

OCCASIONAL PAPER No. 288

**Records of the
Zoological Survey of India**

Ants (Formicidae) of Rajasthan

NEENA TAK

ZOOLOGICAL SURVEY OF INDIA

OCCASIONAL PAPER No. 288

**RECORDS
OF THE
ZOOLOGICAL SURVEY OF INDIA**

Ants (Formicidae) of Rajasthan

NEENA TAK

Desert Regional Station, Zoological Survey of India, Jodhpur

Edited by the Director, Zoological Survey of India, Kolkata



सत्यमेव जयते

**Zoological Survey of India
Kolkata**

CITATION

Tak, Neena, 2008. Ants (Formicidae) of Rajasthan. *Rec. zool. Surv. India, Occ. Paper No., 288* : 1-54. (Published by the Director, *Zool. Surv. India*, Kolkata).

Published : December, 2008

ISBN 978-81-8171-206-6

© Govt. of India, 2008

ALL RIGHTS RESERVED

- No part of this publication may be reproduced stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- This book is sold subject to the condition that it shall not, by way of trade, be lent, resold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which, it is published.
- The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

PRICE

Indian Rs. 200.00

Foreign \$ 15 £ 10

Published at the Publication Division, by the Director, Zoological Survey of India, 234/4 A.J.C. Bose Road, 2nd MSO Building, Nizam Palace (13th floor), Kolkata - 700 020 and printed at Krishna Printing Works, Kolkata - 700 006.

**RECORDS OF THE
ZOOLOGICAL SURVEY OF INDIA
OCCASIONAL PAPER**

No. 288

2008

Pages 1-54

CONTENTS

INTRODUCTION	1
ABBREVIATION USED	3
REVIEW	3
SYSTEMATICS	4
IDENTIFICATION KEY IS BASED ON THE WORKER CASTE OF AN ANT	6
<i>Dorylus (Typhlopone) labiatus</i> Shuckard	8
<i>Dorylus (Alaopone) orientalis</i> Westwood	9
<i>Aenictus (Aenictus) brevicornis</i> worker (♀)	9
<i>Tapinoma (Micromyrma) melanocephalum</i> Fabricius	10
<i>Cerapachys longitarsus</i> Mayr	10
<i>Cerapachys (Cerapachys) risi</i> Forel	11
<i>Anochetus punctiventris</i> Mayr	11
<i>Anochetus taylori</i> Forel	12
<i>Anochetus yerburyi</i> Forel	12
<i>Leptogenys (Lobopelta) processionalis</i> Jerdon	13
<i>Tetraoponera (Tetraoponera) rufonigra</i> Jerdon	13
<i>Crematogaster (Acrocoelia) brunnea</i> var. <i>contemta</i> Mayr	15
<i>Crematogaster (Acrocoelia) rothneyi</i> Mayr	16
<i>Crematogaster (Orthocrema) walshi</i> Forel	16
<i>Meranoplus bicolor</i> Guerin.....	17
<i>Monomorium (Lampromyrmex) atomus</i> Forel	19
<i>Monomorium (Monomorium) latinode</i> Mayr	19
<i>Monomorium (Monomorium) pharaonis</i> Linne	20
<i>Monomorium (Monomorium) wroughtoni</i> Forel	20
<i>Monomorium (Holcomyrmex) criniceps</i> Mayr	21

<i>Monomorium (Holcomymex) glabrum</i> Ern Andre	21
<i>Monomorium (Holcomymex) scabriceps</i> Mayr	22
<i>Monomorium (Parholcomymex) destructor</i> Jerdon	23
<i>Monomorium (Parholcomymex) gracillimum</i> var. <i>mayri</i> Forel.....	23
<i>Monomorium (Xeromyrmex) salomonis indicum</i> Forel	24
<i>Monomorium (Xeromyrmex) longi</i> Forel.....	25
<i>Monomorium sagei</i> Forel	26
<i>Solenopsis geminata</i> Fabricius	26
<i>Messor barbarus</i> subsp. <i>himalayana</i> Forel.....	27
<i>Pheidole (Pheidole) sulcaticeps</i> Roger	28
<i>Pheidole (Pheidole) wroughtoni</i> Forel	28
<i>Pheidologeton affinis</i> Jerdon	29
<i>Tetramorium walshi</i> Forel	30
<i>Camponotus (Dinomyrmex) angusticollis</i> Jerdon	32
<i>Camponotus (Tanaemyrmex) compressus</i> Fabricius	33
<i>Camponotus (Tanaemyrmex) irritans</i> Fred. Smith	34
<i>Camponotus (Tanaemyrmex) carin</i> Emery	35
<i>Camponotus (Tanaemyrmex) mitis</i> Smith	35
<i>Camponotus (Tanaemyrmex) invidus</i> Forel.....	35
<i>Camponotus (Tanaemyrmex) taylori</i> Forel.....	36
<i>Camponotus (Tanaemyrmex) variegatus</i> Smith	36
<i>Camponotus dichrous</i> Forel	37
<i>Camponotus (Orthonotomyrmex) sericeus</i> Fabricius.....	37
<i>Polyrhachis (Myrmhopla) simplex</i> Mayr	38
<i>Cataglyphis bicolor setipes</i> Emery	38
<i>Oecophylla smaragdina</i> Fabricius	39
<i>Paratrechina taylori</i> Forel	40
<i>Acantholepis frauenfeldi</i> Emery.....	41
<i>Anoplolepis jerdoni</i> Forel.....	42
SUMMARY	42
ACKNOWLEDGEMENT	42
REFERENCES	43

INTRODUCTION

Rajasthan is the second largest state of India (3,42,239 Sq.Kms.) situated in the north-western part of Indian Union (23°31' and 30°11' North latitude and 69°29' and 78°17' East longitude) is largely an arid state for most of its part. The tropic of cancer passes through south of Banswara town. Presenting an irregular rhomboid shape, the state has a maximum length of 869 kms. from west to east and 826 kms. from north to south. The western boundary of the state is part of the Indo-Pak international boundary, running to an extent of 1,070 kms. It touches four main districts of the region, namely Barmer, Jaisalmer, Bikaner and Ganganagar. The state is girdled by Punjab and Haryana states in the north, Uttar Pradesh in the east, Madhya Pradesh in the south-east and Gujarat in the south-west.

The presence of Great Indian Thar Desert in its western position makes Rajasthan a unique state of India. Annual rainfall varies from 100mm in Jaisalmer to 1000mm in Jhalawar. Marked variations in diurnal and seasonal range of temperature occurs at all places in the state, exhibiting the most characteristic phenomenon of warm dry continental climate (49°C in Summer to even less than 2°C in Winter). Vegetation can be divided into two distinct groups one comprising the arid vegetation falling into western parts of the state while other belonging to semi-arid to sub-humid one of eastern and southern Rajasthan. Main crops of the state are millet, sorghum, maize, guar, paddy, wheat and barley. South West (Mt. Abu) however receives the highest rainfall in the state.

The state has been administratively divided into following districts of Rajasthan :

- | | | |
|--------------------|---------------|----------------|
| 1. Ajmer | 2. Alwar | 3. Banswara |
| 4. Baran | 5. Barmer | 6. Bharatpur |
| 7. Bhilwara | 8. Bikaner | 9. Bundi |
| 10. Chittorgarh | 11. Churu | 12. Dausa |
| 13. Dholpur | 14. Dungarpur | 15. Ganganagar |
| 16. Hanumangarh | 17. Jaipur | 18. Jaisalmer |
| 19. Jalore | 20. Jhalawar | 21. Jhunjhunu |
| 22. Jodhpur | 23. Karauli | 24. Kota |
| 25. Nagaur | 26. Pali | 27. Rajsamand |
| 28. Sawai Madhopur | 29. Sikar | 30. Sirohi |
| 31. Tonk | 32. Udaipur | |

Among all the wide variety of insect life on the earth, ants are one of the few forms universally recognised. This is because they are found in all terrestrial habitats from swamp to harsh desert, from sea coast to great altitude and from deep in the soil to the tips of the highest trees. Their morphology is varied as their habitat preference and their range of life is enormous.

Ants have the most highly organised social life among all the insects. The major factor responsible for their ecological success is division of labour, performing different biological functions. Ants live in highly organised and integrated units the societies or colonies. Bingham's (1903) fauna is the main source of knowledge on ants. Rothney (1889) published an extensive note on ants of Bengal whereas Wroughton (1892) provided a good account on Formicidae mainly from Maharashtra. Chapman and Capco (1951) published a checklist of the ants of Asia. Roonwal (1975) discussed the plant pest status of *Dorylus orientalis*. Chhotani and Ray (1976) described the hymenopterous fauna of Rajasthan. Mukherji (1925), Chhotani and Maiti (1977) worked on the ants of Andaman Islands. Pajni and Suri (1978) reported the Formicid Fauna of Chandigarh. Mathew (1980, 1983, 1984, 2000) dealt with the ants of North-east India. Sharma (1981) gave a short note on the ants of desert area. Gadagkar (1983) gave the Species richness and diversity of Western Ghats, Karnataka. Ali (1991, 1992) reported the ants fauna of Karnataka. Tiwari (1994, 1997, 1998, 2002, 2003) has worked on ants of South India, Delhi, Orissa, West Bengal and Sikkim. Sunil Kumar (1997) worked the ant species richness of Bangalore whereas Rastogi gave the observations on ants Bharti (2001, 2002) has given a Checklist of ants of Northwest India. Tak (1995, 1996, 2000, 2004) has dealt with the ants of Gujarat and Rajasthan. Varghese (2003) has studied the ants of Indian Institute of Science Campus, Bangalore. Ghosh 2005 has worked out the ants of Rabindra Sarovar, Kolkata. Bolton (1995) has dealt with taxonomic and zoogeographical census of the extant ant taxa (Hymenoptera : Formicidae).

The present studies are based on the material collected by Dr. M.L. Roonwal, Dr. N.S. Rathore, Dr. S. Kumar, Dr. Ram Sewak, Dr. R.C. Sharma, Dr. R.N. Bhargava, Dr. K.C. Kansal, Dr. A.K. Datta, Dr. M. Hayat, Dr. Y.P. Sinha, Dr. P.D. Gupta, Dr. K.V. Surya Rao, Dr. V.C. Agarwal, Dr. P.C. Tak, Dr. L.S. Rathore, Dr. K.V. Rama Rao, Shri G.L. Purohit, Dr. V. Sharma, Shri M.G. Chouhan, Dr. P.S. Kataria, Shri Motilal, Thar Desert Project staff and Z.S.I. parties. I am thankful to all of them.

ABBREVIATION USED

Ram Sewak	: R.S.	M.L. Roonwal	: M.L.R.
R.N. Bhargava	: R.N.B.	P.D. Gupta	: P.D.G.
N.S. Rathore	: N.S.R.	R.C. Sharma	: R.C.S.
Thar Descart Project Staff	: T.D.P.S.	Vinita Sharma	: V.S.
K.C. Kansal	: K.C.K.	K.V. Surya Rao	: K.V.S.R.
Motilal	: M.L.	V.C. Agarwal	: V.C.A.
G.L. Purohit	: G.L.P.	P.S. Kataria	: P.S.K.
A.K. Datta	: A.K.D.	P.C. Tak	: P.C.T.
M. Hayat	: M.H.	M.G. Chouhan	: M.G.C.
Y.P. Sinha	: Y.P.S.	L.S. Rathore	: L.S.R.
Z.S.I. Party	: Z.S.I.P.	K.V. Rama Rao	: K.V.R.R.
S. Kumar	: S.K.	N. Tak	: N.T.

REVIEW

The manuscript deals with 51 ants species distributed under 22 genera and eight subfamilies viz. Dorylinae, Aenictinae, Dolichoderinae, Cerapachyinae, Ponerinae, Pseudomyrmecinae, Myrmicinae and Formicinae of Family Formicidae of Order Hymenoptera. While working on Ants of Rajasthan I have come to the conclusion that *Dorylus labiatus* Shuckard of subfamily Dorylinae, *Tapinoma melanocephalum* Fabricius of sub-family Dolichoderinae, *Tetraponera rufonigra* Jerdon of sub-family Pseudomyrmecinae, *Monomorium glabrum*, Ern Andre, *Monomorium scabriceps* Mayr, *Monomorium gracillimum* var. *mayri* Forel, *Monomorium salomonis* race *indicum* Forel, *Messor barbarus* subsp. *himalayana* Forel of sub-family Myrmicinae, *Cataglyphis bicolor setipes* Emery and *Acantholepis frauenfeldi* Emery of sub-family Formicinae are found in abundance.

Out of 51 species of ants eight species of Ranthambore National Park, Sawai Madhopur are new records from Rajasthan.

SYSTEMATICS

Order HYMENOPTERA

Family FORMICIDAE

Sub-family DORYLINAЕ Leach

Tribe **Dorylini** Fabricius

1. *Dorylus (Typhlopone) labiatus* Shuckard
2. *Dorylus (Alaopone) orientalis* Westwood

Sub-family AENICTINAE

Tribe **Ecitonini** Forel

3. *Aenictus (Aenictus) brevicornis* Mayr

Sub-family DOLICHODERINAE Forel

Tribe **Tapinomini** Emery

4. *Tapinoma (Micromyrma) melanocephalum* Fabricius

Sub-family CERAPACHYINAE Forel

Tribe **Cerapachini** Forel

5. *Cerapachys longitarsus* Mayr
6. *Cerapachys (Cerapachys) risi* Forel

Sub-family PONERINAE Lepeletier

Tribe **Odontomachini** Mayr

7. *Anochetus punctiventris* Mayr
8. *Anochetus taylori* Forel
9. *Anochetus yerburyi* Forel

Tribe **Leptogenyini** Forel

10. *Leptogenys (Lobopelta) processionalis* Jerdon

Sub-family PSEUDOMYRMECINAE Emery

Tribe **Pseudomyrmecini** Forel

11. *Tetraoponera (Tetraoponera) rufonigra* Jerdon

Sub-family MYRMICINAE Lepeletier
Tribe **Crematogasterini** Emery

12. *Crematogaster (Acrocoelia) brunnea* var. *contemta* Mayr
13. *Crematogaster (Acrocoelia) rothneyi* Mayr
14. *Crematogaster (Orthocrema) walshi* Forel

Tribe **Meranoplini** Emery

15. *Meranoplus bicolor* Guerin

Tribe **Solenopsidini** Forel

16. *Monomorium (Lampromyrmex) atomus* Forel
17. *Monomorium (Monomorium) latinode* Mayr
18. *Monomorium (Monomorium) pharaonis* Linne
19. *Monomorium (Monomorium) wroughtoni* Forel
20. *Monomorium (Holcomyrmex) criniceps* Mayr
21. *Monomorium (Holcomyrmex) glabrum* Ern Andre
22. *Monomorium (Holcomyrmex) scabriceps* Mayr
23. *Monomorium (Parholcomyrmex) destructor* Jerdon
24. *Monomorium (Parholcomyrmex) gracillimum* var. *mayri* Forel
25. *Monomorium (Xeromyrmex) salomonis indicum* Forel
26. *Monomorium (Xeromyrmex) longi* Forel
27. *Monomorium sagei* Forel
28. *Solenopsis geminata* Fabricius

Tribe **Pheidolini** Emery

29. *Messor baabarus* subsp. *himalayana* Forel
30. *Pheidole (Pheidole) sulcaticeps* Roger
31. *Pheidole (Pheidole) wroughtoni* Forel

Tribe **Pheidologetini** Emery

32. *Pheidologeton affinis* Jerdon

Tribe **Tetramorini** Emery

33. *Tetramorium salvatum* Forel
34. *Tetramorium walshi* Forel

Sub-family FORMICINAE
Tribe Camponotini Forel

35. *Camponotus (Dinomyrmex) angusticollis* Jerdon
36. *Camponotus (Tanaemyrmex) compressus* Fabricius
37. *Camponotus (Tanaemyrmex) irritans* Fred-Smith.
38. *Camponotus (Tanaemyrmex) carin* Emery
39. *Camponotus (Tanaemyrmex) mitis* Smith
40. *Camponotus (Tanaemyrmex) invidus* Forel
41. *Camponotus (Tanaemyrmex) taylori* Forel
42. *Camponotus (Tanaemyrmex) variegatus* Smith
43. *Camponotus dichrous* Forel
44. *Camponotus (Orthonotomyrmex) sericeus* Fabricius
45. *Polyrhachis (Myrmhopla) simplex* Mayr

Tribe Formicini Forel

46. *Cataglyphis bicolor setipes* Emery

Tribe Oecophyllini Forel

47. *Oecophylla smaragdina* Fabricius

Tribe Prenolepidini Forel

48. *Paratrechina longicornis* Latreille
49. *Paratrechina taylori* Forel

Tribe Plagiolepidini Forel

50. *Acantholepis frauenfeldi* Emery
51. *Anoplolepis jerdoni* Forel

Ants are polymorphic social insects having three distinct forms – the perfect and fertile female (♀), the male (♂) and worker (♀) major or minor. The largest forms are soldiers. Identification of ants is mainly based on the worker caste of ants.

