

TERMITES FROM ARID AREAS OF PUNJAB AND HARYANA, INDIA.

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INTRODUCTION

The arid region of Thar Desert (1,67,750 sq. kms). is contained in the states of Rajasthan (62%), Gujarat (20%), Punjab (5%) and Haryana (4%) in India and some parts of Punjab and Sind in Pakistan. Termites from Rajasthan portion of Thar Desert have been studied extensively by many workers (as reviewed by Roonwal, 1976, 1982) and of Gujarat portion by Thakur (1984, 1989,). However, as there is no published record of termites occurring in arid areas of Pnnjab and Haryana (Roonwal, 1975), the present contribution is an effort to make available information on termites of this part of the country.

The author made extensive survey of termites from Thar Desert portion of Punjab (Bhatinda, Ferozepur and Sangrur) and Haryana (Hissar and Mahendragarh) in November-December, 1982 and collected 187 vials of termites. The present paper is based on the study of this collection. A total of 19 species of termites under 10 genera belonging to two families (Rhinotermitidae) are reported.

All measurements are in mm.

Abbreviations used : Coll., collected by ; Dist., District ; ex., extracted from ; exs., examples ; Im., Imago ; k., King ; Ny., Nymph ; P.S.E.B., Panjab State Electricity Board ; Q. Queen ; S., Soldier ; sev., several ; Type-loc., Type locality ; W., Worker ; Z. S. I., Zoological Survey of India.

SYSTEMATIC ACCOUNT

Family I. RHINOTERMITIDAE

Subfamily (i) HETEROTERMITINÆ

1. *Heterotermes indicola* (Wasmann)

1902. *Leucotermes indicola* Wasmann, *Zool. Jahrb. Abt. Syst.*, Jena, 17 (i) : 118-119. S. & W. Type-loc. : INDIA : Bombay (Maharashtra).

1949. *Heterotermes indicola* : Snyder, *Smiths. misc. Coll.*, 112 : 68.

1979. *Heterotermes indicola* : Thakur and Sen-Sarma, *Indian For. Rec.*, 13 (2) : 10-15.

Present address : Forest Research Institute, P. O. New Forest, Dehra Dun.

Material : (i) One vial with 3 S. and 22 W. from an open land behind D.A.V. College, Bhatinda, 30. xi. 82 (ii) One vial with 2 S. and 10 W from P.W.D. Rest house, Mahendragarh, 16. xii. 82, ex. wooden almirah.

Measurements (three S. from Bhatinda) : Total body length with mandibles 4.95-5.20, head length to lateral base of mandibles 1.54-1.61, max. width of head 0.84-0.91, max. length of mandibles 0.81-0.84, min. (median) length of postmentum 1.19-1.23, max. width of postmentum 0.42-0.46, max length of pronotum 0.56, max. width of pronotum 0.74-0.77. No. of Antennal segments 16.

Distribution : *Previous record :* Widely distributed in Pakistan and northern and western India, upto an altitude of 1800 m. and above 20° N lat. *Present record :* Punjab : Bhatinda. Haryana : Mahendragarh.

Subfamily (ii) COPTOTERMITINAE

2. *Coptotermes heimi* (Wasmann)

1902. *Arrhinotermes heimi* Wasmann, *Zool. Jahrb. Abt. Syst.*, Jena, 17 (1) : 104. Im. Type-loc. : INDIA : Wallon, Ahmadnagar (Maharashtra).

1962. *Coptotermes heimi* : Roonwal and Chhotani, *Indian spec. Termite Genus Coptotermes*, New Delhi (*Indian Council. Res., Entomol. Monggr. No. 2*) : 38-57.

Material : (i) One vial with 7 S. and sev. W from Saina vill., ca. 7 km from Bhatinda, 29.xi.82, ex. *Ficus* sp. (ii) One vial with 3 S. and 10 W from Banasar garden Sangrur, 7.xii.82, ex. *Eucalyptus* sp. (iii) One vial with 3 S. and sev. W. from Dhuri gate, Sangrur, 8.xii.82, ex. Rotten tree-trunk.

