

Rajasthan portion of the Thar Desert were studied in considerable detail by a number of workers, as reviewed by Roonwal (1982). As many as 27 species have been recorded from this region (Roonwal 1976). But there is no published information available on the Gujarat, Punjab and Haryana portions of the Thar Desert.

Termite fauna of Gujarat State were worked out comprehensively (Thakur 1982) and 46 species were recorded. Out of these, as many as 27 species have been recorded from the arid and semi-arid areas of Gujarat, of which 11 are additions to the termite fauna of Thar Desert. This considerable increase in the termite fauna of this region has brought out the fact that even an arid area like the Great Indian Desert can sustain a great variety of termites, which shows the great resistance of termites to arid climates.

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TERMITES HITHERTO UNRECORDED IN GUJARAT
PORTION OF THE THAR DESERT

Family TERMITIDAE

Subfamily TERMITINAE

Eremotermes fletcheri Holmgren and Holmgren

Microcerotermes cameroni Snyder

Microcerotermes heimi Wasmann

Subfamily MACROTERMITINAE

Odontotermes assmuthi Holmgren

Odontotermes bellahunisensis Holmgren &
Holmgren

Odontotermes girnarensis Thakur

Odontotermes lokanandi Chatterjee & Thakur

Odontotermes paralatiguloides Thakur

Odontotermes redemanni (Wasmann)

Odontotermes sasangirensis Thakur

Odontotermes wallonensis (Wasmann)

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28. FURTHER RECORDS OF OCCURRENCE AND INCIDENCE
OF DAMAGE BY TERMITES OF THE GENUS *CRYPTOTERMES*
BANKS IN INDIA (ISOPTERA: KALOTERMITIDAE)

INTRODUCTION

The genus *Cryptotermes* includes one of the most economically important groups of dry-

wood termites which are popularly known as "powder post termites". These are essentially coastal termites, except for records of some species further inland in native habitats (Emer-

son 1952, Chhotani 1963). The genus is generally tropicopolitan in distribution, approximately between 33° North latitude to 35° South latitude with the exception of a few species which occur in the warmer temperate regions, as far north as California and Washington D. C. in United States and England in Europe (Chhotani 1970). These are probably cases of accidental introductions. Within their range of distribution, these termites attack dead and dry portions of living trees in nature (native species) and woodworks in buildings, household furniture and other wooden structures (introduced species). The genus is represented by six species in the Indian region. Of these, *C. bengalensis*, *C. karachiensis* and *C. roonwali* are native species, while the remaining three, *C. domesticus*, *C. dudleyi* and *C. havilandi*, are introduced species, occurring in the Andaman and Nicobar islands (*C. havilandi*) and along the coastal regions of the Indian subcontinent (*C. domesticus* and *C. dudleyi*). This paper gives an account of further records of occurrence and incidence of damage by the above two introduced species in India.

***Cryptotermes domesticus* (Haviland)**

Gay (1970) opines that the centre of origin of this species is probably the coastal regions of associated islands of South-East Asia. The only known record of its occurrence in exclusively wild habitat is from Botal Tabago Islands off the coast of Formosa (Hozawa 1915, Gay 1970), from where it appears to have dispersed to other localities through introduction and is now very widely distributed in Neotropical, Oriental and Papuan regions. In the Oriental region, it has been recorded from Andales (Sumatra), Taiwan, India, Japan, Java, Kalimantan (Borneo), Singapore, Sri Lanka, Thailand and Vietnam (Chhotani 1970, Sen-Sarma *et al.* 1975, Thakur 1980).

Recently during the course of a survey in Kerala, the species was recorded as common at Kovalam beach (c. 20 km south from Trivandrum) and from a wooden pole at Kesavadasapuram (c. 10 km from Trivandrum).

TABLE 1

BODY MEASUREMENTS (IN MM) OF FIVE IMAGO OF
Cryptotermes domesticus (HAVILAND) FROM
KOVALAM BEACH, TRIVANDRUM

Sl. No.	Body parts	Range	Mean
<i>Caste - Imago</i>			
1.	Total body-length with wings	c. 8.50-9.20	9.00
2.	Total body-length without wings	c. 5.40-6.30	5.80
3.	Head - length to tip of labrum	1.20-1.30	1.26
4.	Head - length to base of mandibles	0.85-1.00	0.93
5.	Maximum width of head (with eyes)	0.85-1.00	0.95
6.	Maximum height of head	0.60-0.65	0.63
7.	Maximum diameter of eye (with ocular selerites)	0.30-0.35	0.33
8.	Maximum diameter of lateral ocellus	0.08-0.13	0.10
9.	Minimum diameter of lateral ocellus	0.05-0.09	0.07
10.	Minimum ocellus - antennal distance	0.15-0.20	0.18
11.	Maximum length of pronotum	0.55-0.60	0.58
12.	Maximum width of pronotum	0.95-1.05	1.03

