMICINAE Lepeletier

Key to genera

- 1 Postpetiole attached to the dorsal side of gaster; gaster in dorsal view heart shaped..... ***Crematogaster***
- Postpetiole attached to anterior portion of gaster; gaster not heart-shaped..... 2
2. Club of antenna two-jointed 3
- Club of antenna three-jointed 5
3. Antennae with 10 segments; anterior clypeal margin with a single median seta..... ***Solenopsis***
- Antennae with 9 or 11 segments 4

4. Eyes absent; antennae with 9 segments *Carebara*
 - Eyes present; antennae with 11 segments *Pheidologeton*
5. Antennae with 9 segments *Meranoplus*
 - Antennae with 10-12 segments 6
6. Antennae with 11 segments; propodeum with a pair of spines which curves backwards and upwards; junction of postpetiole and gaster strongly dorsoventrally compressed and narrow in profile *Recurvidris*
 - Antennae with 12 segments; other characters different 7
7. Lateral portion of clypeus dorsoventrally flattened and thin; strongly prominent over mandibles *Cardiocondyla*
 - Characters different 8
8. Hairs on body trifold, thickly spread all over or sting with a lamelliform appendage *Tetramorium*
 - Hairs simple, sparse; no lamelliform appendage on sting 9
9. Propodeum bispinous, apical margin of mandible with third tooth from apex smaller than fourth or reduced third tooth followed by a minute denticle before fourth larger tooth or masticatory margin with two large apical and one or two enlarged basal teeth; in between irregularly crenulate or bluntly dentate *Pheidole*
 - Propodeum unarmed, evenly rounded; mandible not as above..... *Monomorium*

11. Genus *Cardiocondyla* Emery

1869. *Cardiocondyla* Emery, *Ann. Acc. Asp. Nat. Naples, Era 2, 2* : 20.

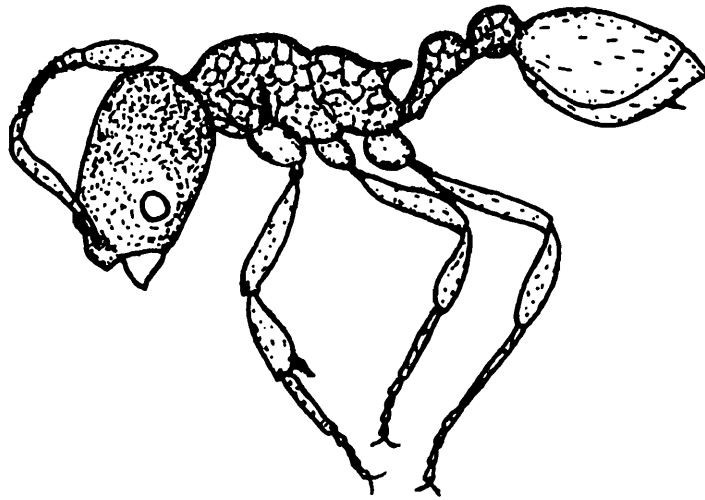
Type-species : *Cardiocondyla elegans* Emery, 1869.

13. *Cardiocondyla nuda* (Mayr)

1866. *Leptothorax nuda* Mayr, *Sitz. Akad. Wiss. Wien, 53* : 508, W.

1903. *Cardiocondyla nuda*, Bin^o.am, *Fauna Brit. India, Hym., 2* : 287.

2003. *Cardiocondyla nuda*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim, (Part 4)* : 492.



Cardiocondyla nuda

Diagnostic characters : W. TL 2.5–3 mm. Head, thorax and petiole red and finely granulate; abdomen jet-black, polished and shining. Head oval, convex in front, posteriorly rounded; broad mandibles armed with 5 teeth; clypeus narrow; 12-segmented antennae elongated. Thorax as long as or little longer than head but narrower than head; anterior angles of pronotum rounded; metanotum cubical, basal part about twice as long as the truncate apical part. Postpetiole much broader than petiole and both together about half the length of thorax; abdomen oval.

Material examined : 6 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution India : West Bengal, Andaman and Nicobar Islands, Meghalaya, Sikkim.

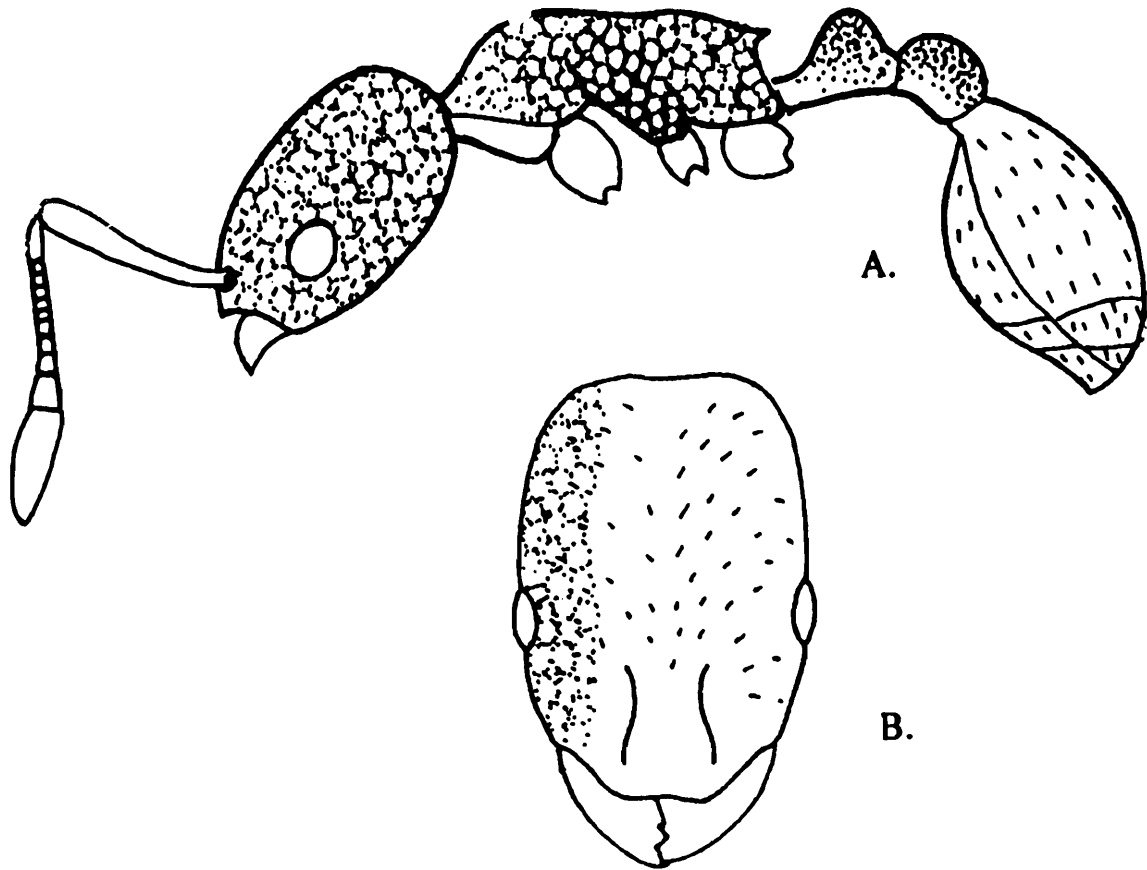
Elsewhere : Malaysia, Sri Lanka, Oceania.