Measurements (five S. from Bhatinda) : Total body-length with mandibles 3.89-4.10, head-length to lateral base of mandibles 1.23-1.26, max. width of head 1.05, length of left mandible 0.81, max. length of pronotum 0.42-0.46, max. width of pronotum 0.63-0.70. Antennal segments 14.

Distribution : *Previous record :* Very widely distributed almost all over India, Pakistan and Bangladesh. *Present record :* Punjab : Bhatinda and Sangrur.

Family II. TERMITIDAE

Subfamily (i) APICOTERMITINAE

3. *Speculitermes cyclops* Wasmann

1902. *Speculitermes cyclops* Wasmann, *Zool. Jahrb. Abt. Syst.*, Jena, 17 (1) : 160-162. Im., W. Type-loc. : INDIA : Khandala, Bombay (Maharashtra).

Material : One vial with sev. W. from Saina vill., ca. 7 km from Bhatinda, 29.xi.82 ex. cow-dung.

Measurements (four W. from Bhatinda) : Total body-length with mandibles 4.55-4.76, head-length to lateral base of mandibles 0.98-1.05, max. width of head 1.33, max. diameter of mid-dorsal spot on head 0.11-0.14, max. length of pronotum 0.42-0.46, max. width of pronotum 0.73-0.77. Antennal segments 14.

Distribution : Previous record : Recorded from the moist open and scrubby areas in northern and western India. (Gujarat, Jammu and Kashmir, Rajasthan, Madhya Pradesh, Maharashtra and Uttar Pradesh) and Pakistan. **Present record :** Punjab : Bhatinda.

Subfamily (ii) TERMITINAE

4. *Amitermes belli* (Desneux)

1906. *Termes belli* Desneux, *Ann. Soc. entomol. Belg.*, Brussels, 49 (12) : 352-354. Im., S. & W. Type-loc : PAKISTAN : Karachi (Sind).

Material : (i) One vial with sev. S. and W. from tree plantations along canal side, Gobindpur vill., ca. 14 km from Bhatinda, 1.xii.82. (ii) One vial with 6 S. and sev. W. from Dhuri gate, Sangrur, 7.xii.82.

Measurements (five S. from Bhatinda) : Total body-length with mandibles 4.62-4.73, head-length to lateral base of mandibles 1.23-1.30, max. width of head 1.02-1.05, length of left mandible 0.81-0.84, max. length of pronotum 0.28-0.32, max. width of pronotum 0.71. Antennal segments 14.

Distribution : Previous records ; INDIA : Western India (Gujarat and Rajasthan) and PAKISTAN : Baluchistan, N.W.F.P., Sind and Punjab. **Present record :** Punjab : Bhatinda and Sangrur.

5. *Microcerotermes tenuignathus* Holmgren

1913. *Microcerotermes tenuignathus* Holmgren, *J. Bombay nat. Hist. Soc.*, Bombay, 22 (1) : 116-117. S. and W. Type-loc : INDIA ; Vadtal (Gujarat).

Material : One vial with 7 S. and sev. W. from Banasar garden. Sangrur, 7.xii.82, ex. soil.

Measurements (five S. from Sangrur) : Total body-length 4.38-4.52, head-length to lateral base of mandibles 0.77-0.81, max. length of pronotum 0.32, max. width of pronotum 0.56. Antennal segments 13.

Distribution : Previous records : INDIA : Gujarat, Rajasthan. PAKISTAN : Baluchistan, N.W.F.P., Punjab and Sind. **Present record :** Panjab : Sangrur.

Subfamily (iii) MACROTERMITINAE

6. *Odontotermes assmuthi* Holmgren

1913. *Odontotermes (Odontotermes) assmuthi* Holmgren, *J. Bombay nat. Hist. Soc.*, Bombay, 22 (1) : 112-113. S. and W. Type-loc. : INDIA : Bombay : Borivli Jungles (Maharashtra).

1981. *Odontotermes assmuthi* : Thakur, *Indian For. Rec.*, 14 (2) : 16-21.