This species appears to have established itself in Singapore and Sarawak during the fag end of the nineteenth century and where it is now confined primarily to buildings, dry, seasoned timber, furniture and other fibrous products. In Vietnam, it has been reported

to cause considerable damage to wooden furniture and constructional timber (Gay 1967). In India, it was recorded earlier from wooden boat model of *Mangifera indica*, fence posts and timber godowns. It has now been collected from the base of dead blown down trees of coconut (*Cocos nucifera*), timber of old abandoned boats and a pole of a varandah in a house.

Individual colonies of *Cryptotermes domesticus* are usually small, not exceeding possibly 250-350 individuals. However, one of the colonies excavated at Kovalam was quite large and contained more than a thousand individuals. It had eaten away a large section of the interior of the infested materials, leaving only the outer rind. Faecal pellets accumulated in the chambers and the galleries had been pushed out through the exit holes at intervals. The faecal pellets piled up at the base in small heaps were conspicuous evidence of infestation. The shape of faecal pellets is cylindrical with rounded bulged out lateral faces. The surface is pentagonal, with five pit like depression and size varies from, 0.7-0.8 mm

length; 0.4-0.5 mm width. The colour is dirty brown.

The swarming period varies with locality and occurs during the greater part of the year from April to November. From Kesavadasapuram, the alates were collected in May, emerging from a pole at ground level, while at Kovalam beach, fully matured adults were collected along with soldiers and pseudoworkers in the last week of November.

Cryptotermes dudleyi Banks

Cryptotermes dudleyi is a very widely distributed species in Australian, Ethiopian, Neotropical, Oriental and Papuan regions. However, clear evidence of its centre of origin and subsequent dispersion remains obscure. In the Oriental region, it has been recorded from East Andalus (Sumatra), Bangladesh, Java, India, South-East Kalimantan (Borneo), Malaya, the Philippines and Sri Lanka. From India, it has been reported from the Andaman Islands, union territory of Daman and Goa, Kerala (Cannanore), Orissa and West Bengal. Recently, it has been collected from Aryad village, about five km north of Alleppey town

TABLE 2

BODY MEASUREMENTS (IN MM) OF SOLDIERS OF TWO SPECIES OF *Cryptotermes* BANKS

Sl. No.	Body parts	<i>C. domesticus</i> (Haviland)	<i>C. dudleyi</i> Banks	
		Range	Mean	
	<i>I-General</i>	(5-examples)		(1-example)
1.	Total body-length ..	c. 5.95-6.40	6.23	5.30
	<i>II-Head</i>			
2.	Head-length with mandibles ..	1.85-1.90	1.88	2.20
3.	Head-length to lateral base of mandibles ..	1.28-1.40	1.35	1.55
4.	Maximum width of head ..	1.30-1.40	1.37	1.30
5.	Maximum height of head ..	0.98-1.08	1.03	1.03
6.	Maximum length of pronotum ..	0.80-0.95	0.87	0.80
7.	Maximum width of pronotum ..	1.28-1.35	1.33	1.18

(c. 9°30' N., 76°23' E.) on a piece of land, separating Arabian sea and Vembanad back-water lake. It is about eight kilometres from the sea coast. This is a new distribution record.

In India, it is also an introduced species and is restricted to coastal regions, where it is a serious pest, damaging and destroying all types of wooden structures in buildings. At Aryad, it was recorded from roof rafters of an old house. The locality is densely populated and thatched huts with wooden roofs are very common. More than 50% rafters were found attacked, being completely riddled with chambers and galleries. The chambers are interconnected by an irregular net work of galleries. The chambers were found packed with faecal pellets. The faecal pellets are

somewhat oblong in shape, slightly tapering to one side. The colour is usually transparent brown to opaquish grey. However, the colour varies according to texture of the host timber. The size of pellets varies from, 0.6-0.8 mm long; 0.3-0.5 mm wide. The smaller pellets are either smooth or with faint depression, whereas the larger pellets are similar to that those of *C. domesticus*.

REMARKS

Though the measurements of alates of *C. domesticus* from Kovalam beach, Trivandrum, come within the range (as given by Chhotani 1970), the soldiers are distinctly larger in size, as is evident from the measurements given in Table No. 2.

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