IDENTIFICATION KEY IS BASED ON THE WORKER CASTE OF AN ANT

Key to the subfamilies of family FORMICIDAE

1. Petiole of the abdomen one or two jointed
1. A more or less marked constriction between basal two segment of abdomen Petiole one jointed

- i) Frontal lobe very narrow so that the antennal sockets are completely visible in frontal view Subfamily **CERAPACHINAE**
- ii) Frontal lobe not narrow so, that the antennal sockets are not visible in frontal view Subfamily **PONERINAE**

2. No constriction between basal two segment of abdomen.

- i) Opening at posterior end of gaster (acidopore) slit like.
 - a. Eyes never present, blind
 - a₁ Petiole one jointed subfamily **DORYLINAE**.
 - a₂ Petiole two jointed subfamily **AENICTINAE**.
 - b. Eyes always present Petiole one jointed subfamily **DOLICHODERINAE**.
- ii) Opening at posterior end of gaster (acidopore) terminal, circular and usually surrounded by a fringe of hairs. Petiole one jointed subfamily **FORMICINAE**.

II Petiole of the abdomen two jointed

- i) Petiole remarkably elongate, generally the anterior node is elongated petiolate, sometimes the posterior node is also petiolate, giving flexibility to the abdomen subfamily **PSUEDOMYRMECINAE**.
- ii) Petiole not so elongate, the anterior node with a long petiole anteriorly and a short petiole posteriorly subfamily **MYRMICINAE**

Subfamily **PONERINAE**

Key to genera of the subfamily PONERINAE

Petiole free with a flexible joint between it and the abdomen

- i) Mandibles articulated close together in middle of front margin of head genus ***Anochetus***
- ii) Mandibles articulated wide apart at the lateral angles of front margin of head genus ***Leptogenys***

Key to species of the genus *Anochetus*

A. Basal abdominal segments closely punctured, opaque.

- i) Punctures on head and alitrunk more distinct not running into longitudinal striae ..
..... ***A. punctiventris***

B. Basal abdominal segment smooth, shining not opaque.

i) Pro-meso and metanotum not striate *A yerburyi*

ii) Pro-, meso-and metanotum striate *A. taylori*

Family FORMICIDAE
Sub-Family DORYLINAE Leach
Tribe Dorylini Forel

Genus *Dorylus* Fabricius
Dorylus (Typhlopone) labiatus Shuckard

1940. *Dorylus (Typhlopone) labiatus* Shuckard, *Ann. Mag. Nat. Hist.*, 5 : 319, Male.

Material Examined : Workers : Alwar District 12 exs., Nagali Sahajpur, 15.9.2001, 10 exs., Near Karoli dam, 18.09.01, R.S. Coll., Barmer 19 exs., Bothia village, 16.7.1980, R.N.B., Coll., 25 exs., Harsani village, 19.7.1995, N.S.R., Coll., 10 exs., 3.9.03, T.D.P.S., Coll., Bundi 30 exs., Rameshwar, 15.4.2001, N.S.R. & R.S., Coll., Ganganagar 10 exs., 16.7.1966, Z.S.I.P., Coll., Jalore 12 exs., 26.8.03, T.D.P.S., Coll., Jodhpur Many exs., Near Khagra dam, 8.1.63, 24 exs., Ratanada Jodhpur, 18.3.63, K.C.K., Coll., Many exs., Jodhpur, 25.3.63, M.L., Coll., 2 exs., Timori ka nada, 24.3.63, A.K.D., Coll., 8 exs., Bishalpur, 10.8.71, R.N.B., Coll., 6 exs., Surpura, 7.10.78, N.S.R., Coll., 6 exs., Agolai, 27.7.79, R.N.B., Coll., Karauli 20 exs., Keoladevi area, 3.9.2001, R.S., Coll., 2 exs., Near Panchla dam, 11.9.2001, N.S.R. Coll., Kota 1 exs., Dak Bungalow, 18.1.75, Y.P.S., Coll., 8 exs., Kalipur, 13.4.2001, N.S.R. & R.S., Coll. Sawai Madhopur (Ranthambore National Park) : 9 exs., Anaptura, 4.11.2000, 30 exs, Lahpur dam, 6.11.2000, N.S.R., Coll., Sikar 10 exs., Harhparwat, 13.9.2002, R.S., Coll., Udaipur Many exs., Near Pichola lake, 31.3.1997, N.S.R. & S.K., Coll.

Diagnostic characters : Length Worker maj. 6-8 mm; Worker min. 3.5 Worker (maj) : Castaneous yellow, polished smooth, shining and blind. Head rectangular, longer than its breadth, broader in front than posteriorly. No longitudinally impressed line on the head. Mandible with two teeth. Antennae worker maj. 11 and worker min. 10 jointed. Alitrunk rectangular depressed slightly constricted at the pro-mesonotal suture. Node of petiole longer than its breadth.

Distribution : India : Rajasthan – Alwar, Barmer, Bundi, Ganganagar, Jalore, Jodhpur, Karauli, Kota, Sawai Madhopur, Sikar and Udaipur; Gujarat, Maharashtra, Chandigarh, Karnataka, Punjab, Dehli, West Bengal, Orissa, Sikkim, Manipur, Uttar Pradesh, Himachal Pradesh.

Elsewhere : Myanmar, Countries East of Bay of Bengal.

Sub-Family DORYLINAE Leach
Tribe Dorylini Forel

Genus *Dorylus* Fabricius
Dorylus (Alaopone) orientalis Westwood

1985. *Dorylus (Alaopone) orientalis* Westwood, *Proc. Zool. Soc. Lond.*, 3 : 72, Male.

Material Examined : Workers : Udaipur 1 ex., Near Pichola lake, 10.3.1995, NSR & S.K., Coll., Jaisalmer 1 ex., 22.7.1995, N.S.R., Coll.

Diagnostic characters : Length Worker maj. : 5.5 mm. Worker (maj) : Castaneous brown with the abdomen generally lighter in colour than the head and alitrunk. Head rectangular occiput deeply emarginate, the head slightly wider anteriorly than posteriorly. A deeply impressed medial line present on the head. Alitrunk elongate, rounded anteriorly depressed and flat above, constricted at the pro-mesonotal suture. Node of the petiole broader than long, united with the abdomen.

Distribution : India : Rajasthan – Udaipur, Jaisalmer; Gujarat, Maharashtra, West Bengal, Uttar Pradesh, Assam, Karnataka, Kerala, Tamil-Nadu, Chandigarh, Orissa, Punjab, Meghalaya, Delhi, Sikkim.

Elsewhere : Sri Lanka, Nepal, China, Malay-Peninsula, Myanmar, Indonesia.

Sub-Family AENICTINAE
Tribe Ecitonini Forel

Genus *Aenictus* Shuckard Mayr
Aenictus (Aenictus) brevicornis worker (♀)

1878. *Aenictus (Acnictus) brevicornis* Mayr (*Typhlatta*) *Verh. zool. bot. Ges. Wien*, 28 : 668 & 669.

1901. Forel, *J. Bombay nat. Hist. Soc.*, 13 : 446, worker.

Material Examined : Workers : Dungarpur 8 exs., Gap sagar, 21.8.84, N.S.R., Coll.

Diagnostic Characters : Length Worker : 2.5-3 mm. Worker : Reddish yellow, head smooth and shining, alitrunk sculptured. Head rectangular very broad posteriorly, mandibles with three distinct teeth. Antennae very short and massive. Scape of the antennae about half length of the head. Alitrunk narrower than the head, pronotum convex smooth and shining basal portion of the metanotum passing by a gradual curve with sloping apical portion. Nodes of petiole rounded shining. Abdomen elongate oval.

Distribution : India : Rajasthan – Dungarpur; Gujarat, Maharashtra, Chandigarh, Karnataka, Kerala, West Bengal, Uttar Pradesh, Meghalaya, Tamil-Nadu, Assam, N.W. Provinces.

Sub-Family DOLICHODERINAE Forel
Tribe Tapinomini Emery
Genus *Tapinoma* Forster

***Tapinoma (Micromyrma) melanocephalum* Fabricius**

1793. *Tapinoma (Micromyrma) melanocephalum* Fabricius, *Ent. Syst.*, 2 : 353, (*Formica melanocephala*).

Material Examined : Workers : Alwar 20 exs., Rajgarh, 17.9.2001, R.S., Coll., Bharatpur 5 exs., Kumer, 20.6.83, N.S.R., Coll., Dungarpur 6 exs., Gapsagar, 21.8.84, N.S.R., Coll., Jodhpur Many exs., 5.10.82, M.L.R., Coll., Many exs., Paota, 31.5.93, N.S.R., Coll., Kota 1 ex., Jagpura, 12.4.2001, N.S.R., Coll., Sawai Madhopur 1 ex., Anaptura, 4.11.2000, N.S.R., Coll., 15 exs., Dundarmar, 1.4.2001, N.S.R. & R.S., Coll., Udaipur 5 exs., Near Pichola lake, 3.4.1996, N.S.R. & S.K., Coll.

Diagnostic characters : Length Worker : 1.5 mm. Worker : Head and alitrunk dark brown in colour abdomen yellowish white. Head longer than broad. Oval, not emarginate, rounded posteriorly. Mandibles triangular broad with the masticatory margin equal to the outer margin and armed with minute teeth. Clypeus evenly convex, broader than high, its anterior margin slightly arched. Antennae thick the scape extending beyond the top of the head. The joints of the flagellum longer than broad. Alitrunk viewed from the side not emarginate, the pro-meso and meso-metanotal sutures distinct slightly constricted at the latter suture. Petiole with a distinct node. Base of the abdomen overhanging the pedicel.

Distribution : India : Rajasthan—Alwar, Bharatpur, Dungarpur, Jodhpur, Kota, Sawai Madhopur and Udaipur; Gujarat, Maharashtra, Meghalaya, Tripura, Chandigarh, Karnataka, Tamil-Nadu, West Bengal, Orissa.

Elsewhere : Spread through both the hemispheres, S. America

Sub-Family Cerapachyinae Forel
Tribe Cerapachyini Forel
Genus *Cerapachys* Smith

Species of the Genus *Cerapachys*

1. Eyes remarkably large, lateral, placed below middle of head *longitarsus*
2. Eyes small, lateral, placed about or above middle of head *risi*

***Cerapachys longitarsus* Mayr**

1878. *Lioponera longitarsus* Mayr, *Verh. zool. -bot. Ges. Wien*, 28 : 667, Worker, Female.

Material Examined : Workers : Udaipur 4 exs., Near Pichola lake, 9.9.1994, N.S.R. & S.K., Coll.

Diagnostic Characters : Length Worker : 4mm Head and abdomen black, alitrunk, pedicel and legs brownish red Mandibles triangular, masticatory margin broad, obsolete dentate antennae 12 - jointed, subapical joint of the flagellum longer than broad. Eyes rounded and proportionately very large. Alitrunk short, pro-meso and meso-metanotal sutures obsolete. Petiole one jointed, node slightly convex above, broader than long, Abdomen longer than the alitrunk, the constriction between the basal two segments very deep.

Distribution : India : Rajasthan–Udaipur; Maharashtra, Meghalaya, Kerala, West Bengal, Karnataka.

Elsewhere : Sumatra.

Sub-Family CERAPACHYINAE Forel
Tribe Cerapachyini Forel

Genus *Cerapachys* Smith
Cerapachys (Cerapachys) risi Forel

1892. *Cerapachys (Cerapachys) risi* Forel, Grandidieer *Hist. Nat. Phy. Madagascar*, 20 : 244, mota, worker.

Material Examined : Workers : Udaipur 10 exs., Near Pichola lake, 9.3.1995, N.S.R. & S.K., Coll.

Diagnostic Characters : Length Worker : 5.5 to 6.5 mm. Black and shining, the whole body is covered rather abundantly with fine long erect yellowish hairs, most dense towards the apex of the abdomen. Head convex in front, slightly narrower posteriorly. Mandibles triangular, masticatory margin obsolete dentate. Antennae 12-jointed, the apical joint of flagellum distinctly much longer than preceding three joints. Alitrunk strongly rounded, and convex above, the posterior face of the metanotum flat. Petiole one jointed, node longer than broad convex above, rounded posteriorly. Abdomen elongate the constriction between the basal two segments broad and well marked.

Distribution : India : Rajasthan–Udaipur; Sikkim, Punjab, Haryana, Meghalaya.

Sub-Family PONERINAE Lepeletier
Tribe Odontomachini Mayr

Genus *Anochetus* Mayr
Anochetus punctiventris Mayr

1878. *Anochetus punctiventris* Mayr, *Verh. zool. -bot. Ges. Wien*, 28 : 659, worker.

Material Examined : Workers : Jodhpur 2 exs., 13.6.73, N.S.R., Coll., 1 ex., 14.8.79, P.D.G., Coll.

Diagnostic Characters : Length Worker 3.5–4 mm. Worker Brownish, the abdomen a little dark in colour. Head convex in front, posteriorly a little emarginate. Mandibles placed very close together in the middle of the front of the head, elongate parallel the apex bent suddenly at right with three teeth, the intermediate tooth very small. Antennal carinae short, wide apart covering the base of the antennae. Antennae 12 jointed filiform. Alitrunk densely punctured, obliquely truncate posteriorly. Node of the petiole ovate rounded above smooth. Abdomen stout.

Distribution : India : Rajasthan–Jodhpur; Gujarat, Maharashtra, West Bengal, Sikkim, Meghalaya, Southern India.

Elsewhere : China.

Sub-Family PONERINAE Lepeletier
Tribe Odontomachini Mayr

Genus *Anochetus* Mayr
Anochetus taylori Forel

1990. *Anochetus taylori* Forel, *J. Bombay nat. Hist. Soc.*, xiii : 60 & 63, worker.

Material Examined : Workers : Sawai Madhopur 3 exs., Ranthambore National Park, 30.11.99, R.S., Coll.

Diagnostic characters : Length worker : 4.8 mm. Worker : Dark castaneous brown, shining. Head, alitrunk and abdomen covered with scattered erect pale hairs. Head irregularly rectangular, posteriorly constricted, mandibles placed very close together in the middle of the front of the head. Mandibles tridentate at apex, the intermediate tooth very small. Antennal carinae short, wide apart, covering the base of the antennae. Antennae 12 jointed, filiform. Alitrunk broad and convex in front, rounded and slightly compressed posteriorly, the pronotum constricted into neck anteriorly, the metanotum truncate posteriorly. Node of the petiole smooth, thick, convex in front, flat almost concave posteriorly.

Distribution : India : Rajasthan–Sawai Madhopur; Gujarat, Maharashtra, Karnataka, Tamil Nadu, Orissa, Western India.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family PONERINAE Lepeletier
Tribe Odontomachini Mayr

Genus *Anochetus* Mayr
Anochetus yerburyi Forel

1900. *Anochetus yerburyi* Forel, *J. Bombay nat. Hist. Soc.*, xiii : 59 & 62, worker.

Material Examined : Workers : Sawai Madhopur 2 exs., Malik talab, 3.11.2000, N.S.R., Coll.

Diagnostic characters : Length Worker 4–4.5 mm. Worker: Head with mandibles, antennae and legs testaceous yellow, alitrunk and abdomen light shining castaneous red. Head smooth convex in front, fan shaped area faintly longitudinally striate, posteriorly not so deeply emarginate. Mandibles placed very close together in the middle of the front of the head. Mandibles tridentate at apex, the intermediate tooth very small. Antennae 12-jointed Alitrunk somewhat coarsely longitudinally rugose in front the meso and metanotum punctate. Petiole one jointed and flat, slightly convex in front, the margin is subacute and rounded Abdomen smooth and shining with the base punctured.

