

MAJOR RODENT PESTS OF AGRICULTURE

An Illustrated Guide

Compiled by

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ALL INDIA CO-ORDINATED RESEARCH PROJECT
ON RODENT CONTROL



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FOREWORD

Rodent pests menace every farmer whether he is growing millet, wheat or fruits or even a plantation crop like cocoa. Although farmers commonly consider all rodents as of one type yet it has been revealed by the work carried out at the CAZRI during the last three decades that even in one crop field 4 to 8 species of rodents may occur. They differ behaviourally and ecologically. It is, therefore, essential that all the species should be scientifically studied in order to devise effective means of their eradication. In this context our scientists have made an attempt in this booklet to illustrate and describe the major rodent pests of agriculture in India in the hope that the information contained in this booklet will enhance the knowledge of research workers about individual rodent species.

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ABBREVIATIONS USED

H B = Head and Body

T = Tail

H F = Hind Foot

E = Ear

Body wt = Body weight

The striped squirrel, *Funambulus* spp.



Distribution : Throughout the country

Habits and Habitats : Medium sized rodent. *Funambulus pennanti* (Northern Five Striped), *Funambulus palmarum* (Palm or common striped squirrel) are almost similar in size and with bushy tail. *F. pennanti* differs from *F. palmarum* by the absence of reddish or yellowish red line on the underside of tail, running down its centre. Both species commonly occur in central India. *F. tristriatus* (Western ghat squirrel) is largest form of *Funambulus*. In *pennanti* there are five light stripes in contrast to three in *palmarum* and *tristriatus*. But *tristriatus* is bigger in size than *palmarum* and former has got rougher-ridged looking fur than *palmarum* which has sleek coat.

F. pennanti abodes holes in trunks of trees, also commensal with man in villages, in rocks and orchards. Diurnal and fossorial

F. pennanti—HB 141–166 mm, Tail 121–169 mm, HF 36–41 mm,
Ear 15–19 mm. Av. weight 90 g., mammae-4

F. palmarum—HB 125–167 mm, Tail 112–170 mm, HF 31–44 mm,
Ear 14.5–18 mm. Av. weight 115 g., mammae-4

F. tristriatus—HB 120–210 mm, Tail 120–181 mm, HF 26–52 mm,
Av. weight 130 g.

Damage : Orchards, vegetable crops, cacao (22%) arecanut, coffee and cardamum.

Breeding : *F. pennanti* breeds from March to September in Rajasthan with peak in March-April and July-September. Litter size 1-5 ; gestation period 42 days. Sexual maturity attained in 4 months. *F. tristriatus* breeds throughout the year with peak from January to March, average litter size is 2-6 and attain maturity in 2 months.

The Indian crested Porcupine, *Hystrix indica* Kerr, 1792



Distribution Throughout the country

Habits and Habitats . Largest rodent in India Body weight 10-18 kg Characterised by body covered with quills with alternate deep brownish black and white bands. A long crest of hairs on head. Caudal rattling quills very large and well open.

HB – 642-744 mm, T 88-210 mm..

HF – 85-135 mm, E 42-47 mm

Prefers rocky habitat but also inhabits tracts dominated with sand dunes. Nocturnal and fossorial. Breeds from March to December with peak during monsoon and December. Gestation period 112 days for North-African species. Litter size 1-3.

Damage : Mostly attacks tuberous crops but also uproots large trees.

The Indian gerbil (Antelope rat), *Tatera indica* (Hardwicke) 1807



Distribution : Except mountainous terrain all over the country.

Habits and Habitat : A large gerbil (Head & Body near or over 200 mm in largest animals, Tail longer than HB length touching 120 to 130% of HB length; Ear over 1/10 of HB; Hind foot 25% of HB; Sole naked up to heel). Eyes large, rounded ears, dorsum brownish rufous or sometimes greyish at rump. An area above and behind eyes and a spot behind ears and belly are off-white. Tail bicolour, a pencil or tuft of black sometimes white hair at tip of tail. Feet whitish, mammae 8. Body wt male 100-250 g, female 70 to 200 g Occurs in crop fields, fallow and waste land. Nocturnal and fossorial. Natural reservoir of plague *Bacillus*.