14. *Cardiocondyla tiwarii* sp. nov.

Holotype: Worker : TL- 1.6mm; HL-0.43mm; HW-0.34 mm; CI-79; SL-0.30 mm; SI-88; PW-0.19 mm; AL-0.46 mm

Colour: Head, thorax and pedicel brownish red; legs pale honey yellow; scape of antennae concolorous with legs, basal flagellar segments brownish yellow, brown colour increasing to apex so that club blackish brown; gaster shining, black.

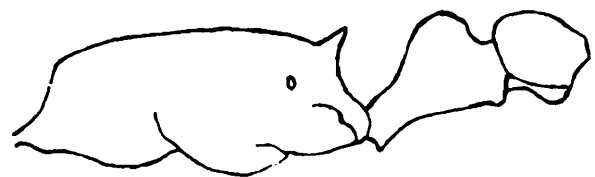
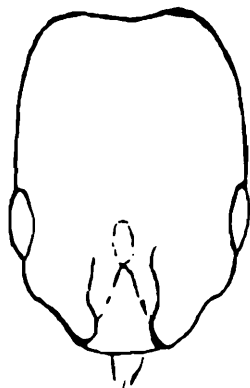
General sculpture and hair pattern : Head regularly and superficially faintly reticulate; thorax dorsally reticulate as on head but more feeble than head; meso and meta sternum of thorax finely punctate, punctures antero-dorsally fading so that anterior margin of



Cardiocondyla tiwarii sp. nov.

A. Body profile

B. Head (dorsal view)



Cardiocondyla minutior Forel
(after Seifert, 2002)

prosternum appears smooth, polished; petiole above and mandibles smooth, polished; post petiole, peduncle of petiole and sides of petiole superficially with light reticulations; gaster smooth; whole body covered with small regularly arranged abundant white appressed pubescence; pubescence more visible on head and gaster; anterior margin of clypeus with three long setae, median longer than other two; pilosity almost absent.

Head : Distinctly longer than broad; posterior margin transverse in front view; postero-lateral corners rounded, sides nearly convex; mandibles with two fine acute apical teeth followed by three minute teeth towards base; clypeus extended anteriorly, antero-median part slightly depressed inwards; anterior margin arched; posterior margin not distinctly defined; frontal lobes short, subparallel, close together. Antennae 12-jointed, scape reaching just to vertex, F1 elongate, F2 to F9 transverse, club very massive, three jointed; terminal club segment more than two times length of preceding two together; club distinctly longer than remaining flagellar segments together (14:10); eyes rounded, prominent, lateral, situated in front of mid line.

Thorax Length subequal to length of head (excluding mandibles) in profile; sutures absent on thorax, in dorsal view, thorax broad anteriorly, narrowing posteriorly and laterally constricted at meso-metanotal suture; pronotum anteriorly rounded, antero-lateral corners of pronotum rounded, propodeum with two small teeth projecting straight backwards, its length and basal width almost equal in profile; spine longer than distance between its bases in dorsal view.

Abdomen : Convex; Petiole node sub globose, its length and breadth almost subequal; peduncle of petiole shorter than node; node rounded above; post petiole in a lower level than petiole, flat above; 1.3x broader than long in dorsal view. Gaster broadly oval, almost flat above; ventrally convex; T1 covering 2/3 its length

Holotype : Worker, INDIA: West Bengal, Rabindra Sarovar, December 2001 to November 2002.

Paratypes : 4W, with same data as holotype.

Discussion : So far 11 species have been reported from this genus from India (Seifert, 2002). This species *C. tiwarii* sp. nov. comes close to *C. minutior* Forel. But it differs from the said species by distinct characters like eyes not hairy (*C. minutior* with hairy eye) and gaster not microreticulate (gaster microreticulate in *C. minutior*). Moreover, the metanotal spines of *C. tiwarii* pointing backwards; whereas that of *C. minutior* pointing upwards.

Etymology : The species is named after Dr. R.N. Tiwari for his contribution to Indian Formicidae.