Distribution : India : Rajasthan–Sawai Madhopur; Karnataka.

Elsewhere : Sri Lanka.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family PONERINAE Lepeletier
Tribe Leptogenyini Forel

Genus *Leptogenys* Roger
Leptogenys (Lobopelta) processionalis Jerdon

1951. *Leptogenys (Lobopelta) processionalis* Jerdon, *Madras Jour. Lit. Sc.*, 17 : 118, worker (Ponera)

Material Examined : Workers : Dungarpur 12 exs., Gap sagar, 21.8.84, N.S.R., Coll.

Diagnostic characters : Length worker : 8-9 mm. Worker Dark castaneous brown, smooth polished and shining. Head broad, rectangular as broad posteriorly as in front. Mandibles broad, longitudinally striate armed at the apex with four unequal teeth and denticulate along the inner margin. Antennal carinae short very close together, antennae stout, the scape just passing the top of the head, Alitrunk slightly narrower than the head, pro-meso and meso-metanotal sutures deeply marked. Claws pectinate. Node of petiole convex in front, flat posteriorly, abdomen massive.

Distribution : India : Rajasthan–Dungarpur; Gujarat, Tamil Nadu, Kerala, Karnataka, West Bengal, Meghalaya, Orissa.

Elsewhere : Sri Lanka.

Sub-Family PSEUDOMYRMECINAE Emery
Tribe Pseudomyrmecini Forel

Genus *Tetraponera* Smith
Tetraponera (Tetraponera) rufonigra Jerdon

1851. *Tetraponera (Tetraponera) rufonigra* Jerdon, *Madras Jour. Lit. Sc.*, 12 : 111, Worker (*Eciton rufonigrum*).

Material Examined : Workers : Baran 12 exs., Kelwada, 4.4.2001, N.S.R., Coll., Bhilwara 6 exs., Meja dam-Mandal, 18.4.2001, N.S.R. & R.S., Coll., 25 exs., Ladpura, 18.4.2001, N.S.R. & R.S., Coll., Bundi 16 exs., Rameshwar, 15.4.2001, N.S.R. & R.S., Coll., Dausa 2 exs., Salempura, 20.9.2002, R.S., Coll., Dungarpur 5 exs., 20.8.84, N.S.R., Coll., 6 exs., Gap-sagar, 21.8.84, N.S.R., Coll., Jodhpur 2 exs., 28.6.74, Y.P.S., Coll., Sawai Madhopur 3 exs., Near fakira talab, 30.3.2001, N.S.R. & R.S., Coll.

Diagnostic characters : Length worker : 12 mm. Worker : Head, 2nd joint of petiole black, the mandibles, antennae, alitrunk and 1st joint of the petiole more or less red. Head rectangular, a little longer than broad and slightly narrow in front then posteriorly. Mandibles with six teeth. Clypeus transverse, narrow raised in the middle which is slightly produced, giving the anterior margin a bisinuate appearance. Antennae short and stout, 12 segmented. Ocelli present. Alitrunk elongate, the pronotum broad its anterior lateral angles dentate, a medial, small longitudinal tubercle at its posterior margin, small longitudinal tubercle at its posterior margin, promesonotal suture arched to the front, mesonotum small flat, a deep emargination at the meso-metanotal suture. Metanotum longer than the pro and meso together. Petiole elongate, the 1st node oval with a long petiole, 2nd node conical with a short petiole.

Distribution : India : Rajasthan-Baran, Bhilwara, Bundi, Dausa, Dungarpur, Jodhpur, Sawai Madhopur; Gujarat, Tripura, Chandigarh, Karnataka, Tamil Nadu, Kerala, Punjab, Haryana, Uttar Pradesh, Himachal Pradesh, Meghalaya, West Bengal, Orissa, Manipur.

Elsewhere : Myanmar, Sri Lanka, China, Singapore, Indonesia, Cambodia, Java, Sumatra.

Subfamily MYRMICINAE

Key to genera of Subfamily MYRMICINAE

A. Antennae with less than 12 joints.

- i) Antennae 11 jointed. Metanotum armed with two spines. Petiole attached to dorsal surface of abdomen ***Crematogaster***
- ii) Antennae 9-jointed. Pronotum and metanotum armed with two teeth. Petiole attached to the middle of abdomen ***Meranoplus***
- iii) Antennae 10-jointed. Metanotum unarmed. Petiole attached to the middle of abdomen ***Solenopsis***

B. Antennae 12-jointed

- i) Clypeus bicarinate ***Monomorium***

ii) Clypeus not bicarinate

- a) Mandibles with or without teeth. Neuters or workers strongly dimorphous *Pheidole*
- b) Mandibles with 5-7 teeth. Workers monomorphous *Tetramorium*

Species of Crematogaster

1) Head smooth and shining with a few striae anteriorly, Club of flagellum of antennae 3 jointed.

- i) Metanotal spines stout, acute, curved a little downwards and inwards *C. contemta*
- ii) Pronotum sculptured *C. walshi*

2. Head not smooth entirely sculptured.

- i) Metanotal spines very thick at base, apex directed backwards and inwards *C. rothneyi*

Sub-Family MYRMICINAE Lepeletier
Tribe Crematogasterini Emery

Genus *Crematogaster* Lund*Crematogaster (Acrocoelia) brunnea* var. *contemta* Mayr

1878. *Crematogaster (Acrocoelia) brunnea* var. *contemta* Mayr, *Verh. zool. -bot. Ges. Wien*, 28 : 681, Worker (*C. contemta*).

Material Examined : Workers : Barmer 10 exs., Balewa village, 18.7.1995, N.S.R., Coll., Banswara 20 exs, Lauda village, 24.8.84, N.S.R., Coll., Jaisalmer 5 exs., Nahar Singh ki dhani, 6.2.1995, N.S.R., Coll., Jhunjhunu 2 exs., 22.2.1961, Z.S.I.P., Coll.

Diagnostic characters : Length Worker : 3.5 –4 mm. Worker : Shining chestnut red, abdomen darkening posteriorly into dark brown, the base being chestnut red. Head very highly polished and shining, very globose and strongly convex in front thick and narrow longitudinally striate at base, the masticatory margin with generally 4 teeth. Antennae 11 jointed the club formed of the apical three joint, Alitrunk the pronotum convex anteriorly with the lateral angles very prominent, mesonotum slightly oblique, longer than broad, meso-metanotal suture broad and very well marked, basal portion of metanotum slightly oblique steeply sloped, metanotal spines short acute, curved a little downward and inwards and placed on the sides a little down the oblique sloping portion of the metanotum. Petiole the

1st joint widened transversely concave and with a small rounded tubercle at apex above; 2nd joint short, longitudinally furrowed, the furrow widening posteriorly. Abdomen smooth slightly shining.

Distribution : India : Rajasthan – Barmer and Jaisalmer, Jhunjhunu; Gujarat, West Bengal, Uttar Pradesh, Himachal Pradesh, Chandigarh, Haryana, Punjab.

Elsewhere : Sri Lanka, Myanmar.

Sub-Family MYRMICINAE Lepeletier
Tribe Crematogasterini Emery

Genus *Crematogaster* Lund
Crematogaster (Acrocoelia) rothneyi Mayr

1878. *Crematogaster (Acrocoelia) rothneyi* Mayr, *Verh. zool. -bot. Ges. Wein*, 28 : 681, worker.

Material Examined : Workers : Sawai Madhopur District 10 exs., Ranthambore National Park, 8.11.2000, N.S.R., Coll., 6 exs., 30.3.2001, 5 exs., Ranthambore National Park, 31.3.2001, N.S.R. & R.S., Coll

Diagnostic Characters : Length Worker 3–3.5 m.m. Worker : Rufo-feruginous, abdomen fuscous brown to black, pilosity fairly abundant. Head longitudinally striate a little longer than broad. Mandibles finely striate with 4 teeth. Antennae slender but short, the scape not quite reaching the top of the head, the club of the flagellum formed of apical three joints. Alitrunk pronotum flat above, rounded anteriorly, mesonotum slightly, concave meso-metanotal suture very distinct, basal portion of the metanotum transversely rectangular, longitudinally striate, metanotal spines very thick at base, apex directed backwards and inwards. Petiole two-jointed 1st joint broad, flat above; broader in front than posteriorly, the sides rounded, 2nd joint seen from above trituberculate on upper side, the tubercles rounded, the anterior one small, the other two larger side by side, subequal, abdomen broadly cordate.

Distribution : India : Rajasthan–Sawai Madhopur district; Gujarat, Maharashtra, Tamil-Nadu, Sikkim, West Bengal, Punjab, Haryana, Himachal Pradesh, Meghalaya, Orissa, Uttar Pradesh.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family MYRMICINAE Lepeletier
Tribe Crematogasterini Emery

Genus *Crematogaster* Lund
Crematogaster (Orthocrema) walshi Forel

1902. *Crematogaster (Orthocrema) walshi* Forel, *Rev. Suisse Zool.*, 10 : 15, Worker.

Material Examined : Workers : Sawai Madhopur 8 exs., Near Galai sagar dam, 7.12.99, R.S., Coll., 23 exs., Near Malik talab, 8.11.2000, N.S.R., Coll.

Diagnostic Characters : Length Worker : 3–3.5 m.m. Worker : Dark piceous, smooth and shining, the basal portion of the metanotum longitudinally striate pilosity fairly abundant and pale yellowish in colour. Head rectangular, slightly longer than broad. Mandibles longitudinally striate with 4 teeth. Antennae short and thick, the scape not extending to the posterior margin of the head, the club formed of the apical three joints, but somewhat indistinct. Alitrunk raised in front and a little compressed pro-mesonotal suture obsolete, meso—metanotal suture deep. Basal portion of metanotum sculptured, metanotal spines very short, triangular, not divergent. Petiole two jointed 1st joint slightly broadened, flat anteriorly and narrowed posteriorly, 2nd joint with a rounded, slightly raised node divided longitudinally by a broad groove. Abdomen short and broad.

Distribution : India : Rajasthan—Sawai Madhopur district; Chandigarh, Punjab, Haryana, Uttar Pradesh, Meghalaya, Orissa, Sikkim, Himachal Pradesh, West Bengal.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family MYRMICINAE Lepeletier
Tribe Meranoplini Emery

Genus *Meranoplus* Fred Smith
Meranoplus bicolor Guerin

1845. *Meranoplus bicolor* Guerin, *Inconogr Regne Anim Insect*, 7 : 425 (*Cryptocerus*).

Material Examined : Workers : Ajmer 1 ex., Pushkar, 26.2.2002, R.S., Coll., Dungarpur 3 exs., Gap-sagar, 21.8.84, 1 ex., Bechiwara, 22.8.84, N.S.R., Coll.

Diagnostic Characters : Length Worker : 4-5 mm. Worker : Head, alitrunk, legs and petiole of the abdomen bright ferruginous red. Abdomen black. Pilosity very long soft, abundant and of a grey colour. Head a little longer than broad, broader posteriorly than the front. Mandibles narrow armed with 4 teeth. Clypeus convex in the middle, inclined downwards. Alitrunk the pro-mesonotal shield about as broad as long, with the anterior angles prominent and acute, the sides posteriorly with a small incision, and beyond that produced backwards into a long laminate spine on each side overhanging the metanotum, the latter, vertical, slightly convex with a carina on each side ending above in an acute spine, Petiole the 1ST node smooth, triangular 2ND node globose, Abdomen cordate.

Distribution : India : Rajasthan—Ajmer, Dungarpur; Gujarat, Maharashtra, Manipur, Tripura, Chandigarh, Karnataka, Kerala, Tamil Nadu, Punjab, West Bengal, Delhi, Orissa, Uttar Pradesh.

Elsewhere : Nepal, Myanmar, Indonesia, Sri Lanka, Pakistan, Bhutan, Thailand, China, Singapore, Malaysia.

Clypeus bicarinate. Club of flagellum formed of the apical three joints Monomorium.

Key to species of Genus *Monomorium*

A. Head opaque

- i) Seen from above 2nd node of petiole distinctly broader than 1st node.
 - a) Yellow, abdomen posteriorly black..... *M. pharaonis*
 - b) Head, alitrunk and abdomen brown
 - b₁) Antennae long, scape reaching beyond top of head, sides of the head very convex *M. longi*
 - b₂) Antennae shorter, scape not attaining top of head, sides of head straight
..... *M. wroughtoni*
- ii) Seen from above 2nd node of petiole not broader than 1st. Nodes subequal
..... *M. indicum*

B. Head smooth and shining.

- a) Antennae 11 jointed – *M. atomus*
- b) Antennae 12-jointed, scape extending beyond top of the head.
 - b₁) Thorax convex above, not submargined *M. sagei*
 - b₂) Thorax somewhat depressed and flat laterally submargined *M. destructor*
- c) Antennae 12-jointed, scape of antennae not extending beyond top of the head.
 - c₁) Second node of petiole not broader than 1st node *M. gracillimum*
 - c₂) Second node of petiole broader than 1st node *M. latinode*

C) Head striate

- i) Head entirely striate *M. scabriceps*
- ii) Anterior half or one-third of head striate.
 - a) Posterior half or two-third of head finely, closely but not densely punctate
..... *M. criniceps*

- b) Posterior half or two-thirds of head smooth, polished and shining
 *M. glabrum*

Sub-Family MYRMICINAE Lepeletier
 Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Lampromyrmex) atomus Forel

1902. *Monomorium (Lampromyrmex) atomus* Forel, *Rev. Suisse Zool.*, 10 : 210, Worker.

Material Examined : Workers : Jodhpur 5 exs., Paota, 17.7.86, N.S.R., Coll.

Diagnostic Characters : Length Worker : 1.5-1.8 mm. Pale yellow, the legs of a shade paler than the head and alitrunk; entirely smooth and polished, shining. Head rectangular a little broader posterior than in front, mandibles narrow, the masticatory margin with 4 teeth. Antennae 11 jointed, scape not attaining the posterior margin of the head. Pro-mesonotum very convex, the basal portion of metanotum rectangular. Petiole-the nodes from above equal. 1st node not higher than the 2nd. Abdomen oval.

Distribution : India : Rajasthan-Jodhpur; Western India, Maharashtra, Punjab, Assam, Karnataka, N.W. Himalayas.

Elsewhere : Myanmar, Bangladesh.

Sub-Family MYRMICINAE Lepeletier
 Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Monomorium) latinode Mayr

1872. *Monomorium (Monomorium) latinode* Mayr, *Ann. Mus. Civ. Stoc. Mat Genova*, 2 : 152, Worker.

Material Examined : Workers : Jodhpur Many exs., 9.11.63, R.C.S., 2exs Female., Coll., Many exs., Paota, 19.12.80, M.L.R., Coll.

Diagnostic characters : Length Worker : 3-3.7 mm. Light castaneous brown, mandibles, antennae and legs yellowish, entirely smooth, polished and shining. Head longer than broad, mandible smooth, armed with 4 teeth, antennae moderately long. 12 jointed, the scape nearly reaching the top of the head. Alitrunk elongate, promesonotum convex, broad nearly as broad as head, emarginate at the mesonotal suture. Petiole long, 1st node petiolate in front, little higher than the 2nd which is very much broader than the 1st. Abdomen long oval.

Distribution : India : Rajasthan-Jodhpur; Tamil Nadu, West Bengal, Orissa, Manipur

Elsewhere : Sri Lanka, Myanmar, Extending to Borneo, Formosa, Oceania.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Monomorium) pharaonis Linne

1758. *Monomorium (Monomorium) pharaonis* Linne, *Syst. Nat.*, 1 : 586, *Worker*.

Material Examined : Workers : Churu Many exs., Talchhapar, 13.1.05, V.S., Coll., Jodhpur 5 exs., Near Surpura dam, 17.2.79, N.S.R., Coll.