Material : Two vials with sev. S. & W. from agr. field near P.S.E.B. office, ca. 5 km from Ferozepur, 24.xi.83, ex. soil.

Measurements (six S. from Ferozepur) : Total body-length 4.90-5.15, head-length

to lateral base of mandibles 1.68-1.72, max. width of head 1.19-1.23, length of left mandible 0.91, distance of tooth in left mandible from tip 0.32, max. width of pronotum 0.84-0.88. Antennal segments 16.

Distribution : Previous records : INDIA : Assam, Bihar, Gujarat, Jammu and Kashmir, Karnataka, Maharashtra, Madhya Pradesh, Punjab, Tamil Nadu and Uttar Pradesh. PAKISTAN : Hangu (Kohat district). BANGLADESH : Dinajpur and Rajshahi. *Present record* : Punjab : Ferozepur.

7. *Odontotermes bellahunisensis* Holmgren & Holmgren

1917. *Odontotermes (Cyclotermes) bellahunisensis* Holmgren and Holmgren, *Mem. Dept. Agric. India (Ent.)*, 5. (3) : 150-151. Im., S., W. Type-loc : INDIA : Bellahunsi, Bellary district (Karnataka).
1981. *Odontotermes bellahunisensis* : Thakur, *Indian For. Rec.*, 14 (2) : 21-25.

Material : (i) One vial with 3 S. and sev. W. from vegetation along canalside, ca. 7 km from Bhatinda, 27.xi.82. (ii) One vial with 5 S. and 10 W. from vegetation near Thermal Power, Bhatinda, 28.xi.82 (iii) Two vials with sev. S. and W. from Saina uill., ca. 7 km from Bhatinda, 29.xi.82 (iv) One vial with 3 S. and 8 W from open land behind D.A.V. College, Bhatinda, 30.xi.82, ex. cow-dung. (v) One vial with 4 S. and sev. W. on Barnala road, ca. 4 km from Bhatinda, 2.xii.82 ex. understone (vi) Two vials with sev. S. and W from Ranbir club area, Sangrur, 5.xii.82 (vii) One vial with 3 S. and 10 W. from Dhuri gate, Sangrur, 8.xii.82, ex. cow-dung (viii) One vial with 5 S. and sev. W. from experimental agriculture farms, Haryana Agric. Univ., Hissar, 10.xii.82. ex. soil (ix) One vial with sev. S and W. from Juliflora vegetation behind Fort, Mahendragarh, 17.xii.82, ex. understone.

Measurements (seven S. from Mahendragarh) : Total body-length 4.55-4.73, length of head to lateral base mandibles 1.12-1.16, max. width of head 1.09-1.12 length of left mandible 0.67, distance of tooth in left mandible from tip 0.21, max. width of pronotum 0.84. Antennal segments 16.

Distribution : Previous records : INDIA : Assam, Bihar, Gujarat, Karnataka, Orissa, Rajasthan, Tamil Nadu and West Bengal. *Present record* : Punjab : Bhatinda and Sangrur. Haryana : Hissar and Mahendragarh.

8. *Odontotermes brunneus* (Hagen)

1858. *Termes brunneus* Hagen, *Linn. Entomol.*, London, 12 : 133. Im., S. Type-loc : INDIA : Bengal.
1981. *Odontotermes brunneus* : Thakur, *Indian For. Rec.*, 14 (2) : 33-37.

Material : (i) One vial with 5 S. & sev. W. from experimental agr. farms, Haryana Agric. Univ., Hissar, 10.xii.82, ex. termite mound. (ii) One vial with 3 S. and sev. W. from H. A. U. campus, Hissar, 12.xii.82, ex. termite mound.

Measurements (five S. from Hissar) : Total body-length 5.81-6.16, length of head to lateral base of mandibles 1.61-1.65, max. width of head 1.40, length of left mandible

0.95-1.02, distance of tooth in left mandible from tip 0.35, max width of pronotum 1.02. Antennal segments 16.