12. *Genus Carebara* Westwood

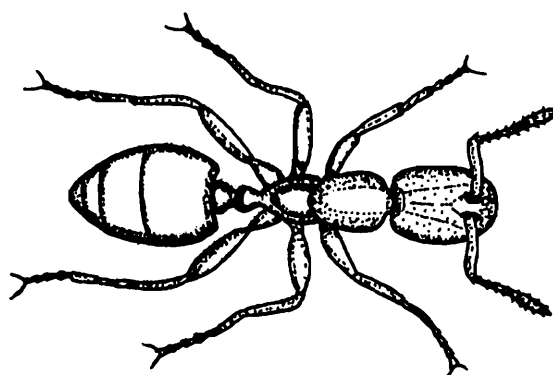
1840. *Carebara* Westwood, *Ann. Mag. Nat. Hist.*, 6 : 86, F.

Type-species : *Carebara lignata* Westwood, 1840.

15. *Carebara lignata* Westwood

1840. *Carebara lignata* Westwood, *Ann. Mag. Nat. Hist.*, 6 : 86, F.

1995. *Carebara lignata*, Bolton, *A New Genl. Cat. Ants World*, : 133.



Carebara lignata

Diagnostic characters : W. TL. 2–2.5 mm. Pale yellow; masticatory margin of mandibles brown; head finely and closely punctate; thorax above and abdomen smooth and shining; pilosity pale and abundant. Head subquadrate, anteriorly and posteriorly rounded; subtriangular mandibles with minutely dentate masticatory margin; clypeus convex, produced back posteriorly between bases of antennae; 9-jointed antennae with distinct club on flagellum. Thorax broad; pronotum rounded anteriorly; meso-metanotal suture distinct; basal portion of metanotum short. Petiole narrower than postpetiole, both rounded above; abdomen broadly oval.

Material examined : 3 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001 – November 2002.

Distribution : India : West Bengal, Assam.

Elsewhere: China, Myanmar, Malayan subregion.

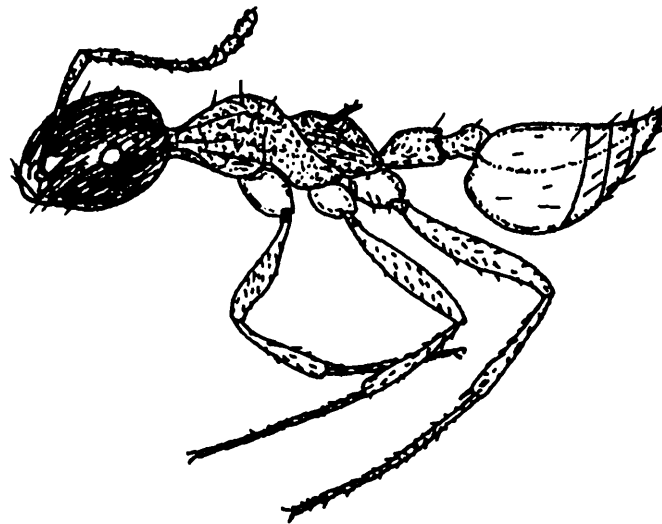
13. *Genus Crematogaster* Lund

1831. *Crematogaster* Lund, *Ann. Sc. Nat.*, 23 : 132.

Type-species : *Formica scutellaris* Oliv., 1792.

16. *Crematogaster rothneyi* Mayr

1878. *Crematogaster rothneyi* Mayr, *Verh. Zool.-Bot. Ges. Wien*, 28 : 681 & 685, W.
 2003. *Crematogaster rothneyi*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim (part 4)* : 488.



Crematogaster rothneyi

Diagnostic characters : 7 W. TL 3–3.5 mm. Head, thorax and petiole ferruginous red; abdomen deep brown; pale yellow pilosity fairly abundant, especially on abdomen; head entirely sculptured, abdomen smooth. Head longitudinally finely striate, little broader than long; occiput transverse; eyes large, placed above the middle of head; mandibles finely striate; clypeus short, anteriorly truncate; short 12-segmented antennae with 3-segmented club. Thorax rugulose; reticulate pronotum rounded anteriorly, flat above; pro-mesonotal suture indicated; meso-metanotal suture distinct; basal portion of metanotum rectangular, longitudinally striate, apical portion finely punctured, shining; long spines stout and divergent. Petiole as broad as long, broader anteriorly; postpetiole trituberculate, the anterior one small, other two larger; abdomen broadly cordate.

Material examined : 9 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001 – November 2002.

Distribution : India : West Bengal, Gujarat, Maharashtra, Meghalaya, Sikkim, Tamil Nadu.

14. Genus *Meranoplus* Smith

1854. *Meranoplus* Smith, *Trans. Ent. Soc. London*, (2) 2 : 224.

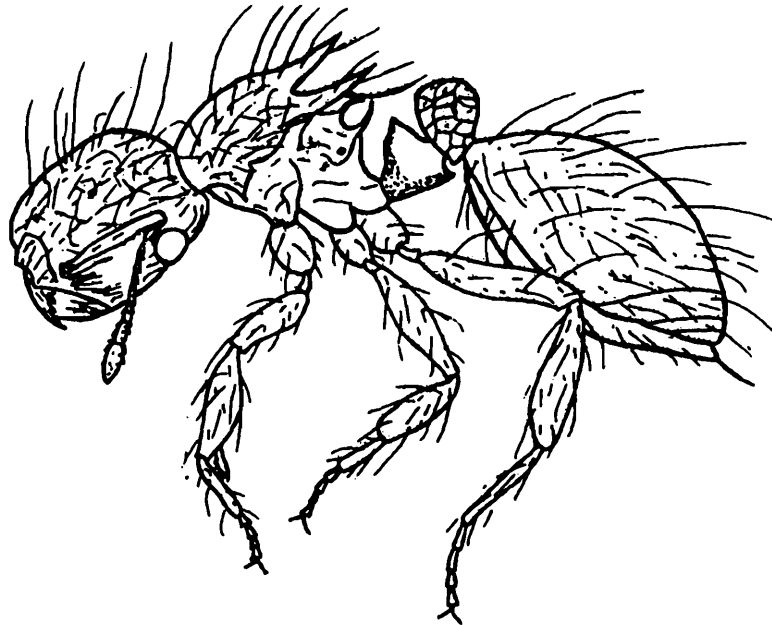
Type-species : *Cryptocerus bicolor* Guérin, 1844.