Diagnostic characters : Length Worker : 2.5-3 mm. Worker : Reddish yellow, posterior two third of the abdomen black, shining. Head half as long again as broad, the sides slightly convex; the posterior margin transverse. Mandibles narrow, linear, slightly broadened at the masticatory margin with 3-4 teeth. Antennae long and thick, scape reaching nearly up to posterior margin of the head. Alitrunk pro-mesonotum convex rounded in front and at the sides narrowing posteriorly, mesometanotal suture very distinct, slightly emarginate metanotum seen from above rectangular, somewhat flat, the posterior lateral angles of the basal portion scarcely tuberculate. Petiole 1st node little thick and rounded at the top, anteriorly with a long petiole, 2nd node from above globose, slightly broader than long and broader than the 1st node. Abdomen oval, truncate anteriorly.

Distribution : India : Rajasthan—Churu, Jodhpur. Gujarat, Punjab, Haryana, West Bengal, Uttar Pradesh, Himachal Pradesh, Meghalaya.

Remarks : Spread over the tropical region of both the hemispheres.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Monomorium) wroughtoni Forel

1902. *Monomorium (Monomorium) wroughtoni* Forel, *Rev. Suisse Zool.*, 10 : 209, *Worker*.

Material Examined : Workers : Jodhpur 7 exs., 23.3.79, K.V.S.R., Coll. 5 exs, Bhimbharak, 24.2.79, N.S.R., Coll.

Diagnostic characters : Length Worker : 2.0 mm. Worker : Blackish brown with the abdomen dark brown. Abdomen opaque except at the base which is smooth and shining. Head longer than broad, narrow posteriorly, slightly emarginate Mandibles narrow armed with 4 teeth. Antennae moderately long, the scape nearly reaching the top of the head. Alitrunk depressed sub-margined, the meso-metanotal suture distinct, basal portion of metanotum rectangular, apex truncate. Petiole 1st node conical, rounded above, anteriorly petiolate, the petiole thickening and sloping posteriorly, 2nd node globose broader than the 1st node. Abdomen broadly oval, truncate anteriorly, acute posteriorly.

Distribution : India : Rajasthan–Jodhpur; Gujarat, Maharashtra, Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Karnataka.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsodini Forel

Genus *Monomorium* Mayr
Monomorium (Holcomyrmex) criniceps Mayr

1878. *Monomorium (Holcomyrmex) criniceps* Mayr, *Verh. zool. -bot. Ges. Wien*, 28 : 672, Worker (*Holcomyrmex*)

Material Examined : Workers : Jodhpur 6 exs., 4.9.64, V.C.A., Coll.

Diagnostic characters : Length Worker : 3.5-5.5 mm. Worker : Head and alitrunk chesnut brown, abdomen dark red. Head rectangular sides straight, posterior lateral angles rounded. Head striate anteriorly. Mandibles very thick, much curved, the masticatory margin indistinctly dentate. Alitrunk the promesonotum forming raised convexity, promesonotal suture obsolete meso-metanotal suture distinct. The basal portion of the metanotum shorter than the promesonotum. Petiole the 1st node petiolate in front higher than the 2nd, sub-triangular, conical and rounded at the top, 2nd node sub-globose as broad as long, attached to the abdomen by the whole of its posterior face. Abdomen broad, truncate anteriorly.

Distribution : India : Rajasthan–Jodhpur; Gujarat, Western India, Chandigarh, Karnataka, Himalayas.

Elsewhere : Sri Lanka, Myanmar, Pegu, Yoma.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Holcomyrmex) glabrum Ern Andre

1883. *Monomorium (Holcomyrmex) glabrum* Ern. Andre, *Spec. Hym. Europe*, 2 : 345, worker (*Holcomyrmex*).

Material Examined : Workers : Alwar 3 exs., Near Karauli dam, 15.9.2001, 13 exs., Nagali Sahajpur, 18.9.2001, R.S., Coll., Barmer 4 exs., Harsani village, 20.7.1995, N.S.R., Coll., 10 exs Turvi village., 1.10.1996, Bharatpur 8 exs. (worker maj.), 4 exs. (worker min.), Uchchain, 12.9.2001, R.S., Coll., Dholpur 5 exs, Bari, 7.9.2001, R.S., Coll., Jaipur 25 exs., Ramgarh, 23.9.2002, R.S., Coll., Jodhpur Many exs., 25.5.63, Many exs., 10.7.63, R.C.S., Coll., Karauli 6 exs., 9.10.96, P.S.K., Coll., 25 exs., Keoli devi area .3.9.2001, R.S., Coll., Udaipur 4 exs., Kewra ki naal, 2.6.87, P.C.T., Coll.

Diagnostic Characters : Length Worker : 3.5-7.5 mm. Worker : Brownish red to brownish black in colour. Pilosity more or less abundant. Head rectangular, sides straight, posterior lateral angles rounded and longitudinally striate, Mandibles very thick, much curved and masticatory margin indistinctly dentate. Alitrunk the pro-mesonotum forming raised convexity, pro-mesonotal suture obsolete, mesometanotal suture distinct. Petiole 1st node petiolate in front higher than the 2nd node, sub triangular, conical and rounded at the top, 2nd node subglobose as broad as long, attached to the abdomen by the whole of its posterior face. Abdomen broad truncate anteriorly.

Distribution : India : Rajasthan—Alwar, Barmer, Bharatpur, Dholpur, Jaipur, Jodhpur, Karauli, Udaipur; Gujarat, Western India, Punjab, Tamil Nadu.

Elsewhere : Sri Lanka, Myanmar.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Holcomyrmex) scabriceps Mayr

1878. *Monomorium (Holcomyrmex) scabriceps* Mayr, *Verh. zool. -bot. Ges. Wien*, 28 : 627, worker (*Holcomyrmex*).

Material Examined : Workers : Ajmer 2 exs., Pushkar, 26.9.2002, R.S., Coll., Alwar 20 exs., Rajgarh, 17.9.2001, R.S., Coll., Barmer 15 exs., Girab area, 3.10.1996, N.S.R., Coll., Churu 1 ex., Talchhapar, 11.1.05, V.S., Coll., Jaisalmer 4 exs., Pithla area, 5.2.1995, N.S.R., Coll., Karauli 2 exs., 9.10.96, P.S.K., Coll.

Diagnostic Characters : Length Worker : 3.5-7 mm. Worker : Reddish ferruginous with the abdomen dark brown in colour. Head rectangular, sides straight, the posterior lateral angles rounded with a median impressed line. Mandibles very thick, much curved and masticatory margin indistinctly dentate. Antennae 12 jointed with the club formed of apical three joints. Pilosity very sparse. Alitrunk the pronotum narrower than the head, rounded anteriorly, the basal portion of the metanotum nearly as long as the pro-mesonotum, the posterior face of the metanotum obliquely truncate. Petiole the 1st node petiolate in front, higher than the 2nd subtriangular, conical and rounded at the top; 2nd node subglose, as broad as long. Abdomen broad, truncate anteriorly.

Distribution : India : Rajasthan—Ajmer, Alwar, Barmer, Churu, Jaisalmer, Karauli; Gujarat, Chandigarh, Punjab, Orissa, Karnataka, Kerala, Tamil Nadu.

Elsewhere : Myanmar

Sub-Family MYRMICINAE
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Parholcomymex) destructor Jerdon

1851. *Monomorim (Parholcomymex) destructor* Jerdon, *Madras Jour. Lit. Sc.*, 17 : 105, Worker (*Atta*).

Material Examined : Workers : Barmer 3 exs., Balewa village, 18.7.1995, 5 exs., 19.7.1995, 2 exs., 20.7.1995, Harsani village, N.S.R., Coll., Jaisalmer 6 exs., 26.7.1995, N.S.R., Coll., Jodhpur 10exs, Agolai village, 23.3.1979, K.V.R.R.; 8exs, Agolai village, 27.7.79, R.N.B.

Diagnostic Characters : Length Worker : 1.8-2.3 mm. Worker : Reddish yellow, apical three-fourth of abdomen from chestnut brown to dark brown. Head rectangular, slightly emarginate posteriorly. Mandibles narrow armed with 4 teeth; the apical longest and acute. Antennae 12 jointed, the scape just reaching the top of the head. Aliturnum-elongate anteriorly as broad as the back of the head, the pro-mesonotum convex, meso-metanotal suture deeply impressed, basal portion of metanotum narrow passing by the rounded curve into the apical portion. Petiole elongate the 1st node squami-form, anteriorly petiolate 2nd node globose, a little broader than long, not as high as the 1st node, Abdomen oval.

Distribution : India : Rajasthan—Barmer, Jaisalmer; Gujarat, Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, West Bengal, Karnataka.

Elsewhere : Torrid regions of both hemispheres.

Sub-Family MYRMICINAE
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Parholcomymex) gracillimum var. *mayri* Forel

1902. *Monomorium (Parholcomymex) gracillimum* var. *mayri* Forel, *Rev. Suisse Zool.*, 10 : 209, Worker.

Material Examined : Workers : Ajmer 10 exs., Pushkar, 26.9.2002, R.S., Coll., Barmer 12 exs., Girab area, 10.2.1995, 10 exs., Balewa village, 18.7.1995, 12 exs., Harsani village, 19.7.1995, 3 exs., Girab area, 3.10.1996, N.S.R., Coll., Bikaner 15 exs., 9.9.03, T.D.P.S., Coll., Jaisalmer 15 exs., Bhopa village, 25.7.1995, 15 exs., Barna village, 26.7.1995, 8 exs., Khuri village, 27.7.1995, 4 exs., Sudasari village, 26.9.1996, 2 exs., Roopsi village, 29.9.1996, N.S.R., Coll., 1 ex., 4.9.2003, T.D.P.S., Coll., Jodhpur 5 exs., 8.8.70, L.S.R., Coll., 7 exs., 23.3.79, K.V.R.R., Coll. 7 exs., 27.7.79, R.N.B., Coll., Many exs., Paota, 17.7.86, , 10 exs., Paota, 7.9.92, N.S.R., Coll., Kota 7 exs., Ummed area, 11.9.21, N.S.R & R.S, Coll., Sawai Madhopur 20 exs., Dhundarmar Kaora, 1.4.2001, N.S.R. & R.S., Coll., Sikar 2 exs., Srimadhapur, 17.9.2002, R.S., Coll., Tonk 9 exs., Uniasa, 31.8.2001, R.S., Coll.

Diagnostic Characters : Length Worker : 2.5-3 mm. Worker : Dark brown with the mandibles, antennae and legs pale yellow in colour. Abdomen with a patch of pale yellow at the base. Head convex, a little longer than broad, the posterior lateral angle rounded. Mandibles with the masticatory margin very oblique armed with four teeth. Antennae short slender the scape falling short of the top by one fourth of its length. Alitrunk narrower than the head, emarginate at the meso-metanotal suture, mesonotum convex, narrower anteriorly slightly convex apical portion obliquely truncate. Petiole 1st node conical rounded above, higher than the 2nd and anteriorly petiolate, 2nd node subglobose not broader than the 1st node. Abdomen oval.

Distribution : India : Rajasthan—Ajmer, Barmer, Bikaner, Jaisalmer, Jodhpur, Kota, Sawai Madhopur, Sikar, Tonk; Gujarat, Tamil Nadu, Kerala

Elsewhere : Sri Lanka, North Africa, Arabia, Myanmar.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Xeromyrmex) salomonis indicum Forel

1902. *Monomorium salomonis* Linn., race *indicum* Forel, *Rev. Suisse Zool.*, 10 : 213.

Material Examined : Workers : Ajmer 24 exs., Pushkar, 26.9.2002, R.S., Coll., Alwar 10 exs, Akarbarpur Forest Chowki area, 16.9.2001, R.S., Coll., Banswara Many exs., Near Daylab talab, 28.8.84, N.S.R., Coll., Barmer 7 exs., Harsani village, 10.2.1995, Many exs., Turvi village, 15.2.1995, 7 exs., Balewa villatge, 18.7.1995, 6 exs., Girab area, 2.10.1996, 5 exs., Girab area, 3.10.1996, N.S.R., Coll., Bharatpur 4 exs., Uchchain, 12.9.2001, R.S., Coll., Bhilwara 5 exs., Mejadam Mandal, 10.4.2001, 5 exs., Mejadam Mandal 19.4.2001, N.S.R. & R.S., Coll., Churu 10 exs, Talchhapar, 11.1.05, 6 exs Talchhapar, 12.1.05, V.S., Coll., 20 exs., Tarangar road, 8.9.2002, 24 exs., Kasoli Dudwakhara, 10.9.2002, R.S., Coll., Dholpur 10 exs., Dholpur, 7.9.2001, R.S., Coll., Hanumangarh 35 exs., Gurunanak nagar, 5.9.2002, 20 exs., Sangaria, 6.9.2002, 18 exs., Nohar, 7.9.2002, R.S., Coll., Jaipur 20 exs., Chaksu, 22.9.2002, R.S., Coll., Jaisalmer 10 exs., Nahar Singh ki dhani, 6.2.1995, 15 exs., Samdunal area, 7.2.1995, 15 exs., Khuri village, 8.2.1995, 3 exs., Sam area, 23.7.1995, 2 exs., Barana village, 26.7.1995, 10 exs., Khuri village, 27.7.1995, 5 exs., Sudasari village, 26.9.1996, 22 exs., Barana village, 28.9.1996, 2 exs., Mogra village, 30.9.1996, N.S.R., Coll., Jhalawar 20 exs., Bhawani mandi, 7.4.2001, N.S.R., Coll., Jodhpur 1 ex., Dangiawas, 22.9.64, K.V.S.R., Coll., 40 exs., Arnaji, 12.3.65, V.C., Coll., 20 exs., Kailana, 20.3.65, R.N.B., Coll., 4 exs., 15.4.65, V.C.A., Coll., Many exs., Narna village, 8.8.66, P.D.G., Coll.,

13 exs., Satlana, 22.6.71, R.N.B., Coll., 8 exs., Satlana 13.4.72, P.D.G., Coll., 25 exs., Sardarsamand, 5.5.1972, Y.P.S., Coll., 5 exs., Lal-Maidan Paota, 10.12.80, N.T., Coll., Jhunjhunu 16 exs., Chirana, 11.9.2002, R.S., Coll., Karauli 10 exs., Hindon city, 4.9.2001, 30 exs., Bhikampur mandora, 5.9.2001, R.S., Coll., Kota 25 exs., Jagpura Ania dam, 12.4.2001, 30 exs., Ummed, 31.3.2001, N.S.R. & R.S., Coll., Sawai Madhopur 2 exs., Near Fakira talab. 30.3.2001, 8 exs., Atalsagar, 31.3.2001, Many exs., Ranthombore National Park, 2.4.2001, N.S.R. & R.S., Coll., Tonk 15 exs., Bhanwartala, 30.8.2001, 15 exs., Niwai, 1.9.2001, R.S., Coll., Udaipur 15 exs., Fateh sagar, 10.9.86, N.S.R., Coll., 5 exs., Kewra ki naal, 2.6.87, P.C.T., Coll.

Diagnostic Characters : Length Worker : 3-3.5 mm., Worker : Ferruginous red with abdomen dark brown. Head opaque almost as broad as long, broader anteriorly than posteriorly. Mandibles narrow with three to four teeth, when closed partially concealed under the projecting margin of the clypeus. Antennae moderately long, the scape not quite reaching the posterior margin of the clypeus. Alitrunk anteriorly rounded moderately broad, the meso-metanotal suture distinct, the basal portion of the metanotum broadening posteriorly, Petiole the nodes seen from above equal. The rounded 1st node higher than the 2nd node and petiolate anteriorly. Abdomen oval.

Distribution : India : Rajasthan—Ajmer, Alwar, Banswara, Barmer, Bharatpur, Bhilwara, Churu, Dholpur, Hanumangarh, Jaipur, Jaisalmer, Jhalawar, Jodhpur, Jhunjhunu, Karauli, Kota, Sawai Madhopur, Tonk, Udaipur; Gujarat, Maharashtra, Chandigarh, Karnataka, Punjab, West Bengal, Andhra Pradesh, Tamil Nadu.

Elsewhere : Myanmar.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium (Xeromyrmex) longi Forel

1902. *Monomorium (Xeromyrmex) longi* Forel, *Rev. Suisse Zool.*, 10 : 211, Worker.

Material Examined : Workers : Banswara 15 exs., Daylab talab, 28.8.84, N.S.R., Coll.