Distribution ; Previous records INDIA : Gujarat, Karnataka, Maharashtra, Rajasthan and Tamil Nadu. *Present record* : Haryana : Hissar.

9. *Odontotermes giriensis* Roonwal and Chhotani

1962. *Odontotermes giriensis* Roonwal and Chhotani, *Proc. Nat. Inst. Sci. India*, (B) 28 (4) : 341-345.

S and W. *Type-loc.* : INDIA : Rongengiri, Garo Hills district (Meghalaya).

1981. *Odontotermes giriensis* : Thakur, *Indian For. Rec.*, 14 (2) : 55-59.

Material : (i) Two vials with sev. S. and W. from open land near Army store, Ferozpur cantt., 23.xi.82 ex. soil (ii) Four vials with sev. S. and W. from vegetation near Thermal Power, Bhatinda, 28.xi.82 (iii) One vial with 5 S. and sev. W. from Saina vill., ca. 7 km from Bhatinda, 29.xi.82 (iv) Four vials with sev. S. and W. from open land behind D.A.V. Colleges, Bhatinda, 30.xi.02 (v) One vial with 3 S. & sev. W. from Gobindpur vill., Bhatinda, 7.xii.82. (vi) Three vials with sev. S. & W. from experimental Agri. farms, H.A.U., Hissar, 10.xii.82. (vii) Two vials with sev. S. & W. from Dadri road, ca. 4 km from Mahendragarh, 16.xii.82, ex. soil. (viii) One vial with 5 S. and sev. W. from Juliflora vegetation behind Fort, Mahendragarh, 17.xii.82, ex. cow-dung.

Measurements (ten S. from Ferozpur) : Total body length 4.27-4.41, length of head to lateral base of mandibles 1.26-1.33, max. width of head 1.12-1.16 length of left mandible 0.67-0.70, distance of tooth in left mandible from tip 0.18-0.21, max. width of pronotum 0.81-0.84. Antennal segments 16.

Distribution : Previous records : INDIA : Arunachal Pradesh, Assam, Gujarat, Meghalaya, Rajasthan, Tripura and Uttar Pradesh. *Present record* : Punjab : Bhatinda and Ferozpur. Haryana : Hissar and Mahendragarh.

10. *Odontotermes gurdaspurensis* Holmgren & Holmgren

1917. *Odontotermes (Odontotermes) obesus f. gurdaspurensis* Holmgren and Holmgren, *Mem. Dept. Agric. (Ent.)*, 5 (3) : 149-150. Im., S. and W. *Type-loc.* : INDIA : Gurdaspur.

1981. *Odontotermes gurdaspurensis* : Thakur, *Indian For. Rec.*, 14 (2) : 59-63.

Material : (i) One vial with 6 S. and sev. W. from agric. field on Zeera road, ca. 12 km from Ferozpur, 22.xi.82. (ii) Four vials with sev. S. and W. from agr. field near P.S.E.B., Office, Ferozpur, 24.xi.82. (iii) Five vials with sev. S. & W. from roadside towards kotkapura, ca. 12 km from Ferozpur, 25.xi.82, ex. soil. (iv) One vial with 7 S. and sev. W. from vegetation near Thermal Power, Bhatinda, 28.xi.82, ex. understone. (v) Three vials with sev. S. and W. collected near Ranbir club, Sangrur, 5.xii.82, ex. understone. (vi) Two vials with sev. S. & W. from roadside on Malerkotla road, ca. 4 km from Sangrur, 6.xii.82. (vii) Three vials with sev. S. & W. from Hissar—Balsamand road, ca. 5 km from H.A.U., Hissar, 21.xii.82. (viii) One vial with 3 S. and sev. W. from Narnaul

road, ca. 6 km from Mahendragarh, 15.xii.82, *ex.* understone (ix) One vial with 4 S and sev. W from Dadri road, ca. 5 km from Mahendragarh, 16.xii.82, *ex.* understone.

Measurements : (One S. from Hissar) : Total body—length 6.06, length of head to lateral base of mandibles 1.58, max. width of head 1.33, length of left mandible 1.05, distance of tooth in left mandible from tip 0.42, max. width of pronotum 0.95. Antennal segments 16.