Three subspecies in country - *T. indica indica*, *T. indica cuvieri*, *T. indica hardwickei* - *Distribution* : of *cuvieri* (HB 135-189 mm; T 193-234 mm; Hf 40.5-45 mm, tail longer than other subspecies over 130% of HB) Arcot, Madras, Eastern Ghats, Nilgiri hills, Trichnopoly, Kolar, Mysore, Vijaynagar, Bellary. Of *hardwickei* (HB 149-203 mm, Tail 170-222 mm; HF 38-47 mm, Tail less than 120% of HB) in parts of Maharashtra, parts of Karnataka. Of *indica* (HB 116-189 mm, Tail 115-215 mm; less than 120% of HB, Hf 31-45 mm) rest of country, breeds year round, litter size 1-10 Gestation 4.8 days (*T. i. indica*). Maturity at 16 weeks age (*T. i. indica*).

Damage : Almost all agricultural crops

The Indian desert gerbil, *Meriones hurrianae* (Jerdon), 1867



Distribution : North west desert zone of country

Habits and Habitat : Dorsum sandy grey to brownish grey, under parts off-white pale. Tail pale with black or dark brown tassel of hair at tip. HB length over 100 mm, tail shorter than HB, soles at least partly hairy. HB 106-143 mm, T 100-164 mm, HF 27-38 mm, E 8-12 mm Mammæ 8. Body wt. 40-160 g. Occurs in sandy and gravel plains, stabilised sand dunes, prefers hummocky landscape, diurnal, fossorial, extensive burrower. Breeds round the year with peaks in February, March, July and September. Gestation period 30 days, lactation continues upto 20 days, litter size 1-9.

Damage : Common pest of bajra, wheat, chillies and other vegetable crops, grasses and other vegetation.

The House rat, *Rattus rattus* (Linnaeus), 1758



Distribution : World over

Habits and Habitats : Medium sized species, commensal ones are dark bellied, whereas wild ones have white belly. Tail longer than HB Dorsal hair of various shades, of brown or black, ventral part off white or grey. Tail bi-coloured and ringed. Mammae 10-12. Body wt. 150-200 g Occurs in houses, godowns, stores, poultry farms, fields, plantation crops etc. Nocturnal generally but active during day also. Breeds throughout year. gestation period 22 days, litter size 1-10, 16^{sub} species occur in country of which *R. r. rufescens* is common.

Damage . Pest of coconut, cacao, poultry farm and cause extensive damage

The soft furred field rat or metad,
Rattus meltada (Gray), 1837



Distribution : Throughout the country except north and east mountainous area

Habits and Habitat : Fur soft, dorsum light (pallid) to dark grey, feet and belly off white, tail bicoloured (dark above, pale below). Tail equal to or shorter than HB, sole with 4-5 plantar pads. HB 100-156 mm, Tail 92-144 mm, HF 21-28 mm, E 17-24 mm. Body wt. 40 g, Mammae-8. Tail skin very loose. Nocturnal, generally abodes cracks & crevices in field or occupies deserted burrow of other rodent species. Breeds from March to October in Rajasthan, although year in Karnataka, lowest in summer. Litter size 1-10.

Damage : Pest of vegetation and crops in Rajasthan, major pest of wheat and paddy in association with *B bengalensis*.