Diagnostic characters : Length Worker—2.5 mm. Dull chestnut brown. Head more or less rugulose, opaque. Mandibles opaque with four teeth antennae long, scape reaching beyond the top of the head. Alitrunk long, pro-mesonotum very convex, meso-metanotal suture well marked, the alitrunk emarginate at the suture, the metanotum rectangular, sub-margined at base sloping to the mesometanotal suture. Petiole the 1st node rounded at the apex petiolate anteriorly, 2nd node globose, broader than long, seen from above broader than the 1st node, abdomen elongate, oval.

Distribution : India : Rajasthan—Banswara; Assam, Tripura, Punjab, Chandigarh

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Monomorium* Mayr
Monomorium sagei Forel

1902. *Monomorium sagei* Forel, *Rev. Suisse Zool.*, X : 211.

Material Examined : Workers : Banswara 20 exs., Danpur, 27.8.84, N.S.R., Coll.

Diagnostic characters : Length Worker 2.2-2.5mm. Pale yellow, smooth and shining. Mandible narrow with four acute teeth, Antennae 12-jointed, scape extending beyond the top of head, flagellum with a distinct club. Alitrunk convex above not sub-margined, alitrunk seen in profile deeply emarginate at the meso-metanotal suture. Petiole the 1st node squamiform, anteriorly petiolate, 2nd node from above circular, smoothly rounded a little broader in front than posteriorly, abdomen more than twice as long as broad.

Distribution : India : Rajasthan–Banswara; Karnataka, North-West Himalayas.

Sub-Family MYRMICINAE Lepeletier
Tribe Solenopsidini Forel

Genus *Solenopsis* Westwood
Solenopsis geminata Fabricius

1804. *Solenopsis geminata* Fabricius, *Syst. Piez.*, : 423, (*Atta*).

Material Examined : Workers : Udaipur Many exs., Near Pichola lake, 9.3.1995, N.S.R. & S.K., Coll.

Diagnostic characters : Length Worker : 3-4.5 mm. Worker : Reddish yellow, smooth and shining, the abdomen and borders of the mandibles marked with yellow. Head more or less square, posteriorly slightly emarginate. Mandibles 4-dentate apical tooth long and acute. Alitrunk pro-mesonotal suture obsolete, alitrunk seen in profile emarginate at meso- metanotal suture. Petiole 1st node squamiform, shortly petiolate, 2nd node seen from above oval, broader than long abdomen oval.

Distribution : India : Rajasthan–Udaipur; Gujarat, Karnataka, Kerala, Tamil Nadu, Punjab, Orissa, Andamans.

Elsewhere : Spread over both the Hemispheres, Sri Lanka, Philippines, Oceania.

Sub-Family MYRMICINAE Lepeletier
Tribe Pheidolini Emery

Genus *Messor* Forel

Messor barbarus subsp. *himalayana* Forel

1092. *Messor barbarus* subsp. *himalayana* Forel, *Rev. Suisse Zool.*, 10 : 220, Worker, Female, Male (*Siennama*).

Material Examined : Workers : Ajmer 10 exs., Pushkar, 26.9.2002, R.S., Coll., Banswara Many exs., Dhambar, 8.9.1986, N.S.R., Coll., Barmer 10 exs., Girab area, 10.2.1995, 22 exs., Harsani village, 11.2.1995, 2 exs., Turvi village, 13.2.1995, 1 ex., Harsani village, 19.7.1995, 1 ex., Girab area, 21.7.1995, N.S.R., Coll., Bikaner 5 exs., 7.9.2003, T.D.P.S., Coll., Churu 23 exs., Khasoli Dudwakhara, 10.9.2002, 30 exs., Talchhapar 11.1.2005, R.S., Coll., 4 exs., Talchhapar 12.1.2005, V.S., Coll., Dausa 15 exs., Salempur, 20.9.2002, R.S., Coll., Hanumangarh 3 exs., Sangaria, 6.9.2002, R.S., Coll., Jaipur 15 exs., 24.9.2002, R.S., Coll., Jaisalmer 10 exs., Khuri village, 8.2.1995, 30 exs., Pithla area, 24.7.1995, 20 exs., Barana village, 26.7.1995, N.S.R., Coll., 3 exs., 4.9.2003, T.D.P.S., Coll., Jodhpur Many exs., Luni village, 12.12.62, Many exs., Salawas, 21.12.62, R.C.S., Coll; 5 exs., Salawas, 21.12.62, M.L., Coll; Many exs., Tivari village, 5.1.63, 5 exs., Sangaria village, 18.7.63, Many exs., Loonawas, 19.1.63, R.C.S., Coll; Many exs., Sangaria village, 29.10.63, M.L., Coll; Many exs., 9.11.63, Many exs., Agolai, 11.2.64, R.C.S., Coll; 3 exs., Pinchi village, 26.3.64, K.V.S.R., Coll; 20 exs., Agolai 13.10.64, R.N.B., Coll; 8 exs., Way to Kayanpur, 4.1.69, P.D.G., Coll; 23 exs., Tivari village, 12.8.69, K.V.S.R., Coll; 15 exs., Narva village, 18.8.69, P.D.G., Coll; 8 exs., Narva village, 19.8.69, R.N.B., Coll; Many exs., Lal Maidan, 10.12.80, N.T., Coll., Jhunjhunu 12 exs., Chirana village, 11.9.2002, 10 exs., Titwar, 12.9.2002, R.S., Coll., Karauli 10 exs., 4.9.2001, P.S.K., Coll., Nagaur 8 exs., 11.9.2003, T.D.P.S., Coll., Sikar 10 exs., Khur, 15.9.2002, 12 exs., Raghunathgarh, 16.9.2002, 10 exs., Srimadhapur, 17.9.2002, R.S. Coll., Udaipur 15 exs., Chittorgarh road, 7.9.86, N.S.R., Coll.

Diagnostic Characters : Length Worker-4-10 mm. Black shining, the mandibles reddish brown, the flagellum of the antennae and legs castaneous, the scape brown. Head without the mandibles square longitudinally striate, masticatory margin of mandibles dentate. Alitrunk narrower than the head, the posterior lateral angles of the metanotum dentate, 1st node of the petiole conical, rounded above with a long petiole anteriorly, 2nd node broader, rounded above, about as broad as its length. Abdomen oval.

Distribution : India : Rajasthan—Ajmer, Banswara, Barmer, Bikaner, Churu, Dausa, Hanumangarh, Jaipur, Jaisalmer, Jodhpur, Jhunjhunu, Karauli, Nagaur, Sikar, Udaipur; Punjab, Chandigarh, N.W. Himalayas, Himachal Pradesh.

Key to the Genus

- 1 Club of antennae formed of apical three joints which together are as long as the remainder of the flagellum. Antennae 12 jointed *Pheidole*

Key to species of genus *Pheidole*-Soldier

A. First joint of petiole with no projection beneath. Pro and mesonotum not forming a single convexity. Whole head sculptured.

- i) Frontal groove for reception of scape of antennae obsolete. Head including mandibles very large as long as or longer than alitrunk and petiole united
..... *P. wroughtoni*
- ii) Frontal groove for reception of scape of antennae distinct. Abdomen finally striate at base *P. sulcaticeps*

Sub-Family MYRMICINAE Lepeletier
Tribe **Pheidolini** Emery

Genus *Pheidole* Westwood
Pheidole (Pheidole) sulcaticeps Roger

1863. *Pheidole (Pheidole) sulcaticeps* Roger, *Berl. ent. Zeitschr.*, 7 : 193, Worker, Female, Male, Soldier.

Material Examined : Soldiers : Bundi 2 exs., (Soldiers), 3 exs., (Workers), Rameshwar, 15.4.2001, NSR & RS, Coll., Jaipur 3 exs., Chomu, 18.9.2002, R.S., Coll., Jaisalmer 5 exs., Khuri village, 8.2.1995, N.S.R., Coll., Diagnostic Characters Length : Soldier : 4.5–5mm.

Soldier : Reddish brown shining, the head and abdomen darker than the alitrunk. Head rectangular as broad posteriorly as in front longitudinally striate, the striae curving laterally outwards and becoming transverse on the posterior lobes, a distinct transverse depression on the vertex, mandibles triangular smooth and shining, sparsely punctured. Clypeus smooth and slightly depressed in the middle, its anterior margin incised. Antennal groove very well marked, scape of the antennae not reaching quite half way from the insertion to the top of the head. Alitrunk transversely striate, anteriorly convex, the mesonotal transverse groove and ridge very distinct, the metanotum flat above, the metanotal spines short, erect, acute. Petiole the 1st node squamiform above, transverse not emarginate 2nd node transverse rounded above, opaque. Abdomen broadly oval.

Distribution : India : Rajasthan–Bundi, Jaipur, Jaisalmer; Gujarat, Western India, West Bengal.

Elsewhere : Sri Lanka, N.W. Provinces.

Sub-Family MYRMICINAE Lepeletier
Tribe **Pheidolini** Emery

Genus *Pheidole* Westwood
Pheidole (Pheidole) wroughtoni Forel

1902. *Pheidole (Pheidole) wroughtoni* Forel, *Rev. Suisse Zool.*, 10 : 176, 183, Worker, Female, Male.

Material Examined : Soldiers : Barmer 2 exs., Turvi village, 13.2.1995, 5 exs., Harsani village, 19.7.1995, 5 exs., Girab area, 2.10.1996, N.S.R., Coll., Jodhpur 4 exs., Kuri reservoir, 25.4.64, V.C.A., Coll.; 10 exs., Agolai, 17.11.64, R.N.B., Coll.; 3 exs., Pratap sagar, 8.7.66, P.D.G., Coll.; 6 exs., 8.5.72, K.C.K., Coll.; 5 exs., Bucheti village, 21.6.72, Y.P.S., Coll.; 15 exs., Near Circuit House, 22.3.75, M.G.C., Coll.; 5 exs., Mathania village, 13.6.80, R.N.B., Coll.; 10 exs., Paota, 13.9.81, N.S.R., Coll.; 5 exs., Lal Maidan, Paota, 13.11.81, N.T., Coll.; 10 exs., 13.9.86, N.S.R., Coll.

Diagnostic Characters : Length Soldiers : 5.5-6mm.

Soldier : Head, alitrunk, petiole and the extreme base of the abdomen chestnut red, the rest of the abdomen, the mandibles and clypeus, dark brown or black. Body covered with soft erect hairs. Head proportionately very large rectangular, anteriorly longitudinally and coarsely, and posteriorly on the lateral lobes transversely striate. Mandibles triangular, punctate. Clypeus medially slightly emarginate. No antennal groove. The scape of the antennae short not reaching quite half the distance between their insertion at the top of the head. Alitrunk transversely striate, anteriorly rounded and convex with no lateral tubercles, mesonotum with a transverse groove and posterior to it a transverse ridge, metanotum broad, base transversely striate posteriorly smooth, the metanotal spines short, stout, erect and acute. Petiole with the first node emarginated above with no appendix beneath, 2nd node transverse twice as long as broad, convex., Abdomen oval, opaque

Distribution : India : Rajasthan–Barmer, Jodhpur; Gujarat, Karnataka.

Sub-Family MYRMICINAE Lepeletier

Tribe Pheidologetini Emery

Genus *Pheidologeton* Mayr

Pheidologeton affinis Jerdon

1851. *Pheidologeton affinis* Jerdon, *Madras Jour. Lit. Sc.*, 17 : 110, Worker, Soldier, (Oecodoma).

Material Examined : Soldiers : Udaipur Many exs., Near Pichola Lake, 9.3.1995, N.S.R. & S.K., Coll.

Diagnostic Characters : Length Soldier : 5 to 11 mm. Chestnut red colour, polished and shining, the mandibles black, sculpture more feeble and the median longitudinal furrow less deeply impressed. Head proportionately much longer with no ocellus on the front. Mandibles large, smooth, the masticatory margin with two strong teeth at apex Antennae 11 jointed, scape short, club of the antennae formed of 2 apical joints of flagellum. Alitrunk smaller, scutellum prominent and gibbous, pronotum not armed. Petiole with 1ST node narrower, more conical and not emarginate above, the keel below less strongly marked.

Distribution : India : Rajasthan–Udaipur: Maharashtra, Kerala, Karnataka, West Bengal, Assam, Tamil Nadu, Manipur.

1. Club of flagellum formed of the apical three joints which together are as long as the remainder of the flagellum. Antennae 11 or 12 jointed..... *Tetratomorium*

Key to species of Genus *Tetramorium*

- i) Antennae 12-jointed Pronotum not armed
- a) Erect hairs on body trifold *T walshi*
- b) Erect hairs on body not trifold, simple *Tetramorium salvatum* Forel

Sub-Family MYRMICINAE Lepeletier
Tribe **Tetramorini** Emery

Genus *Tetramorium* Mayr

1902. *Tetramorium salvatum* Forel, *Rev. Suisse Zool.*, **10** : 235, Worker.

Material Examined : Workers : Barmer 5 exs., Harsani village, 19.7.1995, N.S.R., Coll., Karauli 10 exs., Bhikampur Mandora, 5.9.2001, R.S., Coll.

Diagnostic characters : Length Workers : 2.3-2.4 mm. Worker : Reddish yellow in colour, abdomen dark brown Head rectangular a little broader posteriorly than in front the sides convex. Mandibles armed with 7 teeth. The eyes are large and more convex. Antennae 11 jointed, Alitrunk Pronotum broad anteriorly, not emarginate at the meso-metanotal suture. Metanotal spines as long as about two-thirds of the space between them. First node of petiole as broad as long, second node narrowed anteriorly, broadened posteriorly. Abdomen convex.

Distribution : India : Rajasthan–Barmer, Karauli; Gujarat, Western India, N.W. Himalayas.

Sub-Family MYRMICINAE Lepeletier
Tribe Tetramorini Emery

Genus *Tetramorium* Forel
Tetramorium walshi Forel

1890. *Triglyphothrix walshi* Forel, *Ann. Soc. Ent. Belg.*, **34** : 107, Worker, Female.

Material Examined : Workers : Dungarpur 6 exs., Ratanpur, 20.8.84, N.S.R., Coll., Kota 20 exs., Ummed, 11.4.2001, N.S.R. & S.K., Coll., Udaipur 1 ex., Near Pichola lake, 3.4.1996, N.S.R. & S.K., Coll.

Diagnostic Characters : Length Worker : 2.5 mm. Dull brown, abdomen black. Pilosity very dense and woolly, whitish in colour and somewhat concealing the sculpture. Head narrowed anteriorly. Posterior margin of clypeus produced between the basis of antennae. Mandibles broad with 5-7 teeth. Antennae 12-jointed, short, the scape not reaching the top

of the head. Alitrunk short and broad, curved and convex above, pronotum unarmed, the metanotal spine sub-triangular and acute at apex pointing obliquely back. Erect hairs on body trifold. First node of petiole distinctly transverse, much broader than long. Petiole of 1st node nearly as long as node.

Distribution : India : Rajasthan–Dungarpur, Kota, Udaipur; Karnataka, Kerala, Tamil Nadu, Meghalaya, Arunachal Pradesh, Orissa, West Bengal, Himachal Pradesh.

Elsewhere : Sri Lanka.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Camponotus* Mayr
FORMICINAE

Key to genera of subfamily FORMICINAE

A. Antennae 12 jointed, Maxillary palpi 6 jointed.

1. Antennae inserted at perceptible distance from posterior margin of clypeus.

- i) Alitrunk and node of petiole not spinous, basal two abdominal segments equal in length *Camponotus*
- ii) Alitrunk and node of petiole spinous, basal segment much longer than the 2nd ..
..... *Polyrhachis*

2. Antennae inserted immediately above posterior margin of clypeus, almost touching it.

- i) Antennal and clypeal hollows not confluent, distinct *Paratrechina*
- ii) Antennal and clypeus hollows confluent.
 - a) Ocelli present. Node of petiole rounded. 4th joint of maxillary palpi nearly twice as long as 5th *Cataglyphis*
 - b) Antennae 12 jointed, maxillary palpi 5 jointed *Oecophylla*

B. Antennae 11 jointed, maxillary palpi 6 jointed.

- i) Metanotum and node of petiole bispinous or bidentate *Acantholepis*

Key to species of the genus *Camponotus*

A. Alitrunk viewed from side forming a regular arch.

- 1 Head, alitrunk and abdomen black.