Distribution : *Previous records* : INDIA : Jammu and Kashmir, Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh. PAKISTAN : Baluchistan, Islamabad, Jhelum, Kohat, Kohore, Loralai, N.W.F.P., Peshawar, Rawalpindi. *Present record* : Punjab : Bhatinda, Ferozepur and Sangrur. Haryana : Hissar and Mahendragarh.

11. *Odontotermes indicus* Thakur

1981. *Odontotermes indicus* Thakur, *Indian For. Rec.*, 14 (2) : 70-75. Im., S. and W. *Type-loc* : INDIA : Bombay (Maharashtra).

Material : One vial with 4 S. and sev. W. from Banasar garden, Sangrur, 7.xii.82, *ex.* cow-dung.

Measurements (Five S. from Sangrur) : Total body-length 8.40-8.61, length of head to lateral base of mandibles 2.69-2.76, max. width of head 2.24-2.28, length of left mandible 1.47-1.51, distance of tooth in left mandible from tip 0.63, max. width of pronotum 1.61-1.65. Antennal segments 17.

Distribution : *Previous records* : This species is widely distributed throughout India, except the eastern zone. *Present record* : Punjab : Sangrur.

12. *Odontotermes latiguloides* Roonwal and Verma

1973. *Odontotermes latiguloides* Roonwal and Verma, *J. Indian Acad. Wood. Sci.*, 4 (2) : 81-91. S. and W. *Type-loc.* : INDIA : Mandargarh (Bhilwara district), ca. 48 km SW of Bhilwara (Rajasthan).

1981. *Odontotermes latiguloides* : Thakur, *Indian For. Rec.*, 14 (2) : 81-83.

Material : One vial with 3 S. and sev. W. from vegetation near Thermal Power, Bhatinda, 28.xi. 82, *ex.* understone. (ii) One vial with 2 S. and sev. W. from Saina vill., ca. km from Bhatinda, 29.xi.82, *ex.* cow-dung. (iii) Two vials with sev. S. and W. from open land behind D. A. V. College, Bhatinda, 30.xi. 82, *ex.* cow-dung. (iv) Three vials with sev. S. and W. from Gobindpur vill., ca. 14 km from Bhatinda, 1.xii. 82, *ex.* understone. (v) One vial with 2 S. and sev. W. from Banasar garden, Sangrur, 7.xii.82 *ex.* understone. (vi) Two vials with sev. S. and W. from Narnaul road, ca. 6 km from Mahendragarh, 15.xii.82, *ex.* cow-dung.

Measurements (two S. from Sangrur) : Total body-length with mandibles 4.27-4.34, length of head to lateral base of mandibles 1.05-1.09, max. Width of head 1.12, length of

left mandible 0.84, distance of tooth in left mandible from tip 0.28, max. width of pronotum 0.49-0.53. Antennal segments 16.

Distribution : Previous records : INDIA : Gujarat and Rajasthan. *Present record* : Punjab : Bhatinda and Sangrur. Haryana : Mahendragarh.

13. *Odontotermes lokanandi* Chatterjee and Thakur

1967. *Odontotermes lokanandi* Chatterjee and Thakur, *Indian For. Rec.*, 11 (1) : 38-41. S. and W. Type-loc. : INDIA : Residence plot area No. 6, near River Tawi, Jammu (Jammu and Kashmir).

1981. *Odontotermes lokanandi* : Thakur, *Indian For. Rec.*, 14 (2) : 84-86 ; 132-134.

Material : (i) One vial with 7 S. and 10 W. from agr. field, ca. 7 km from B & R Rest House, Ferozepur cantt., 21.xi.82 ex. soil. (ii) Two vials with sev. S. & W. from open land near Army store, Ferozepur cantt., 23.xi.82, ex. understone. (iii) Two vials with sev. S. and W. from vegetation near Thermal Power, Bhatinda, 28.xi.12, ex. understone. (iv) Two vials with sev. S. & W. from open land behind D. A. V. College, Bhatinda, 30.xi.82, ex. soil. (v) One vial with 2 S. and sev. W. from Gobindpur vill., Bhatinda, 1.xi.82, ex. understone. (vi) One vial with 5 S. & 10 W. from Narnual road, ca. 6 km from Mahendragarh, 15.xii.82 ex. soil.