17. *Meranoplus bicolor* (Guér.)

1844. *Cryptocerus bicolor* Guér., *Cuv. Iconogr. Régn. Anim Ins.*, 3 : 425.

1903. *Meranoplus bicolor*, Bingham, *Fauna Brit. India, Hym.*, 2 : 168

1995. *Meranoplus bicolor*, Bolton, *A New Genl. Cat. Ants World.* : 250.



Meranoplus bicolor

Diagnostic characters : W. TL 4–5 mm. Head, thorax, legs and petiole ferruginous red; abdomen black; pilosity long, soft and abundant; head and thorax coarsely sculptured; abdomen finely reticulate. Head little longer than broad, broader posteriorly; dentate mandibles obscurely straight, pubescent; clypeus convex, inclined downwards; antennae 9–segmented, antennal furrow lateral and deep. Pro-mesonotal shield of thorax about as broad as long, anterior angles dentate and posterior sides produced backwards into long, somewhat laminate spines, overhanging metanotum; the latter vertical with a carina on each side ending above in an acute spine. Petiole smooth, triangular with bevelled apex; postpetiole globose; abdomen cordate.

Material examined : 7 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Arunachal Pradesh and nearly throughout the country excepting hot, dry places.

Elsewhere : Myanmar to Malayan subregion.

15. Genus *Monomorium* Mayr

1855. *Monomorium* Mayr, *Verh. Zool.-Bot. Ges. Wien*, 5 : 452.

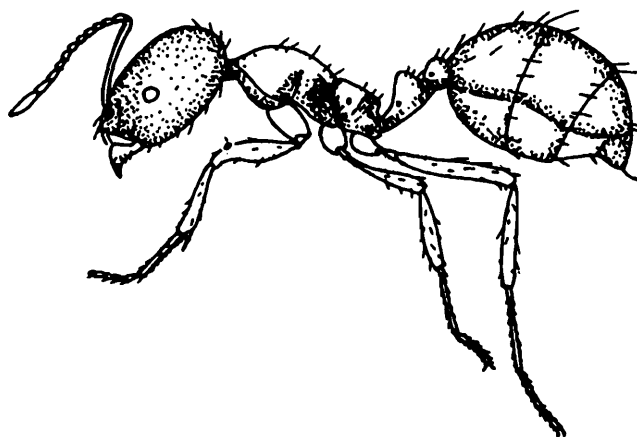
Type-species : *Monomorium minutum* Mayr, 1855.

18. *Monomorium destructor* (Jerdon)

1851. *Atta destructor* Jerdon, *Madras J. Lit. Sci.*, 17 : 105, W.

1893. *Monomorium destructor*, Dalla Torre, *Cat. Hym.*, 7 : 66.

1995. *Monomorium destructor*, Bolton, *A New Genl. Cat. Ants World*, : 261.

*Monomorium destructor*

Diagnostic characters : W. TL 2.5–3 mm. Head and thorax reddish yellow; antennae, legs and petiole lighter in colour, abdomen dark brown; smooth and shining with few scattered punctures. Head rectangular, convex, posteriorly transverse; mandibles with 4 small teeth; clypeus anteriorly arched, obsolete carinate; scape of 12-segmented antennae just reaching the top of the head; eyes small, placed below the middle of head. Thorax elongate, promesonotum convex; meso-metanotal suture deeply impressed, slightly emarginate; basal portion of metanotum narrow and rectangular, passing by a somewhat rounded curve into truncate apical portion. Petiole moderately sharp but rounded above, higher than postpetiole; post petiole globose; abdomen oval.

Material examined : 2 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Southern India and almost throughout the country.

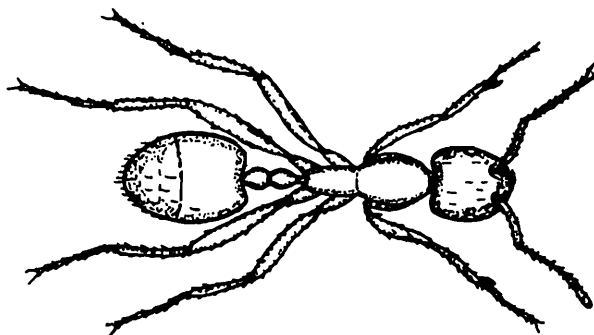
Elsewhere : Sri Lanka and spread throughout hot and dry regions of both hemispheres.

19. *Monomorium floricola* (Jerdon)

1851. *Atta floricola* Jerdon, *Madras J. Lit. Sci.*, 17 : 107, W.

1879. *Monomorium floricola*, Mayr, *Verh. Zool.-Bot. Ges. Wien*, 28 : 671.

1998. *Monomorium floricola*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 3 : Fauna of West Bengal, (Part 8)* : 256.

*Monomorium floricola*

Diagnostic characters : W. 1.5–2 mm. Head, petiole and legs reddish brown, thorax lighter, abdomen dark brown; smooth polished and shining; pilosity almost wanting; few erect hairs on head anteriorly and on apex of abdomen. Head rectangular, occiput slightly emarginate; narrow mandibles armed with 4 teeth; clypeus convex, obsolete carinate; scape of 12-segmented antennae just reaching the top of head, club remarkably thick; eyes placed below the middle. Thorax proportionately long; pro-mesonotum somewhat pyriform; meso-metanotal suture distinct; basal portion of metanotum rectangular, apically truncate. Petiole anteriorly elongate; post petiole broader; abdomen oval.

Material examined : 3 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Tamil Nadu, Kerala, Andaman & Nicobar Is., Orissa, Meghalaya, Manipur and spread throughout India.