The Sikkim rat, *Rattus rattus brunneusculus* (Hodgson), 1845



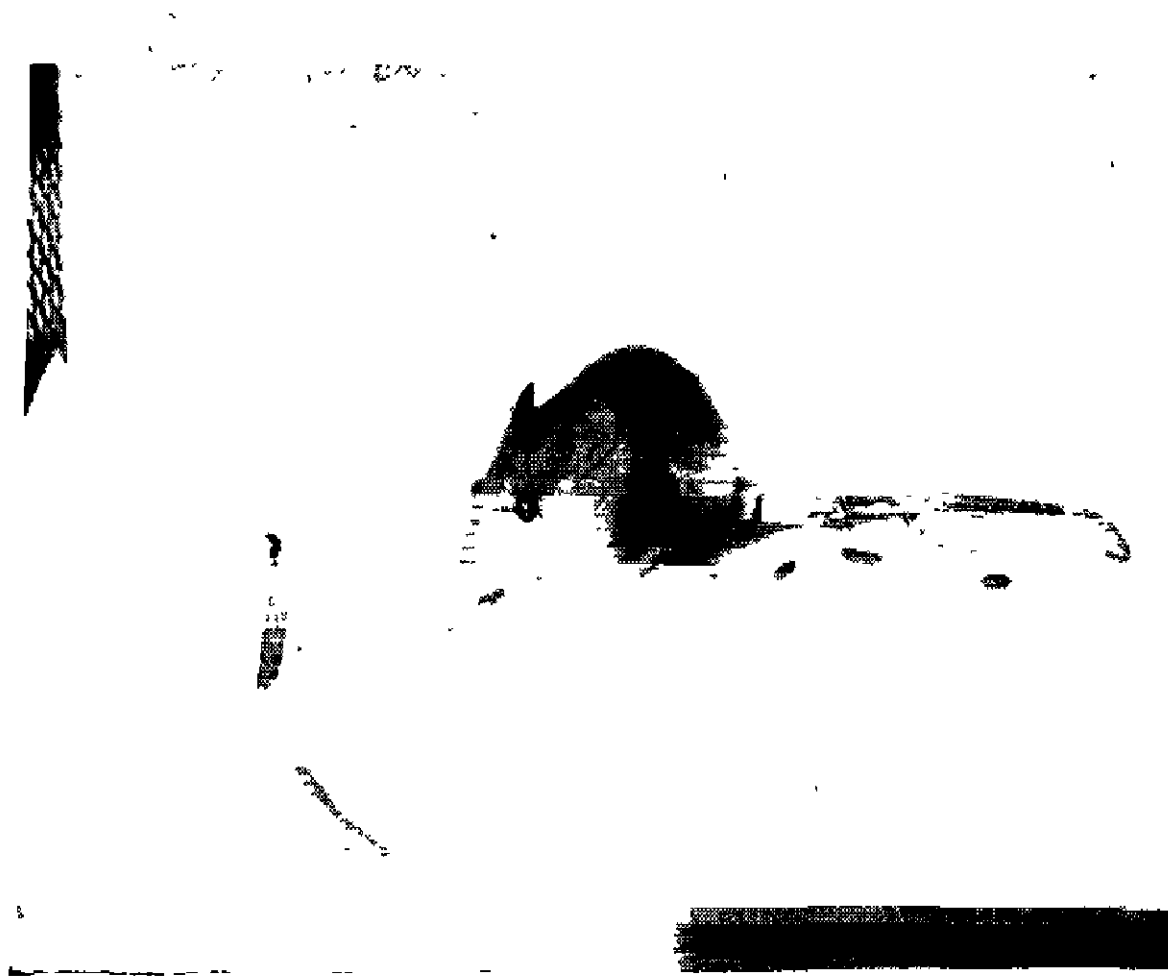
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Distribution : Nepal, Sikkim, Assam, Meghalaya, Manipur, Naga Hills, Mizoram.

Habits and Habitats : It is the only Asiatic white bellied wild *Rattus rattus* but those occurring in tribal settlements may have yellowish or buffy belly. Fur short and soft. Dorsal fur brown to greyish. Occurs in hilly slopes, paddy and other fields in jhums (shifting cultivation), forest and also in tribal settlements HB 140-230 mm, Tail 178-233 mm, HF 31-37 mm, E 22-27 mm., Mammae 10-12, Nocturnal, fossorial and arboreal, Male breeds from April to October but females are sexually active from March to December. Peak breeding from June to August, No breeding in January and February. Litter size 1-10 but 6-8 is common.

Damage : It is a major pest during bamboo-flowering in Mizoram. It constitutes 92 per cent of total rodent population. Pest of paddy and maize.

The Himalayan rat, *Rattus nitidus* Hodgson, 1845



Distribution : Nepal, N.E.H Region

Habits and Habitat ; It is a commensal rat fur is soft Dorsum usually dark brown, occasionally with a darker mid-dorsal line or patch, feet yellowish to whitish or sometimes dark Under parts dull grey (silvery) or brownish or sometimes nearly white Tail wholly dark, naked, little longer than HB (107%), Mammae 12, but occasionally 8-13, HB 131-200 mm, Tail 142-198 mm, HF 24-38 mm, E 19-25 mm, Body wt 100-175 g.

Damage , Pineapple, paddy, Maize etc

The Norway or brown rat, *Rattus norvegicus* (Berkenhout), 1769



Distribution : Port areas (large town), along banks of navigable rivers and of high roads, Meghalaya. Introduced from Britain.