Measurements (six S. from Mahendragarh) : Total body-length 3.92-4.06, length of head to lateral base of mandibles 1.05-1.12 max. width of head 1.02-1.05, length of left mandible 0.67. distance of tooth in left mandible from tip 0.14, max. width of pronotum 0.77 Antennal segments 16.

Distribution : Previous records : INDIA : Gujarat, Himachal Pradesh, Jammu and Kashmir and Uttar Pradesh. Very widely distributed in Pakistan and Bangladesh. *Present record* : Punjab : Bhatinda and Ferozepur. Haryana : Mahendragarh.

14. *Odontotermes microdentatus* Roonwal and Sen-Sarma

1960. *Odontotermes microdentatus* Roonwal and Sen-Sarma, *Indian Counc. Agric. Res. (Ent. Monogr. No. 1)* : 33-39. Im., S. Tyoe-loc. : INDIA : Dehra Dun (Uttar Pradesh).

1981. *Odontotermes microdentatus* : Thakur, *Indian For. Rec.* 14 (2) : 92-97.

Material : One vial with 6 S. and sev. W. from Haryana Agr. Univ. farm, Hissar, 10.xii.82. ex. Termite mound.

Measurements : (five S. from Hissar) : Total body-length 4.90-5.04, length of head to lateral base of mandibles 1.40-1.54, max. width of head 1.12-1.19. length of left mandible 0.84, distance of tooth in left mandible from tip 0.21-0.25, max. width of pronotum 0.77. Antennal segments 16.

Distribution : Previous records : INDIA : Bihar, Gujarat, Himachal Pradesh, Madhya Pradesh and Uttar Pradesh. *Present record* : Haryana : Hissar.

15. *Odontotermes obesus* (Rambur)

1842. *Termes obesus* Rambur, *Hist. natur. Insecta Neuroptera*, Paris : 304. Im. Type-loc. : INDIA : Bombay (Maharashtra).
 1981. *Odontotermes obesus* : Thakur, *Indian For. Rec.*, 14 (2) : 100-107.

Material : (i) A vial with 5 S. & 13 W. from Muktsar road, ca. 6 km from B & R Rest House, Ferozepur cantt., 20.xi.82, ex. understone. (ii) Three vials with sev. S. & W. from agr. field, ca. 7 km from B & R Rest House, Ferozepur cantt., 21.xi.82, ex. soil. (iii) One vial with 3 S, & sev. W. from agr. field, ca. 12 km towards Zeera, Ferozepur, 22.xi.82, ex. soil. (iv) Two vials with sev. S. & W. from agr. field near P. S. E. B. Office, Ferozepur, 24.xi.82, ex. soil. (v) Two vials with sev. S. & W from roadside towards Kotkapura, ca. 12 km from Ferozepur, 25.xi.82, ex. understone. (vi) Three vials with sev. S. & W from vegetation near Thermal Power, Bhatinda, 28.xi.82. (vii) One vial with 6 S. and sev. W. from Govindpur vill., Bhatinda, 1.xii.80, ex. soil. (viii) One vial with 2 S. & Sev. W. from Barnala road, 1.xii.82, ex. understone. (ix) Two vials with sev. S & W. collected near Ranbir club, Sangrur, 5.xii.82. (x) Two vials with sev. S. & W. from Dhuri gate, Sangrur, 8 xii.82 (xi) Seven vials with sev. S. & W from experimental agr. farms, H. A. U. Hissar, 10.xii.82. ex. soil. (xii) Two vials with sev. S. & W. from Hissar-Balsamand road, ca. 5 km from H. A. U., Hissar, 11.xii.82. (xiii) Four vials with sev. S. & W. from H. A. U. Campus, Hissar, 12.xii.82, ex. understone. (xiv) Two vials with sev. S. & W. from Nehru Stadium, Hissar, 13.xii.82, ex. ground. (xv) Two vials with sev. S. & W. from roadside on Mahendragarh-Narnaul road, ca. 6 km from P. W.D. Rest House, Mahendragarh, 15.xii.82. (xvi) Two vials with sev. S. & W. from Mahendragarh-Dadri road, ca. 5 km from Mahendragarh, 16.xii.82. (xvii) Seventeen vials with sev. S. & W. from juliflora vegetation behind Fort. Mahendragarh, 17.xii.82, ex. understone.