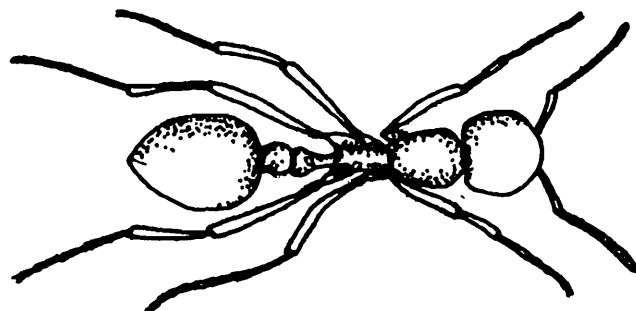
Elsewhere : Sri Lanka, Australia, New Caledonia Is., Oceania.

Remarks : Tiwari *et al.* (1998) also reported this species from Lilly Pool (Rabindra Sarovar), Kolkata.

20. *Monomorium latinode* Mayr

1972. *Monomorium latinode* Mayr, *Ann. Mus. Civ. Stor. Nat. Genova*, 2 : 152, W.

1998. *Monomorium latinode*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 3, Fauna of West Bengal, (Part 8)* : 256.



Monomorium latinode

Diagnostic characters : W. TL 3–3.5 mm. Light castaneous brown; mandibles, antennae and legs lighter in colour; smooth, polished and shining. Head longer than broad, posteriorly transverse; clypeus anteriorly arched, carinae almost obsolete. Thorax elongate; pro-mesonotum convex, broad; emarginate at meso-metanotal suture, which is deeply impressed; basal portion of metanotum rectangular, posteriorly truncate. Petiole long in profile, convex anteriorly and posteriorly; postpetiole broader than petiole; abdomen long, oval.

Material examined : 8 W. India, West Bengal, Kolkata, Rabindra Sarovar (Lilly Pool), 7. vi.1990, coll. R. N. Tiwari.

Distribution : India : West Bengal, Tamil Nadu, Orissa, Manipur and spread throughout India.

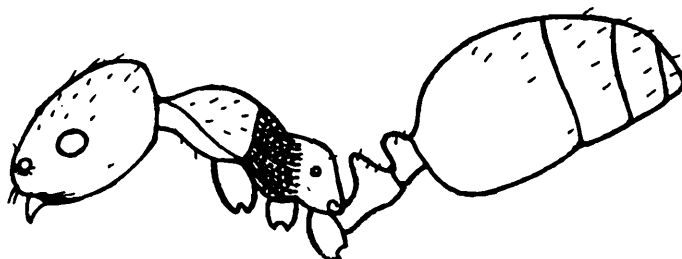
Elsewhere : Myanmar, Sri Lanka, Indonesia (Borneo), Formosa (Taiwan).

Remarks : Tiwari *et al.* (1998) reported this species from ‘Lilly Pool’ (Rabindra Sarovar), Kolkata.

21. *Monomorium monomorium* Bolton

1987. *Monomorium monomorium* Bolton, *Bull. Brit. Mus. Nat. Hist.*, 54 : 287.

1995. *Monomorium monomorium*, Bolton, *A New Genl. Cat. Ants World*, : 264.



Monomorium monomorium

Diagnostic Characters : W. TL 1.5–2 mm. Head and thorax dark brown, abdomen black; smooth, polished and shining; pilosity very sparse. Head rectangular, posteriorly transverse; narrow mandibles with 4 teeth on masticatory margin; clypeus very convex, anteriorly rounded; scape of 12-segmented antennae nearly reaching upto the top of the head; eyes comparatively large, placed in the middle of the head. Pro-mesonotum convex; meso-metanotal suture distinct and emarginate; metanotum compressed, basal portion rectangular, apical portion truncate. Petiole rounded; postpetiole broader than long, not broader but lower than petiole; abdomen oval.

Material examined : 2 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka.

Elsewhere : Africa, North America, Southern Europe.

22. *Monomorium pharaonis* (Linnaeus)

1758. *Formica pharaonis* Linnaeus, *Syst. Nat. Ed. 10*, 1 : 580, W.

1862. *Monomorium pharaonis*, Mayr, *Verh. Zool.-Bot. Ges. Wien*, 12 : 752.

1975. *Monomorium pharaonis*, Bolton, *A New Genl. Cat. Ants World*, : 265.

Diagnostic characters : W. TL 2.5–3 mm. Reddish yellow, posterior portion of abdomen black; head rugulose and opaque, abdomen smooth and shining; pilosity almost wanting. Head longer than broad; posterior margin transverse; mandibles linear, narrow clypeus obsoletely carinate and convex; the scape of 12-segmented antennae reaching nearly to top of head. Pro-mesonotum convex, distinctly longer than broad, rounded anteriorly, narrowing posteriorly; meso-metanotal suture distinct; metanotum rectangular, somewhat flat, apically truncate. Petiole somewhat cuneiform, rounded at the top; postpetiole broader, globose; abdomen oval, anteriorly truncate.

Material examined : 4 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka and almost throughout the country.

Elsewhere : Spread over the tropical regions of both hemispheres.