- i) Tibia of the legs prismatic. Head posteriorly narrow but not confluent to form a collar *C. compressus*
- ii) Tibia of the legs prismatic. Head posteriorly constricted so as to form a collar ...
..... *C. angusticollis*

2. Head, alitrunk and abdomen yellow. *C. invidus*

3. Head, alitrunk and abdomen never all black or all yellow.

1) Tibia cylindrical without spines.

a) Worker major with 7 teeth *C. taylori*

b) Worker major with 6 teeth *C. variegatus*

2) Tibia compressed

i) Tibia spined beneath.

a) Head much broader posteriorly than in front *C. dichrous*

b) Head only as broad posteriorly as in front *C. irritans*

ii) Tibia without spines beneath.

a) Head, alitrunk and abdomen dark castaneous brown *C. carin*

b) Head and abdomen fuscous brown or black, alitrunk honey yellow *C. mitis*

B. Regular arch of the alitrunk interrupted at the meso-metanotal suture by the metanotum forming an angle with the mesonotum, basal portion of metanotum horizontal flat or concave, apical portion excavate.

i) Tibia of legs spinous beneath node of petiole thick, globose *C. sericeus*

***Camponotus (Dinomyrmex) angusticollis* Jerdon**

1851. *Camponotus (Dinomyrmex) angusticollis* Jerdon, *Madras Jour. Lit. Sc.*, 17 : 120, Worker, Female, Soldier, 4. (*Formica angusticollis*)

Material Examined : Workers : Jaisalmer 2 exs., Barana village, 27.9.1996, N.S.R., Coll., Jodhpur 3 exs., Ratanada, 19.9.63, V.C.A., Coll., 1 ex., Vishnu dhani, Bilara road, 23.6.73, M.L., Coll., Udaipur 3 exs., Near Pichola lake, 9.9.1994, NSR & SK, Coll.

Diagnostic characters : Length Worker : min : 12 mm. Worker : Black opaque Head subtriangular mandibles with 6 teeth. Clypeus with a very prominent medial vertical carina.

Alitrunk elongate constricted to form a collar. Node of the petiole thick, the front at base flat, above very convex, the upper margin transverse and notched, posteriorly flat and truncate, tibia of the legs prism shaped, abdomen oval and massive.

Distribution : India : Rajasthan–Jaisalmer, Jodhpur, Udaipur; Gujarat, Maharashtra, Western India, Karnataka, Tamil Nadu, Kerala, Meghalaya, Assam, Central India, Orissa, West Bengal, Andaman and Nicobar Islands.

Elsewhere : Myanmar, Nepal.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) compressus Fabricius

1787. *Componotus (Tanaemyrmex) compressus* Fabricius, *Mant. Insect.*, 1 : 307, Worker, (*Formica*).

Material Examined : Workers : Alwar 2 exs., Near Karoli dam, 15.9.2001, R.S., Coll., Barmer 10 exs., Harsani village, 20.7.1995, N.S.R., Coll., Bharatpur 1 ex., Unch ka Nagala, 11.9.2001, R.S., Coll., Bhilwara 10 exs., Meja dam, Mandal, 19.4.2001, N.S.R. & R.S., Coll., Dungarpur 2 exs., Ratanpur, 20.8.1984, N.S.R., Coll., Hanumangarh 2 exs., Sangaria, 6.9.2002, R.S., Coll., Jaisalmer 27 exs., Barana village, 27.9.1996, N.S.R., Coll., Jhunjhunu 7 exs., Tintwar, 12.9.2002, R.S., Coll., 5 exs., Navalgarh, 13.9.2002, Jodhpur 2 exs., Sardarsamand, 4.12.62, K.C.K., Coll.; 2 exs., Near Jojari river, Sangaria, 20.10.63, R.C.S., Coll.; 10 exs., Agolai, 11.7.64, M.L.R., Coll.; 15 exs., Near Umaid sagar, 11.8.64, K.V.S.R., Coll.; 10 exs., Agolai, 18.9.64, R.N.B., Coll.; 1 ex., Agolai, 29.6.65, P.D.G., Coll.; 1 ex., Pichyak dam, Bilara, 30.7.69, P.D.G., Coll.; 20 exs., Bishalpur, 11.5.72, K.C.K., Coll.; 20 exs., Bucheti village, 21.6.72, Y.P.S., Coll.; 20 exs., Bishalpur, 28.11.72, R.C.S., Coll.; 1 ex., Daizer, 30.5.79, N.S.R., Coll.; 6 ex., Daizer, 10.12.80, Many exs., Lal-Maidan, Paota, 6.7.83, 20 exs., Lal-Maidan, Paota 5.7.88, N.T., Coll., Nagaur 3 exs., 21.7.1973, Y.P.S., Coll., Pali 2 exs., 29.7.71, P.D.G., Coll., Sawai Madhopur 3 exs., Near Lahpur dam, 6.11.2000, N.S.R., Coll., 1 ex., Mansarovar, 31.3.2001, N.S.R. & R.S., Coll., Sikar 8 exs., Lachhmangarh, 14.9.2002, R.S., Coll., Udaipur 4 exs., Near Pichola lake, 9.9.1994, N.S.R. & S.K., Coll.

Diagnostic characters : Length Worker : 13 mm. Worker : Black opaque. Head sub triangular, very broad posteriorly. Mandibles triangular with seven teeth. Clypeus medially vertically carinate. Alitrunk narrower than the head, anteriorly produced into a collar, Node of the petiole oval, transverse convex in front, flat posteriorly. Tibia of the legs prismatic. Abdomen broad and massive.

Distribution : India : Rajasthan–Alwar, Barmer, Bharatpur, Bhilwara, Dungarpur, Hanumangarh, Jaisalmer, Jhunjhunu, Jodhpur, Nagaur, Pali, Sawai Madhopur, Sikar, Udaipur; Gujarat, Maharashtra, Tripura, Andamans, Chandigarh, Karnataka, Tamil Nadu, Assam, West Bengal, Meghalaya, Punjab, Orissa, Sikkim, Manipur.

Elsewhere : Sri Lanka, Myanmar, Russia, Arabia, Africa, Borneo, Philippines, Nepal, Malayan subregion.

Sub-Family FORMICINAE Lepeletier
Tribe **Camponotini** Forel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) irritans Fred. Smith

1857. *Camponotus (Tanaemyrmex) irritans* Fred. Smith, *Jour. Proc. Linn. Soc. Lond. Zool.*, 2 : 55, Worker.

Material Examined : Workers : Barmer 6 exs., Harsani village, 20.7.1995, N.S.R., Coll., Jodhpur 12 exs., Paota, 9.5.75, Z.S.I.P., Coll., 2 exs., 6.6.79, R.N.B., Coll.

Diagnostic characters : Length Worker maj. 8-10 mm. Worker : Head and abdomen dark castaneous brown, antennae, alitrunk petiole and legs honey yellow. Head subtriangular, very convex in front with 7 teeth, clypeus raised along the medial carina. Alitrunk longer, narrower more compressed in front, flat posteriorly. Node of petiole narrow conical convex in front, flat posteriorly. Abdomen short and narrow.

Distribution : India : Rajasthan–Barmer, Jodhpur; Gujarat, Karnataka, West Bengal.

Elsewhere : Sri Lanka, Malay Peninsula, Bangkok, Borneo, China, Java, Sumatra.

Sub-Family FORMICINAE Lepeletier
Tribe **Camponotini** Forel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) carin Emery

Camponotus (Tanaemyrmex) carin Emery, *Ann. Mus. Civ. Stor. Nat. Genova*, 3(7) : 512, Worker.

Material Examined : Workers : Sawai Madhopur 2 exs., Bagda, 12.10.2003, 2 exs., Ranthambore National Park, 14.10.2003, S.K., Coll.

Diagnostic Characters : Length Worker maj.–11–12 m.m. Worker : Head and scape of antennae black, alitrunk and abdomen dark fuscous brown. Head elongate, broader in front narrower oval, the posteriorly occiput transverse but the occipital angles not prominent, mandibles with six teeth. Clypeus rather narrow, vertically carinate down the middle, median lobe slightly produced. Alitrunk seen from side forming a regular arch. Pronotum remarkable long, narrowed anteriorly forming a neck, about twice as long as broad. Petiole one jointed and the node of the petiole very thick at base, low and conical. Abdomen narrow, oval.

Distribution : India : Rajasthan–Sawai Madhopur; Maharashtra.

Elsewhere : Myanmar, Tennasserim, China.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Farel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) mitis Smith

1892. *Camponotus maculatus* Fabr., race *mitis* (Smith), Forel, *J. Bombay nat. Hist. Soc.*, VII : 230 & 242, Worker.

Material Examined : Workers : Jodhpur 15 exs., Paota, 13.5.75, 15 exs., Paota, 20.5.75, Z.S.I.P.

Diagnostic Characters : Length Worker Major- 8-10 mm. Worker Major Head, scape of antennae and abdomen opaque dark fuscous brown, flagellum of the antennae, alitrunk and legs yellowish brown. Head sub-triangular, broad posteriorly, mandibles with 7 teeth. Distance between antennal carinae equal to distance between eyes and antennal carina. Alitrunk viewed from side forming a regular arch. Legs moderately long, tibia prism shaped without spines, Abdomen broad, long and massive.

Distribution : India : Rajasthan–Jodhpur; Maharashtra, Chandigarh, Orissa, Sikkim, Tamil Nadu, Andaman & Nicobar Islands.

Elsewhere : Myanmar, Tenasserim, the Malay Peninsula and islands down to Borneo.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) invidus Forel

1892. *Camponotus (Tanaemyrmex) invidus* Forel, *J. Bombay nat. Hist. Soc.*, 7 : 235, fig.2, Worker, Soldier.

Material Examined - Workers : Sawai Madhopur 10 exs., Mansarovar, 8.12.99, R.S., Coll., 1 ex., Near Lahpur dam, 6.11.2000, N.S.R., Coll.

Diagnostic Characters : Length Worker : 5–6 m.m. Worker Head, alitrunk and abdomen entirely pale yellow with sparse erect yellowish pubescent. Head more or less elongate, sides of the head straight not convex. Mandibles with 6 teeth; clypeus comparatively broad. Antennae 12 segmented, comparatively long and thick. Alitrunk convex anteriorly, strongly laterally compressed posteriorly, with the pro-meso and metanotum more strongly curved. Legs stout, tibia cylindrical. Petiole one jointed, node low, convex in front, flat posteriorly, abdomen comparatively long and massive.

Distribution : India : Rajasthan–Sawai Madhopur; Orissa, Himachal Pradesh, Uttaranchal, Sikkim, West Bengal, Delhi.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Farel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) taylori Forel

1892. *Camponotus maculatus* Fabricius race *taylori* Forel, *J. Bombay nat. Hist. Soc.*, 7 : 229 & 241, Worker.

Material Examined : Workers : Jodhpur 7 exs., Sardar-samand, 20.2.63, R.C.S., Coll., Many exs., Ummed, 11.8.64, K.V.S.R., Coll., 3 exs., Near Akerajji ka talab, 4.5.73, M.L., Coll., 5 exs., 13.5.75, Z.S.I.P., Coll., Many exs., Paota, 28.5.75, 3 exs., 23.8.79, R.N.B., Coll., Sawai Madhopur 4 exs., 8.11.2000, N.S.R., Coll.

Diagnostic Characters : Length Worker maj. 7–8 m.m. Worker : Castaneous brown in colour. Head subtriangular, mandibles with 7 teeth. Antennae 12 jointed, scape of antennae cylindrical. Median lobe of clypeus with its anterior margin transverse. Alitrunk very broad and short viewed from side forming a regular arch. Tibia cylindrical and without spines. Abdomen short and broad. Petiole one jointed, node of petiole oval, transverse, convex in front, flat posteriorly.

Distribution : India : Rajasthan–Jodhpur, Sawai Madhopur; Maharashtra, Sikkim, Orissa, Kerala, Tamil Nadu, West Bengal, Himalayas.

Elsewhere : Myanmar, China, Sri Lanka.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Farel

Genus *Camponotus* Mayr
Camponotus (Tanaemyrmex) variegatus Smith

1858. *Camponotus (Tanamyrmex) variegatus* Smith (*Formica*) *Cat.*, VI : 19, Worker, Female.

Material Examined : Workers : Sawai Madhopur 3 exs., Malik talab, 3.11.2000, N.S.R., Coll.

Diagnostic Characters : Length Worker maj. : 9–10 m.m. Worker–Yellowish red without lusture. Head subtriangular, rather elongate, the posterior lateral angles not prominent, mandibles with 6 teeth. Scape of antennae cylindrical. Median lobe of clypeus with its anterior margin transverse. Alitrunk narrow rather compressed, seen from side forming a

regular arch. Tibia cylindrical and without spines beneath. Petiole one jointed and the node of the petiole small, remarkably thick, very convex in front, flat posteriorly, abdomen broadly oval.

Distribution : India : Rajasthan–Sawai Madhopur; Tamil Nadu

Elsewhere : Myanmar, Sri Lanka, Java, Singapore.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Camponotus* Mayr
Camponotus dichrous Forel

1897. *Camponotus dichrous* Forel, *Bull. Soc. Vaud. Sc. Nat.*, 16 : 63, Worker.

Material Examined : Workers : Alwar 5 exs., Sariska, 18.6.83, N.S.R., Coll., Sawai Madhopur 4 exs., Near lahpur dam, 8.11.2000, N.S.R., Coll.

Diagnostic Characters : Worker : 9–11 m.m. Worker : Head and 3rd and following segments of the abdomen pitch–black, basal two segments yellow, the alitrunk brown. Head triangular much broader posteriorly than in front, the lateral occipital angles very prominent, mandibles with 7 teeth, clypeus carinate with a median anteriorly produced rectangular lobe. Scape of antennae cylindrical. Tibia compressed and spined beneath. Alitrunk anteriorly narrowed into a collar, seen from side forming a regular arch. Petiole one jointed and node of petiole convex in front, flat posteriorly. Abdomen oval not broader than the head.

Distribution : India : Rajasthan–Alwar, Sawai Madhopur; Punjab, Uttar Pradesh, West Bengal, Himalayas.

Remarks : Recorded for the first time from Rajasthan.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Camponotus* Mayr
Camponotus (Orthonotomyrmex) sericeus Fabricius

1798. *Camponotus (Orthonotomyrmex) sericeus* Fabricius, *Suppl. Ent. Syst.*, : 279, Worker (*Formica*).

Material Examined : Workers : Dungarpur 2 exs., Bech iwara, 22.8.84, N.S.R., Coll., Jaipur 2 exs., Ramgarh, 23.9.2002, R.S., Coll., Kota 1 ex., Jagpura, 12.9.2001, N.S.R. & R.S., Coll.

Diagnostic characters : Length Worker maj. 10 mm. Worker : Black with the head blood red in colour Abdomen with a dense silky golden pubescence hiding the sculpture Head very broad, emarginate posteriorly, mandibles with 5 teeth The anterior border of clypeus emarginate in the middle. Alitrunk broad in front, strongly compressed posteriorly, emarginate at the meso-metanotal suture, the basal face of the metanotum horizontal, flat the sides margined posterior face excavate. Node of petiole rounded knob like Abdomen very broad globose.

Distribution : India : Rajasthan–Dungarpur, Jaipur, Kota; Gujarat, Maharashtra, Chandigarh, Karnataka, Tamil Nadu, West Bengal, Meghalaya, Punjab, Orissa, Manipur, Delhi.

Elsewhere : Myanmar, Sri Lanka, Africa, Arabia, Egypt, Indo-China.

Sub-Family FORMICINAE Lepeletier
Tribe Camponotini Forel

Genus *Polyrhachis* Smith
Polyrhachis (Myrmhopla) simplex Mayr

1862. *Polyrhachis (Myrmhopla) simplex* Mayr, Verh. zool. -bot. Ges. Wien, 13 : 682, Worker.

Material Examined : Workers : Sawai Madhopur 2 exs., Near Lahpur dam, 1.12.99, R.S., Coll., 1 ex., (Female), 12.10.2003, S.K., Coll., Udaipur 5 exs., Near Pichola lake, 10.3.1995, N.S.R. & S.K., Coll.