Habits and Habitat : Dorsum brown to dark brown, ventrum light greyish. feet light, blunt muzzle, small ears, tail shorter than HB, HB 170-250, T, 155-200, HF 43-45, E 16-18. Body wt. 200-450 g. Occurs in sewers, fossorial and nocturnal but may be active during day also. Prolific breeder, Litter size 1-12, gestation period 22-25 days.

Damage : Extensive burrower, damage at par to *Rattus rattus*.

The house mouse, *Mus musculus* Linnaeus, 1758



Distribution : All over the world.

Habits and Habitat · Dorsum colour varies from dark brown to lighter sandy brown, under parts whitish to light grey, dark brown or dull Tail longer than HB, dark above and light below generally but may be wholly dark, feet white or dark with white toes, HB 52-99 mm, T 61-95 mm, HF 13-19 mm, E 9-15 mm, Body wt 18 g. Occurs indoors and in fields, nocturnal and fossorial but may be active during day. Breeds round the year, litter size 1-8, gestation period 18 days

Damage · In field damages sugarcane, ground nut etc In houses damages clothes, papers etc

The brown spiny mouse, *Mus platythrix* Bennet, 1832

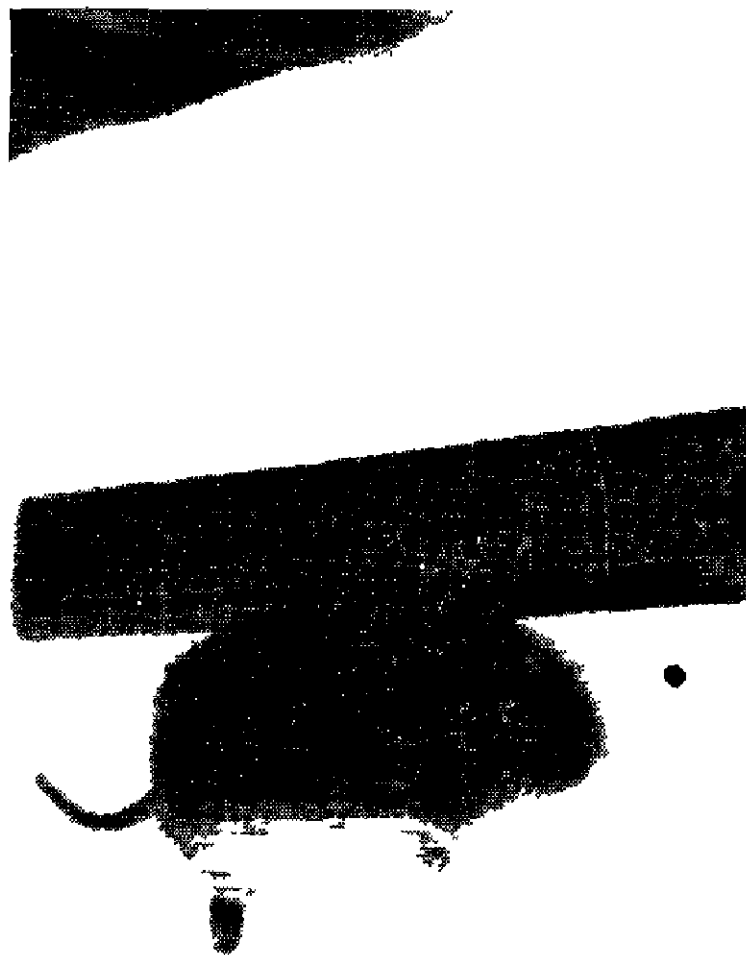


Distribution : Throughout the country.

Habits and Habitat : Large *Mus* species. The fur is crisp and usually spiny. HB exceeds 100 mm, tail shorter (90% of HB), Mammae 10-12 or even 13. Dorsum dark brown to pale brown, feet whitish, under parts white with a clear line of demarcation along the sides, tail dark above and white below. HB 78-104 mm, T 55-90 mm, HF 16-22 mm, E 14-18 mm, Nocturnal, fossorial, some animals arrange pebble at n.outh of burrow opening. *Mus booduga* is conspecific with *M. Platythrix*

Damage : Paddy, wheat, oilseed and pulse crops.