16. Genus *Pheidole* Weswood

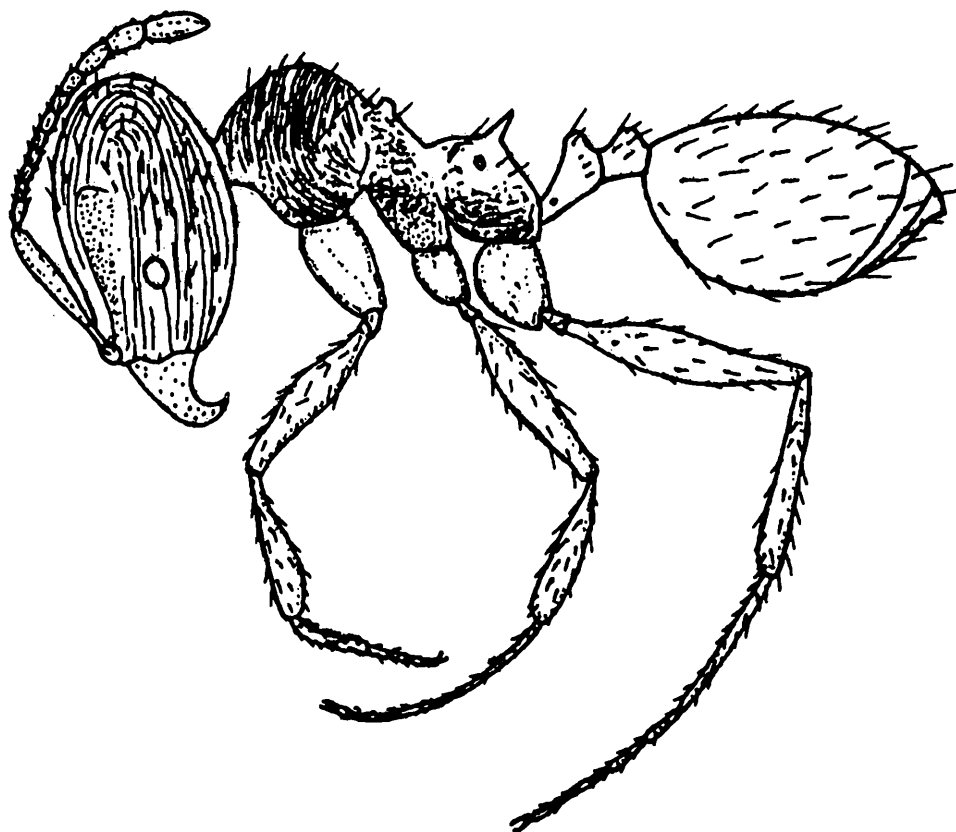
1840. *Pheidole* Westwood, *Ann. Mag. Nat. Hist.*, 6 : 87.

Type-species : *Atta providens* Sykes, 1835.

23. *Pheidole roberti* Forel

1902. *Pheidole roberti* Forel, *Rev. Suisse Zool.*, **10** : 182 & 198, S, W.

2003. *Pheidole roberti*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim, (Part 4)* : 484.



Pheidole roberti

Diagnostic characters : S. TL 4.5–5 mm. Bright light red; antennae, legs and abdomen brown; pilosity sparse and scattered; head longitudinally and lightly striate, which posteriorly breaks into reticulation; thorax finely transversely striate; abdomen smooth and shining. Head longer than broad; sides convex; mandibles smooth, polished and shining; clypeus smooth; scape of 12-segmented antennae falling short of the top of head, frontal grooves for reception of scape distinct and finely sculptured within. Thorax anteriorly gibbous; pronotum without lateral tubercles; well marked transverse ridge on mesonotum; narrow metanotum with very long and acute spines. Elongate petiole squamiform; postpetiole transversely oval; abdomen oval.

Material examined : 2 S, 5 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka, Meghalaya, Sikkim.

24. *Pheidole* sp.

Diagnostic characters : S. TL 3.5–4 mm. Head and abdomen brownish black, thorax yellowish brown; head longitudinally finely striate and posteriorly widely punctate. Thorax transversely striate; anterolateral corners of pronotum submargined; mesonotum depressed. Petiole small; postpetiole more than twice broader than petiole, sides sharply angulate.

Material examined : 2 S. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

17. Genus *Pheidologeton* Mayr

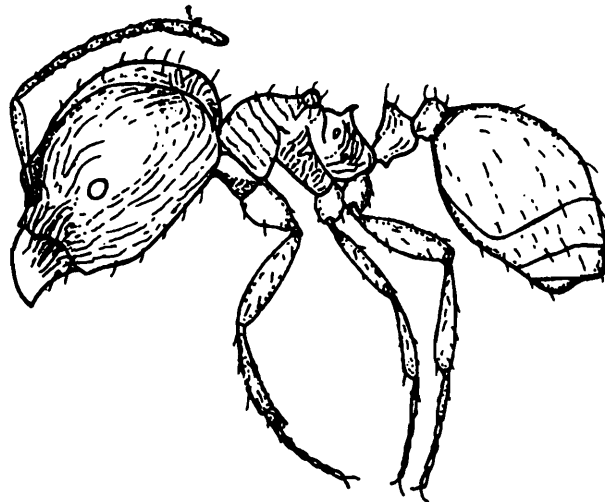
1862. *Pheidologeton* Mayr, *Verh. Zool.-Bot. Ges. Wien*, **12** : 750.

Type species : *Oecodoma diversa* Jerdon, 1851.

25. *Pheidologeton diversus* (Jerdon)

1851. *Oecodoma diversa* Jerdon, *Madras J. Lit. Sci.*, **17** : 109, S, W.

2003. *Pheidologeton diversus*, Tiwari *et al.*, *Zool. Surv. India, State Fauna Seris 9, Fauna of Sikkim (Part 4)* : 486.



Pheidologeton diversus

Diagnostic characters : S. TL 5–10 mm. Dark chestnut brown, antennae and legs lighter in colour; head anteriorly longitudinally striate; the posterior lobes of head, anterior pronotum and basal portion of metanotum transversely striate; petiole rugose; rest of the body smooth and shining. Head rectangular, sides straight, a deep impression down the front which bears

a single large ocellus; mandibles long with 2 teeth on apex of masticatory margin; clypeus narrow, posteriorly clearly defined and rounded; 11-segmented antennae with pubescence; eyes small. Pro and mesonotum of thorax convex; pro-mesonotal suture lightly impressed; scutellum gibbous; metanotum depressed, spines erect long and stout. Petiole thick, subtriangular, upper margin transverse and emarginate, with a stout broad keel on lower side; postpetiole broader than petiole, upper margin rounded; abdomen broadly oval.