Diagnostic characters : Length Worker : 4.5- 7 mm. Worker Black, head and alitrunk punctured, granulate, abdomen opaque, pubescence almost entirely absent. Head broadly oval, clypeus with a distinct medial vertical carina, the anterior margin incised in the middle, antennal carinae wide apart. Alitrunk narrower than the head, compressed posteriorly, pronotum and mesonotum longer than broad, pronotal spines very short and thick directed obliquely outwards, metanotal spines erect, slightly divergent, the apex slightly bent outwards, legs stout tibia without hairs. Node of the petiole broader than long, biconvex, with two spines on the upper lateral angles and two obtuse teeth in the middle between them, abdomen short, very convex above, globose.

Distribution : India : Rajasthan–Sawai Madhopur, Udaipur; Gujarat, Tamil Nadu, Chandigarh.

Sub-Family FORMICINAE Lepeletier
Tribe Formicini Forel

Genus *Cataglyphis* Forster
Cataglyphis bicolor setipes Emery

1925. *Cataglyphis bicolor setipes* Emery, C., Genera Insect. Fasc., 183 : 266.

Material Examined : Workers : Barmer 1 ex., Girab area, 10.2.1995, 6 exs., Turvi village, 13.2.1995, 2 exs., Balewa village, 18.7.1995, 2 exs, Harsani village, 20.7.1995, 5 exs., Girab area, 21.7.1995, N.S.R., Coll., 1 ex., 1.9.2003, 1ex 2.9.203 exs., 3.9.2003, T.D.P.S., Coll., Bhilwara 1 ex., Meja-dam, Mandal, 18.4.2001, N.S.R. & R.S., Coll., Bikaner 5 exs., 31.1.1961, A.K.D., Coll., Churu 3 exs., Dudwakhara, 10.9.2002, R.S., Coll., Jaisalmer 1 ex., Khuri village, 8.2.1995, 8 exs., Bhopa village, 25.7.1995, 12 exs., Barana village, 26.7.1995, 4 exs., Khuri village, 27.7.1995, 2 exs., Samdunal area, 7.9.1995, 4 exs., Barana-Sudasari, 28.9.1996, N.S.R., Coll., 2 exs., Pokran, 6.9.2003, 9 exs., 4.9.2003, T.D.P.S., Coll., Jodhpur 3 exs., Daizer, 14.9.62, 6 exs., Mathania, 9.11.62, R.C.S., Coll., 1 ex., Shastrinagar, 6.3.63, 9 exs., Air-Port road, 9.7.63, R.N.B., Coll., 4 exs., Pichyak dam-Bilara, 19.5.72, G.L.P., Coll., 6 exs., Paota, 17.5.73, R.C.S., Coll., 1 ex., 28.6.74, Y.P.S., Coll., 1 ex., Salawas, 4.6.75, M.H., Coll., 15 exs., Pipar city, 10.12.80, 4 exs., Paota, 20.12.80, N.T., Coll., Karauli 5 exs., 9.10.96, P.S.K., Coll.

Diagnostic characters : Length Worker : 10-12 mm. Worker : Head, alitrunk, legs and node of petiole dark red, legs and abdomen black. Head quadrangular not emarginate posteriorly, mandibles comparatively large, strongly dentate, the apical tooth remarkably long, curved and acute. Three ocelli present. Alitrunk viewed from the side constricted in the middle, saddle shaped; pronotum convex, mesonotum long, narrow rounded above, metanotum short gibbous. Petiole one jointed, node rounded, not much raised. Abdomen oval.

Distribution : India : Rajasthan—Barmer, Bhilwara, Bikaner, Churu, Jaisalmer, Jodhpur, Karauli; Gujarat, Chandigarh, Punjab, Delhi, West Bengal, Tamil Nadu.

Elsewhere : Persia, North Eastern and Northern Africa, South Europe, Iran.

Sub-Family FORMICINAE Lepeletier
Tribe Oecophyllini Forel

Genus *Oecophylla* Smith
Oecophylla smaragdina Fabricius

1793. *Oecophylla smaragdina* Fabricius, *Hafniae Ent. Syst.*, 3 : 350, Worker.

Material Examined : Workers : Banswara Many exs. (maj. and min.), Lauda village, 24.8.84, 15 exs., Kushalgarh, 26.8.84, 10 exs., Near Daylab talab, 28.8.84, N.S.R., Coll., 15 exs., Near Daylab talab 23.5.87, 7 exs., Milaj village, 26.5.87, P.C..T., Coll.

Diagnostic characters : Length Worker maj. 9.5-11 mm. Worker min. 7-8 mm. Worker : Rusty red. Head of maj. and min. relatively the same size, roundly quadrangular, posteriorly not emarginate and slightly broader than in front. Mandibles long with masticatory margin very broad in proportion to length, dentate, the apical tooth acute and curved, clypeus strongly convex about two third as high as broad, its anterior margin strongly arched. Antennae 12-jointed originating from the anterior margin of the clypeus. Alitrunk elongate,

pronotum convex, anteriorly narrowed into a collar, mesonotum constricted, narrow, saddle shaped. Metanotum rounded above, gibbous. Petiole elongate, incrassate in the middle scarcely nodiform. Abdomen short oval.

Distribution : India : Rajasthan–Banswara; Gujarat, Maharashtra, Uttar Pradesh, Sikkim, Uttranchal, Assam, Chandigarh, Meghalaya, Orissa, Tamil Nadu, Karnataka, Kerala, Andamans, N.W. Himalayas.

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

Sub-Family FORMICINAE Lepeletier
Tribe Prenolepidini Forel

Genus *Paratrechina* Motschoulsky
Species of the Genus *Paratrechina* (*Prenolepis*)

Scape of antennae remarkably long, extending beyond top of head by more than half its length *P. longicornis*

a) Scape of antennae extending beyond top of head by less than half its length
..... *P. taylori*

1802. *Paratrechina longicornis* Latreille. *Nylanderia longicornis* Latreille, *Hist. Nat. Fourmis* : 113, (*Formica longicornis*).

Material Examined : Workers : Alwar 12 exs., Near Karauli dam, 15.9.2001, 15 exs., Rajgarh, 17.9.2001, R.S., Coll., Jhalawar 1 ex., Near Jhalawar tank, 7.4.2001, N.S.R., Coll.

Diagnostic characters : Length Worker : 2.5–3mm. Dull coppery brown in colour, with fairly abundant, long, erect, somewhat coarse hairs. Head oval as broad in front as posteriorly. Mandible small with 5-6 teeth. Antennae 12 jointed, scape of antennae remarkably long, extending beyond the top of the head by more than half its length. Alitrunk elongate, rounded above viewed from side lightly emarginate at the mesonotum, not constricted at the mesometanotal suture. Node of the petiole not so broad as high. Abdomen anteriorly gibbous oval and massive.

Distribution : India : Rajasthan–Alwar, Jhalawar: Western India, Maharashtra, Orissa, West Bengal, Uttar Pradesh, Tamil Nadu.

Elsewhere : All tropical countries (Europe).

Sub-Family FORMICINAE Lepeletier
Tribe Prenolepidini Forel

Genus *Paratrechina* Motschoulsky
Paratrechina taylori Forel

1903. *Prenolepis taylori* Bingham *Fauna Brit. India, Hym.*, 2 : 328, Worker, Female, Male.

Material Examined : Workers : Alwar 8 exs., Nagali Sahajpur, 18.9.2001, R.S., Coll.

Diagnostic Characters : Length Worker : 1.5-2mm. Pale yellow in colour, body covered with scattered, short semi-erect pale hairs. Head oval longer than broad very convex in front. Mandibles narrow, the masticatory margin oblique scape of antennae extending beyond top of head by less than half its length. Eyes rather small. Alitrunk elongate, the pro-meso and meso-metanotal sutures distinct, meso-notum not constricted. Node of petiole low, inclined forward, flat, rounded above. Abdomen massive, convex above, gibbous in front.

Distribution : India : Rajasthan–Alwar; West Bengal, Orissa, Western India

Elsewhere : Sri Lanka.

Sub-Family FORMICINAE Lepeletier
Tribe Plagiolepidini Forel

Genus *Acantholepis* Mayr
Acantholepis frauenfeldi Emery

1925. *Acantholepis frauenfeldi* Emery, *C. Gen. Insect. Fasc.*, 183 : 23, 25.

Material Examined : Workers : Ajmer 12 exs., Pushkar, 26.9.2002, R.S., Coll., Barmer 50 exs., Harsani village, 11.2.1995, 12 exs., Harsani village 20.7.1995 15 exs., Girab area, 21.7.1995, 5 exs., Turvi village, 1.10.1996, 2 exs., Girab area, 2.10.1996, 10 exs., Girab area, 3.10.1996, N.S.R., Coll., Bhilwara 10 exs., Sodar, 25.8.1985, R.S., Coll., 20 exs., Ladpura, Mandalgarh, 18.4.2001, N.S.R. & R.S., Coll., Churu : 1 ex., Kasoli Dudwakhara, 10.9.2002, R.S., Coll., Dausa 32 exs., Kundal, 21.9.2002, R.S., Coll., Jodhpur 10 exs., Salawas, 7.9.1962, K.C.K., Coll., Many exs., Near Akherajji ka talab, 23.1.1964, Many exs., Agolai, 13.11.2003, R.N.B., Coll., 2 exs., Near Pichyak dam, Bilara, 30.7.1976, M.H., Coll., 3 exs., 1.11.80, R.N.B., Coll., 5 exs., 13.8.1976, Many exs., 1.6.1993, Many exs., Kailana 4.6.1993, N.S.R., Coll., Jaisalmer 15 exs., Pithla area, 5.2.1995, 8 exs., Pithla area 24.7.1995, 12 exs., Barana village, 26.7.1995, 2 exs., Barna village, 27.9.1996, N.S.R., Coll., Karauli 10 exs., 9.10.96, P.S.K., Coll.

Diagnostic Characters : Length Worker : 3.5 mm. Worker : Head brown, mandibles, antennae alitrunk, legs and node of petiole brownish yellow abdomen dark brown, Head distinctly longer than broad, rounded above, mandibles narrow, curved with the apical tooth long and acute, clypeus strongly convex, Scape of antennae remarkably long extending for more than half its length beyond the top of the head. Alitrunk the pronotum from above appears circular, the mesonotum strongly constricted in front forming a cylindrical neck, widening posteriorly, the metanotal teeth thick and broad at base, the meso-metanotal suture deep and distinct. Node of petiole pentagonal the upper border slightly emarginate. Abdomen oval.

Distribution : India : Rajasthan—Ajmer, Barmer, Bhilwara, Churu, Dausa, Jodhpur, Jaisalmer, Karauli; Maharashtra, Chandigarh, Punjab, Andhra Pradesh, Meghalaya, West Bengal, Karnataka.

Elsewhere : Southern Europe, N. Africa.

Sub-Family FORMICINAE Lepeletier
Tribe **Plagiolepidini** Forel

Genus *Anoplolepis* Santschi
Anoplolepis jerdoni Forel

1894. *Plagiolepis jerdoni* Forel, *J. Bombay nat. Hist. Soc.*, 8 : 415, Worker.

Material Examined : Workers : Banswara 10 exs., Dhambar, 8.9.1986, N.S.R., Coll., Dungarpur 10 exs., 8.9.1986, N.S.R., Coll.

Diagnostic characters : Length Worker : 1.5 mm. Worker : Brownish black, head smooth polished and shining. Head a little longer than broad, slightly emarginate posteriorly. Mandibles narrow, masticatory margin with five teeth, the apical tooth long and acute. Antennae 11-jointed slender scape extending slightly more beyond the top of the head. Alitrunk short and broad pronotum large convex mesonotum from above circular, convex meso-metanotal emargination well-marked, metanotum nearly as broad as the pronotum. Node of the petiole low transverse above, inclined to the front. Abdomen oval.

Distribution : India : Rajasthan—Banswara, Dungarpur; Maharashtra, Gujarat, West Bengal, Karnataka, Kerala.

SUMMARY

The manuscript deals with 51 ant species distributed under 22 genera of the Family Formicidae. The Family Formicidae comprises eight sub-families namely Dorylinae with 1 genera and 2 species, Aenictinae with 1 genera and 1 species, Dolichoderinae with 1 genera and 1 species, Cerapachyinae with 1 genera and 2 species, Ponerinae with 2 genera and 4 species, Pseudomyrmecinae with 1 genera and 1 species, Myrmicinae with 8 genera and 23 species, Formicinae with 7 genera and 17 species.

ACKNOWLEDGEMENT

Gratitude is expressed towards Dr. J.R.B. Alfred, Director Zoological Survey of India, Kolkata for providing all the facilities to undertake the Research Work. I am grateful to Dr. N.S. Rathore, Officer-in-Charge for his kind support and encouragement during the course of this work. I am thankful to Dr. Sanjeev Kumar, Scientist-B for his advice to improve the

quality of this communication and Dr. Ram Sewak, Assistant Zoologist for his useful suggestions. Thanks are also due to Mrs. Venulata Nigam, Library and Information Assistant, Desert Regional Station for help rendered in consulting literature from the library.

REFERENCES

- Ali, T.M.M. 1991. Ant Fauna of Karnataka I. Newsl. IUSSI Indian Chapter, **5** : 1-3.
- Ali, T.M.M. 1992. Ant Fauna of Karnataka II. Newsl. IUSSI Indian Chapter, 1-9.
- Ali, T.M.M. & Ganeshiah, K.N. 1998. Mapping diversity on ants and root grubs. *Current Science* **75**(3) : 201-204.
- Bharti, H. 2001. Checklist of Ants from North West India-I. *Uttar Pradesh J. Zool.*, **21**(2) : 183-187.
- Bharti, H. 2002. Checklist of Ants of North West India-II. *J. Bombay nat. Hist. Soc.*, **99**(2) : 341-343.
- Bingham, C.T. 1903 *Fauna British India* (Hymenoptera) London, **2** : xix + 506; pl. 1.
- Bolton, B. 1995. A taxonomical and zoogeographical census of the extant ant taxa, (Hymenoptera : Formicidae). *J. nat. Hist. Soc. London* **29** : 1037-1056.
- Chapman, J.W. and Capco, S.R. 1951. *Checklist of the Ants (Hymenoptera : Formicidae) of Asia*. Monograph of the Institute of Science and Technology, Manila No. 1, 327 pp.
- Chhotani, O.B. and Ray, K.K. 1976. Fauna of Rajasthan India, Hymenoptera *Rec. zool. Surv. India, India*, **71** : 13-49.
- Chhotani, O.B. and Maiti, K.K. 1977. Contribution to the knowledge of Formicidae of the Andaman Islands *Newsl. zool. Surv. India*, **3**(1) : 17-20.
- Gadagkar, R., Nair, P., Chandrasheker K. & Bhat, D.M. 1983. Ant species richness and diversity in some selected localities in Western Ghats, India *Hexapoda*, **5**(2) : 89-94.
- Ghosh, S.N., Sheela, S. and Kundu, B.G. 2005. Ant. (Hymenoptera : Formicidae) of Rabindra Sarowar, Kolkata. *Rec. zool. Surv. India, Occ. Paper No.* **234** : 1-40.
- Mathew, R 1980. Description of new species of ants (Hymenoptera : Formicidae) from the Khasi Hills, Meghalaya. *Oriental Insects*, **14**(4) : 425-427.
- Mathew, R. 1983. Studies on house hold pest (Hymenoptera Formicidae.) of Shillong *Bull. zool. Surv. India*, **5**(1) : 125-127.
- Mathew, R. 1984. Some new records of ants (Hymenoptera Formicidae.) from Tripura. *Bull. zool. Surv. India*, **6**(1-3) : 307-308.