Measurements (One S. from Sangrur) : Total body-length 5.25, length of head to lateral base of mandibles 1.40, max. width of head 1.26 length of left mandible 0.98. distance of tooth in left mandible from tip 0.32. max. width of pronotum 0.98. Antennal segments 16.

Distribution : Previous records : This is the most common and widely distributed termite species, occurring all over India, Pakistan, Bangladesh and Burma. **Present records :** Punjab : Bhatinda, Ferozepur and Sangrur. Haryana : Hissar and Mahendragarh.

16. *Microtermes mycophagus* (Desneux)

1906. *Termes mycophagus* Desneux, *Ann. Soc. Ent. Belg.*, 49 (12) : 348-352. Im. S. & W. Type-loc. : PAKISTAN : Karachi (Sind).

Material : (i) One vial with 5 S. & sev. W. from agr. field near P, S. E. B. Office, Ferozepur, 24.xi.83, ex. soil. (ii) Two vials with sev. S. & W. from vegetation near Thermal Power, Bhatinda, 28.xi.82. (iii) One vial with 2 S. & sev. W. from Saina vill. ca. 7 km from Bhatinda, 29.xi.82. (iv) One vial with 3 S. & sev. W. from open land

behind D. A. V. College, Bhatinda, 30.xi.82, *ex. soil.* (v) Two vials with sev. W. & S. from roadside towards Malerkotla, *ca.* 4 km from Sangrur, 6.xii.82. (vi) One vial with 2 S. & sev. W. from experimental agr. farms, H. A. U., Hissar, 10.xii.82. *ex. soil.* (vii) One vial with 1 S. & sev. W. from Satnali road, *ca.* 7 km from Mahendragarh, 17.xii.82.

Measurements (five S. from Ferozepur) : Total body-length 4.20-4.55, length of head to lateral base of mandibles 0.91-0.98, max. width of head 0.88-0.92, length of left mandible 0.56-0.61, max. width of pronotum 0.63-0.67. Antennal segments 15.

Distribution : Previous records : INDIA : Delhi, Gujarat, Rajasthan and Punjab. PAKISTAN : Sind, Punjab, N. W. F. P. and Baluchistan. *Present record* : Punjab : Bhatinda, Ferozepur and Sangrur. Haryana : Hissar and Mahendragarh.

17. *Microtermes obesi* Holmgren

1912. *Microtermes obesi* Holmgren, *J. Bombay nat. Hist. Sec.*, Bombay, 21 (3) : 787-788. Im. *Type-loc.* : INDIA : Khandala near Bombay (Maharashtra).

Material : (i) One vial with 3 S. & sev. W. from agr. field, *ca.* 7 km from B & R Rest House, Ferozepur cantt., 21.xi.82. (ii) Two vials with sev. S. & W. from open land near Army Store, Ferozepur cantt., 23 xi.82, *ex. understone.* (iii) Three vials with sev. S. & W. from vegetation near Thermal Power, Bhatinda, 22.xi.82. (iv) Five vials with sev. S. & W. from Saina will. *ca.* 7 km from Bhatinda, 29.xi.82. (v) Three vials with sev. S. & W. from open land behind D. A, V College, Bhatinda, 30.xi.82. (vi) One vial with 4 S. & sev. W. from Govindpur vill., Bhatinda, 1.xii.82. (vii) One vial with 2 S. & W. collected near Railway Station, Sangrur, 5.xii.82. (viii) One vial with 2 S. & 5 W. from roadside towards Malerkotla, *ca.* 4 km from Sangrur, 6.xii.82. (ix) Five vials with sev. S. & W. from roadside on Mahendragarh—Narnaul road, *ca.* 6 km from Mahendragarh., 15.xii.82. (x) Six vials with sev. S. & W. from Dadri road, *ca.* 5 km from Mahenpragarh, 16.xii.82. (xi) Three vials with sev. S. & W. from Satnali road, *ca.* 3 km from Mahendragarh, 17.xii.82, *ex. soil.*