Material examined : 2 S, 6 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Karnataka, Kerala, Maharashtra, Sikkim.

Elsewhere : Malaysia, Myanmar.

18. Genus *Recurvidris* Bolton

1992. *Recurvidris* Bolton, *Psyche*, **99** : 36.

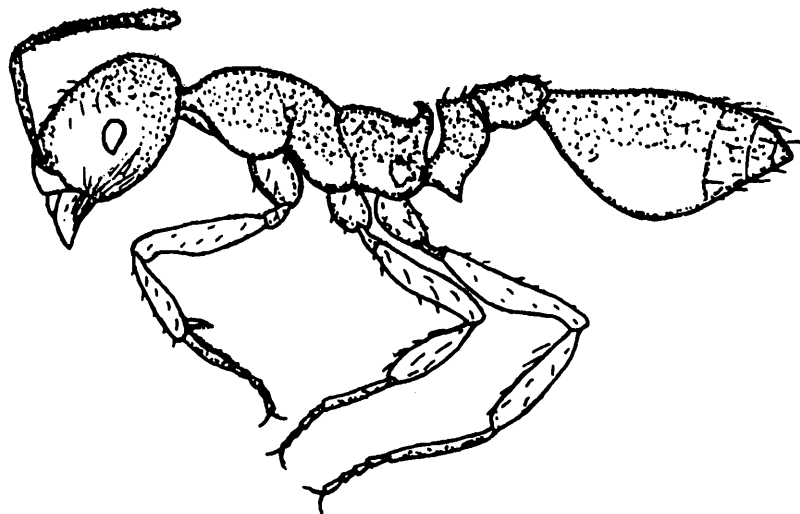
Type-species : *Trigonogaster recurvispinosus* Forel, 1890.

26. *Recurvidris recurvispinosa* (Forel)

1890. *Trigonogaster recurvispinosus* Forel, *Ann. Soc. Ent. Belg., C. R.*, **34** : 109, W.

1992. *Recurvidris recurvispinosa*, Bolton, *Psyche*, **99** : 46.

2000. *Recurvidris recurvispinosa*, Sheela *et al.*, *Rec. zool. Surv. India*, **98** (2) : 95.



Recurvidris recurvispinosa

Diagnostic characters : W. TL 2–2.5 mm. Orange yellow, eyes black, mandibles brown; pubescence almost absent; erect sparse hairs on head, thorax and abdomen. Head elongate, rectangular, anteriorly truncate; narrow mandibles with 4 teeth; vertical clypeus medially bicarinate, anterior margin complete and arched; scape of 11-segmented antennae almost reaching posterior margin of head. Thorax elongate, broad anteriorly; pro-mesonotum forming a single convexity; pro-mesonotal suture absent; meso-metanotal suture deep, emarginate; metanotum dorsally flat, strong spines curved upwards and forwards from their bases. Petiole with long thick peduncle in front with an acute ventral spine, node low and weakly conical, postpetiole reduced, shallow in profile; basal segment of abdomen dorsally flat, strongly convex ventrally.

Material examined : 1 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Assam, Karnataka, Kerala, Tamil Nadu, Uttaranchal.

Elsewhere : China, Hongkong, Japan, Myanmar, Nepal.

19. Genus *Solenopsis* Westwood

1840. *Solenopsis* Westwood, *Ann. Mag. Nat. Hist.*, 6 : 86.

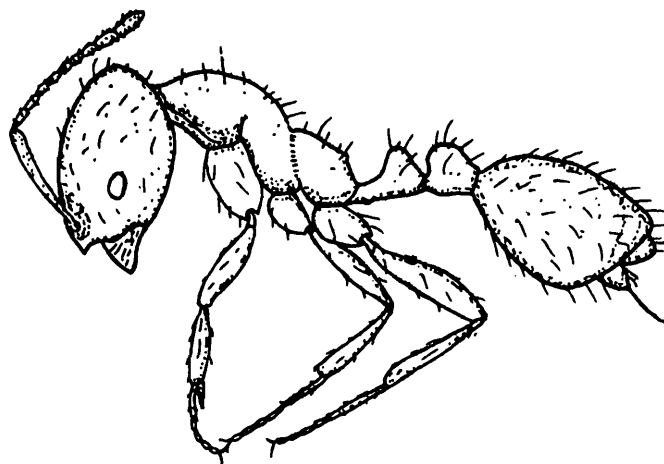
Type species : *Atta geminata* Fabricius, 1804
(= *Solenopsis mandibularis* Westwood, 1841).

27. *Solenopsis geminata* (Fabricius)

1804. *Atta geminata* Fabricius, *Syst. Piez.*, : 423.

1840. *Solenopsis geminata*, Westwood, *Ann. Mag. Nat. Hist.*, 6 : 87.

2003. *Solenopsis geminata*, Tiwari *et al.* *Zool. Surv. India, State Fauna Series 9, Fauna of Sikkim* (Part 4) : 491.



Solenopsis geminata

Diagnostic characters : W. TL 3–4.5 mm. Pale yellow to reddish yellow, abdomen and borders of mandibles marked with brown; smooth and shining. Head square; mandibles short with 4 teeth; middle of clypeus produced back between antennal carinae, apices of each side projected as small teeth beyond anterior margin; antenna 10-segmented. Narrow thorax; pronotum rounded anteriorly; pro-mesonotal suture obsolete; mesonotum convex; meso-metanotal suture deep and emarginated, basal portion of metanotum passing into apical portion by a regular curve. Petiole squamiform, pedunculate anteriorly; postpetiole broader, oval; abdomen oval.

Material examined : 3 S, 25 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Andaman and Nicobar Islands, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu.