- Mathew, R. 2000. Insecta : Hymenoptera Formicidae. *State Fauna Series 7 : Fauna of Tripura, Part 3* : 347-354. (ZSI).
- Mathew, R. & Tiwari, R.N. 2000. Insecta, Hymenoptera: Formicidae. *State Fauna Series 4 : Fauna of Meghalaya, Part, 7* : 251-409. Zool. Surv. India.
- Mukherji, D and Ribeiro, S. On collection of Ants (Formicidae) from the Andaman Islands. *Rec. Indian Museum*, Vol. viii-205-209.
- Pajni, H.R. & Suri, R.K. 1978. First report on the Formicid Fauna (Hymenoptera) of Chandigarh. *Res. Bulletin (Science) Panjab University*, **29** : 5-12.
- Rao, N.S. and Veeresh, G.K. 1991, Some observations on the biology and behaviour of crazy ant, *Anoplolepis longipes* (Jerdon), Hymenoptera, Formicidae *Entomon*, **16(4)** : 261-267.
- Rastogi, N.; Nair, P.; Kolatkar, M.; William, H. & Gadagkar, R. Ant fauna of the Indian Institute of Science Campus Survey and some preliminary observations. *J. Indian Inst. Sci.*, **77** : 133-140.
- Rastogi, N.; Nair, P.; Kolatkar, M. & Gadagkar, R. 1997. Foraging strategies in the Ants *Myrmecaria brunnea* and *Diacamma ceylonenses*-Some preliminary observations. *Entomon*, **22(1)** : 79-81.
- Roonwal, M.L. 1972. Plant-pest status of root eating ant *Dorylus orientalis* with notes on taxonomy, distribution and habits (Insecta : Hymenoptera). *J. Bombay nat. Hist. Soc.* **72(3)** : 305-313.
- Rothney, G.A.J. 1889. Notes on Indian ants. *Trans. Ent. Soc. Lond.*, **3** : 347-374.
- Sharma, I.K. 1981. Notes on the Carpenter ant *Camponotus irritans* Smith *J. Bombay nat. Hist. Soc.*, **78(3)** : 616-617.
- Sunil Kumar, M.; Srihari, K.T.; Nair, P.; Verghese, T. & Gadagkar, R. 1997. Ant species richness of selected localities of Bangalore. *Insect Environment*, **3(1)** : 3-5.
- Tak, N. 1995. Studies on ants (Formicidae) of Rajasthan I. Jodhpur. *Hexapoda*, **7(1)** : 17-28.
- Tak, N. 2000. Studies on ants (Formicidae) of Rajasthan II. Dungarpur. *Entomon*, **25(1)** : 47-54.
- Tak, N. 2000. Studies on ants (Formicidae) of Rajasthan III. Banswara. *Entomon*, **25(2)** : 97-101.
- Tak, N. 2004. Ants of Arid Zone of Rajasthan *Advancements in Insect Biodiversity* : 289-297. (Editor Rajiv K. Gupta.)

- Tak, N. and Rathore, N.S.** 1996. Ant (Formicidae) Fauna of thar Desert : *Faunal Diversity in the Thar Desert : Gaps in Research*. Edited by Ghosh, Baqri and Prakash. Scientific publishers, pp. 271-279.
- Tak, N. & Rathore, N.S.** 2004 Ants (Formicidae) Fauna of Desert National Park in *D.N.P. Project Report*, 85-90.
- Tak, N. and Rathore, N.S.** 2004 Insecta :Hymenoptera : Formicidae. *State Fauna Series 8 : Fauna of Gujarat, Zool. Surv. India* : 161-183.
- Tak, N.; Rathore, N.S. & Kumar, S.**2007. Insecta-Hymenoptera. In : *Fauna of Pichola lake-Wetland Ecosystem Series*, 127-130.
- Tiwari, R.N.** 1994. Two new species of a little known genus *Myrmecina curtis* (Insecta : Hymenoptera : Formicidae) from Kerala, India. *Rec. zool. Surv. India*, **94**(2-4) : 151-158.
- Tiwari, R.N.** 1997. Hymenoptera : Formicidae *State Fauna Series 6 : Fauna of Delhi*, 441-451(Z.S.I.).
- Tiwari, R.N.** 1998. Taxonomic Studies on ants of Southern India (Insecta : Hymenoptera : Formicidae) *Memoirs of Zoological Survey of India*, **18**(4) : 1-90.
- Tiwari, R.N.; Kundu, B.G.; Rajchowdhury, S and Ghosh, S.N.** 1998. Insecta : Hymenoptera : Formicidae *State Fauna Series 3 : Fauna of West Bengal, Part 8* : 211-294.
- Tiwari, R.N.; Kundu, B.G.; Rajchowdhury. S and Ghosh, S.N.** 2003. Insecta : Hymenoptera : Formicidae *State Fauna Series 9 : Fauna of Sikkim, Part 4* : 467-506. (Z.S.I.).
- Tiwari, R.N., and Tiwari, S.K.** 2002 Contribution to the Knowledge of Ants (Hymenoptera : Formicidae)of Chandaka-Dampara Wild life Sanctuary, Orissa. *Rec. zool. Surv. India*, **100**(1-2) : 145-169.
- Varghese, T.** 2003. Ants of India Institute of Science Campus Centre for Ecological Sciences *Indian Institute of Science Bangalore. Tech. Report No. 98* : 1-112.
- Veeresh, G.K.** 1990. Pest ants and their management. Social Insects and the Environments. *Proc. 11th International Congress. IUSSI, 1990* : 267-268.43
- Wroughton, R.C.** 1892. Our Ants. *J. Bombay nat. Hist. Soc.*, 13-60.

ANTS COLLECTION SITES

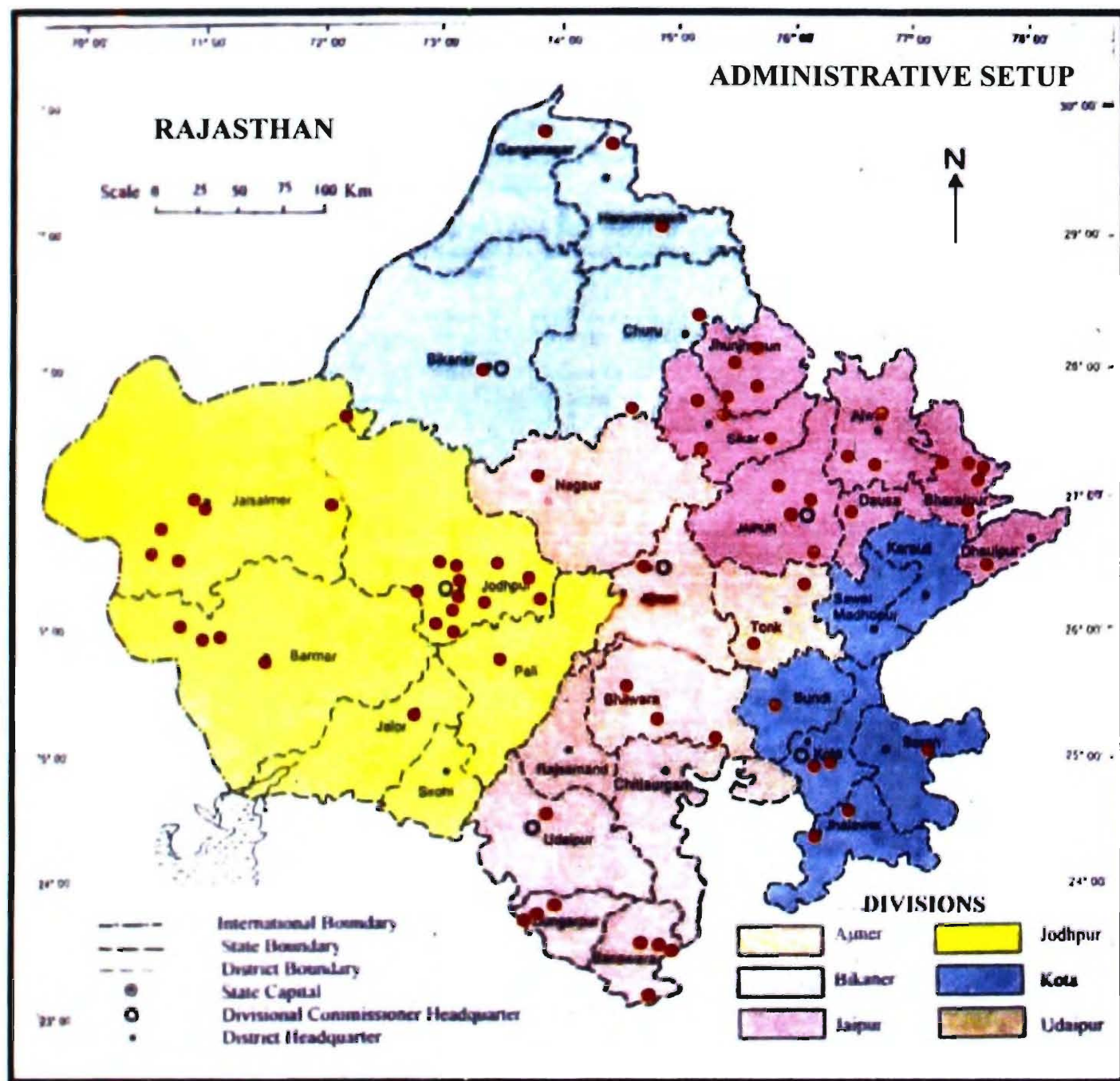
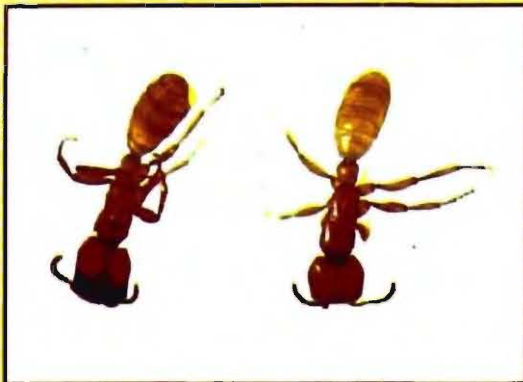


PLATE-1



1. *Dorylus (Typhlopone) labiatus* Shuckard



2. *Dorylus (Alaopone) orientalis* Westwood



3. *Aenictus (Aenictus) brevicornis* Mayr



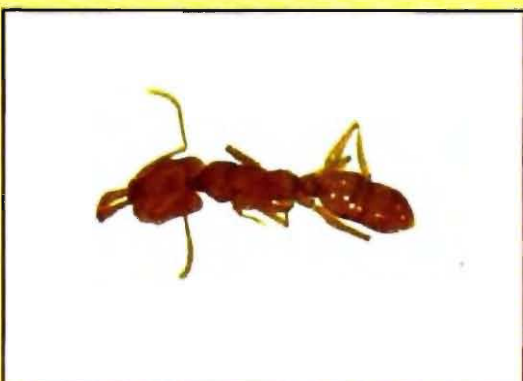
4. *Tapinoma (Micromyrma) melanocephalum* Fabricius



5. *Cerapachys longitarsus* Mayr



6. *Cerapachys (Cerapachys) risi* Forel



7. *Anochetus punctiventris* Mayr



8. *Anochetus taylori* Forel

PLATE-2

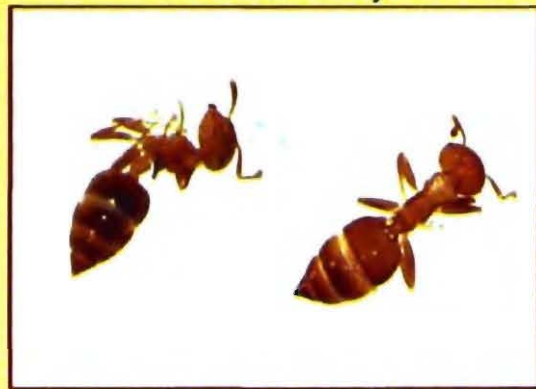
9. *Anochetus yerburyi* Forel10. *Leptogenys (Lobopelta) processionalis* Jerdon11. *Tetraponera (Tetraponera) rufonigra* Jerdon12. *Crematogaster (Acrocoelia) Brunnea* var. *Contemta* Mayr13. *Crematogaster (Acrocoelia) rothneyi* Mayr14. *Crematogaster (Orthocrema) walshi* Forel15. *Meranoplus bicolor* Guerin16. *Monomorium (Lampromyrmex) atomus* Forel

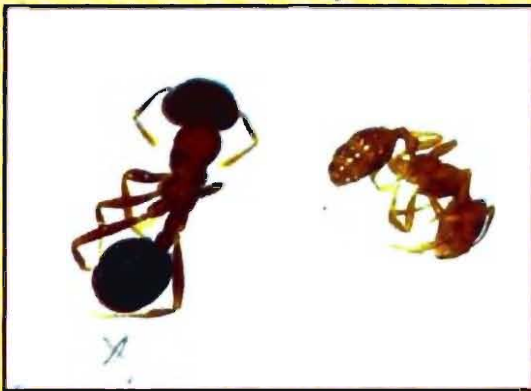
PLATE-3



17. *Monomorium (Monomorium) latinode* Mayr



18. *Monomorium (Monomorium) pharaonis* Linne



19. *Monomorium (Monomorium) wroughtoni* Forel



20. *Monomorium (Holcomyrmex) criniceps* Mayr



21. *Monomorium (Holcomyrmex) glabrum* Ern Andre



22. *Monomorium (Holcomyrmex) scabriceps* Mayr



23. *Monomorium (Parholcomyrmex) destructor* Jerdon



24. *Monomorium (Parholcomyrmex) gracillimum* var. *Mayri* Forel

PLATE-4



25. *Monomorium (Xeromyrmex) salomonis indicum* Forel



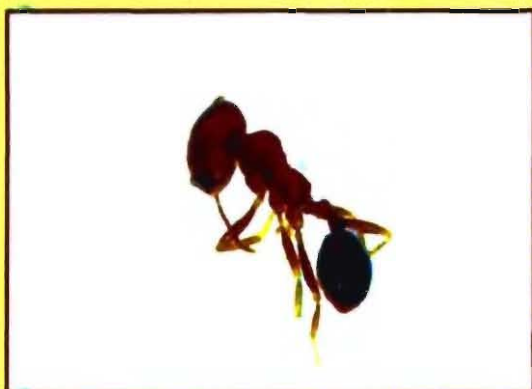
26. *Monomorium (Xeromyrmex) longi* Forel



27. *Monomorium sagei* Forel



28. *Solenopsis geminata* Fabricius



29. *Messor baabarus* subsp. *himalayana* Forel



30. *Pheidole (Pheidole) sulcaticeps* Roger



31. *Pheidole (Pheidole) wroughtoni* Forel



32. *Pheidolgeton affinis* Jerdon

PLATE-5



33. *Tetramorium salvatum* Forel



34. *Tetramorium walshi* Forel



35. *Camponotus (Dinomyrmex) angusticollis* Jerdon



36. *Camponotus (Tanaemyrmex) compressus* Fabricius



37. *Camponotus (Tanaemyrmex) irritans* Fred-Smith



38. *Camponotus (Tanaemyrmex) carin* Emery



39. *Camponotus (Tanaemyrmex) mitis* Smith



40. *Camponotus (Tanaemyrmex) invidus* Forel

PLATE-6

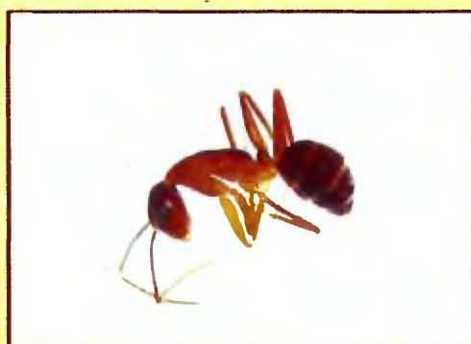
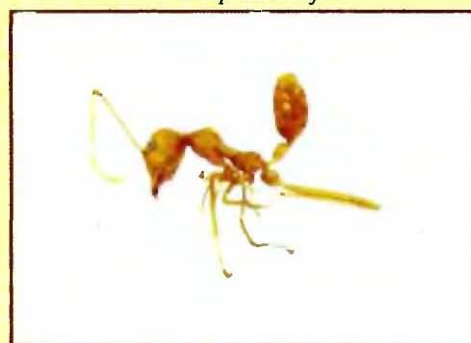
41. *Camponotus (Tanaemyrmex) taylori* Forel42. *Camponotus (Tanaemyrmex) variegatus* Smith43. *Camponotus dichrous* Forel44. *Camponotus (Orthonotomyrmex) sericeus* Fabricius45. *Polyrhachis (Myrmhopla) simplex* Mayr46. *Cataglyphis bicolor setipes* Emery47. *Oecophylla smaragdina* Fabricius48. *Paratrechina longicornis* Latreille

PLATE-7



49. *Parataechina taylori* Forel



50. *Acantholepis frauenfeldi* Emery



51. *Anoplolepis jerdoni* Forel