Measurements (ten S. from Sangrur) : Total body-length 4.48-4.83, length of head to lateral base of mandibles 0.81-0.91, max. width of head 0.77-0.84, length of left mandible 0.49-0.53, max. width of pronotum 0.46-0.49. Antennal segments 14.

Distribution : *Previous records* : Widely distributed species recorded from all over India, Pakistan, Bangladesh, Sri Lanka, Bhutan, Burma and Thailand. *Present record* : Punjab : Bhatinda, Ferozepur and Sangrur. Haryana : Mahendragarh.

18. *Microtermes unicolor* Snyder

1933. *Microtermes unicolor* Snyder, *Proc. Biol. Soc.*, 46 : 92-93. Im. (dealated K & Q). *Type-loc.* : INDIA : Dehra Dun (Uttar Pradesh).

Material : (i) One vial with 5 S. & sev. W. from vegetation Near Thermal Power, Bhatinda, 28.xi.82. (ii) One vial with 3 S. & sev. W. from Banasar garden, Sangrur,

7.xii.82. (iii) One vial with 6 S. & sev. W. from vegetation along Satnali road, ca. 3 km from Mahendragarh, 17.xii.82.

Measurements (three S. from Mahendragarh) : Total body-length 3.92-4.41, length of head to lateral base of mandibles 0.88-0.91, max. width of head 0.81, length of left mandible 0.49, max. width of pronotum 0.49-0.53. Antennal segments 14.

Distribution : *Previous records* : INDIA : Gujarat, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan and Uttar Pradesh. Also recorded from Pakistan (Punjab, N. W. F. P. and Sind) and Bangladesh. *Present record* : Punjab : Bhatinda and Sangrur. Haryana : Mahendragarh

Subfamily (iv) NASUTITERMITINAE

19. *Trinervitermes biformis* (Wasmann)

1902. *Eutermes biformis* Wasmann, *Zool. Jahrb. Abt. Syst.*, Jena, 17 (1) : 133-135. Im., S. & W. *Type-loc.* : SRI LANKA : Bandarawalla and INDIA : Khandala, Bombay (Maharashtra).

Material : (i) One vial with sev. S & W. (major and minor from open land near P. S. E. B. Office, ca. 5 km from Ferozepur 24.xi.82, ex. soil. (ii) One vial with sev. S. & W. (major and minor) from roadside on Barnala road, ca. 4 km from Bhatinda, 2.xii.82, ex. soil. (iii) One vial with 4 S. & sev. W (major & minor) from Banasar garden. Sangrur, 7.xii.82, ex. soil. (iv) One vial with sev. S & W. (major & minor) from H. A. U. Campus, Hissar, 12.xii.82, ex. soil.

Measurements (five S. major from Hissar) : Total body-length 4.76-4.90, length of head without rostrum 1.40-1.47, max. width of head 1.33-1.37, max. posterior buldge of head 0.56-0.60, max width of pronotum 0.49-0.53. Antennal segments 13.

Distribution : *Previous records* : INDIA : Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and West Bengal. Also known from Pakistan and Sri Lanka. *Present record* : Bhatinda, Ferozepur and Sangrur. Haryana : Hissar.

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SUMMARY

Nineteen species of termites (Insecta : Isoptera) belonging to families Rhinotermitidae (2 species) and Termitidae (17 species) are reported from the arid areas of Punjab and Haryana. All are new records from this portion of the Thar Desert.

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