Elsewhere : Spread pretty nearly over the tropics of the two hemispheres (Bingham, 1903).

20. Genus *Tetramorium* Mayr

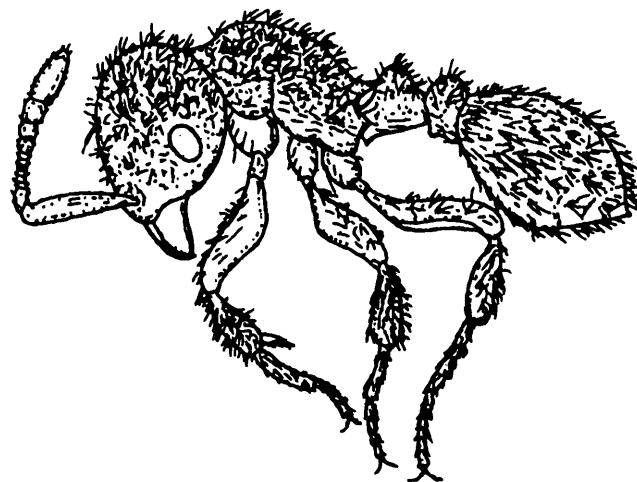
1855. *Tetramorium* Mayr, *Verh. Zool.-Bot. Ges. Wien*, 5 : 423.

Type-species : *Formica caespitum* Linnaeus, 1758.

28. *Tetramorium walshi* (Forel)

1890. *Triglyphohtrix walshi* Forel, *Ann. Soc. Ent. Belg.*, C.R. 34 : 57.

1985. *Tetramorium walshi*, Bolton, *J. Nat. Hist.*, 19 : 247.



Tetramorium walshi

Diagnostic characters : W. TL 2–2.5 mm. Dull brown, abdomen black; mandibles, antennae and legs lighter in colour; whole body longitudinally punctured and reticulate; pilosity very dense and woolly. Head broader posteriorly than in front, posteriorly slightly emarginate; mandibles punctured; scape of 12-segmented antennae not reaching the top of head; antennal grooves broad and shallow; eyes placed in the middle of the sides of head. Thorax short and broad, shorter than head, curved and convex above; metanotal spines acute at apex, pointing obliquely back; apical portion of metanotum shining, laterally carinate. Petiole transverse, much longer than broad, pedunculate anteriorly; abdomen oval.

Material examined : 4 W. India, West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

Distribution : India : West Bengal, Western India.

29. *Tetramorium* sp.

Diagnostic characters : W. TL 2 mm. Light yellow, abdomen with brownish tint; eyes yellowish grey; head striate in front, reticulate posteriorly and on sides; thorax and petiole reticulate; abdomen smooth except some longitudinal striations on extreme base; hairs simple, not trifid. Head rectangular; carinate clypeus, anterior margin entire with slight median depression; frontal carinae long reaching almost upto occipital corners; frontal groove distinct; antennae 12-segmented. Anterior pronotal corners sharply angular; metanotal spines broad, slightly curved upwards. Apical portion of abdomen with triangular lamelliform appendage.

Material examined : 5 W. India : West Bengal, Kolkata, Rabindra Sarovar, December 2001–November 2002.

DISCUSSION

The study shows that the community of ants is rich in this Rabindra Sarovar area. Diversity of the species of ants reveals the fact that ants can withstand the human interferences which is caused mainly due to recreational activities of the local residents. Green grasses, bushes and trees help to maintain their niche to some extent.

29 species under 20 genera of ants recorded from this area indicates that this type of habitat, though within the city, may be considered the abode of insects, ants in particular.

Prolonged and vigorous searching may yield more variation in the species composition of ants of this small and changing habitat. Diversity of species over a small area is the indicator of good environmental health of the place. The floral wealth and undisturbed habitat are very much in need for the diversity. But to make the Sarovar merely a place for recreation, concretization within the Sarovar has already been started. Even tree felling is also seen

frequently. These activities should be restricted to restore the floral and faunal wealth, as well as the virginity and good health of the environment which is beneficial for the city overall.

During that period (December 2001–November 2002) collections were also made from the divider of the side-by road – Southern Avenue, which is one of the busiest roads of Kolkata. The divider is also with full of greens, ornamental bushes and trees, maintained by the Department of Forests, Govt. of West Bengal. Different activities to maintain the garden is inevitable, which was noticed during the time of collection. Moreover, vehicular pressure on the road, to and fro, is considerable. The exhausts from those vehicles come directly on the divider. The lead, mixed in the fuel, and other obnoxious gases and particles of the vehicular exhausts pollute the area which might have adverse effect on the faunal wealth of that place, particularly on the soil dwellers. 17 species of ants under 16 genera are recorded from the collections made from that divider during that period. Though this collecting spot is adjacent to the Sarovar and more or less same type of vegetation is noticed, this less diversification of the species of ants may be the ill-effect of the pollution and anthropogenic disturbances of that area. On the contrary, the population structure of individual species was seen to vary greatly. In that polluted environment also *Solenopsis geminata* was seen to flourish quite well, nearby road to away from it, outnumbering all other species recorded from there. This dominance indicates the ability of that species to withstand the pressure of pollution effectively and to utilize the opportunity of poor-presence of other species of ants.

However, thorough investigation is needed to reach the conclusion properly.

SUMMARY

This paper deals with the ants of Rabindra Sarovar, the Lake of National Importance, situated at the Southern part of Kolkata. 29 species of ants under 20 genera and 5 subfamilies are recorded here with diagnostic characters, keys to subfamilies, genera and species. Among these, description of a new species, *Cardiocondyla tiwarii* is also incorporated.

Moreover, for comparison of the diversity of species of ants between unpolluted and polluted habitats, 17 species of ants under 16 genera and 4 subfamilies are recorded from the divider of side-by road – Southern Avenue, which spot is exposed to constant vehicular pollution, as well as man-made disturbances.

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