The short tailed mole rat, *Nesokia indica* (Gray), 1830

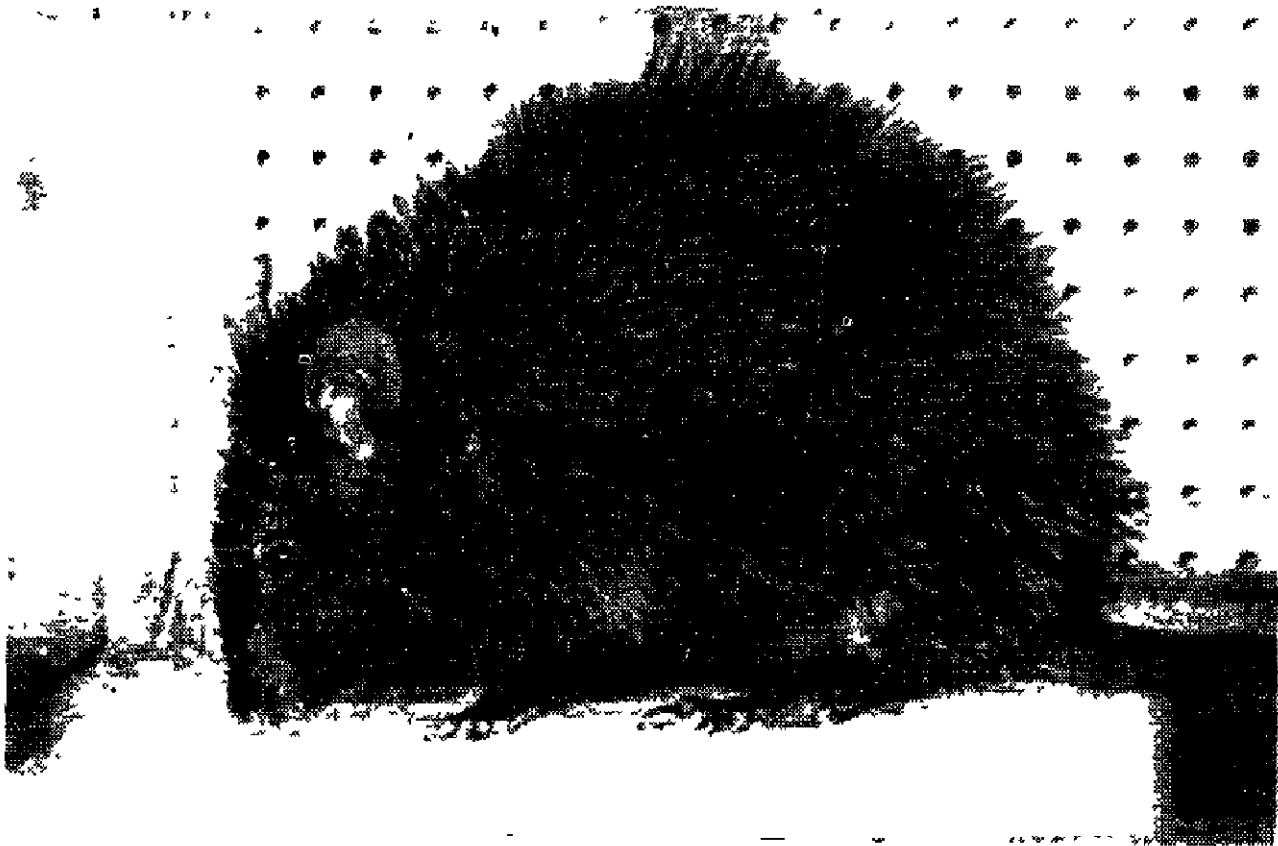


Distribution : Punjab, Delhi, Rajasthan, U P.

Habits and Habitat : Dorsum dull brown or pale to rufous brown, ventrum lighter, darker to grey, tail wholly dark, body heavily built, tail short (about 70%) of HB, incisors broad, HB 153-211 mm, T 97-130 mm, HF 27-36 mm, E 14-22, Mammae 8, Av. body wt. 200 g. Prefers cultivated dry fields but occurs in natural vegetation, gardens and lawns Nocturnal, breeds round the year in laboratory, litter size 2-7,

Damage : Extensive burrower, damages forest plantation in Rajasthan, other crops in different states.

The lesser bandicoot rat, *Bandicota bengalensis* (Gray), 1835

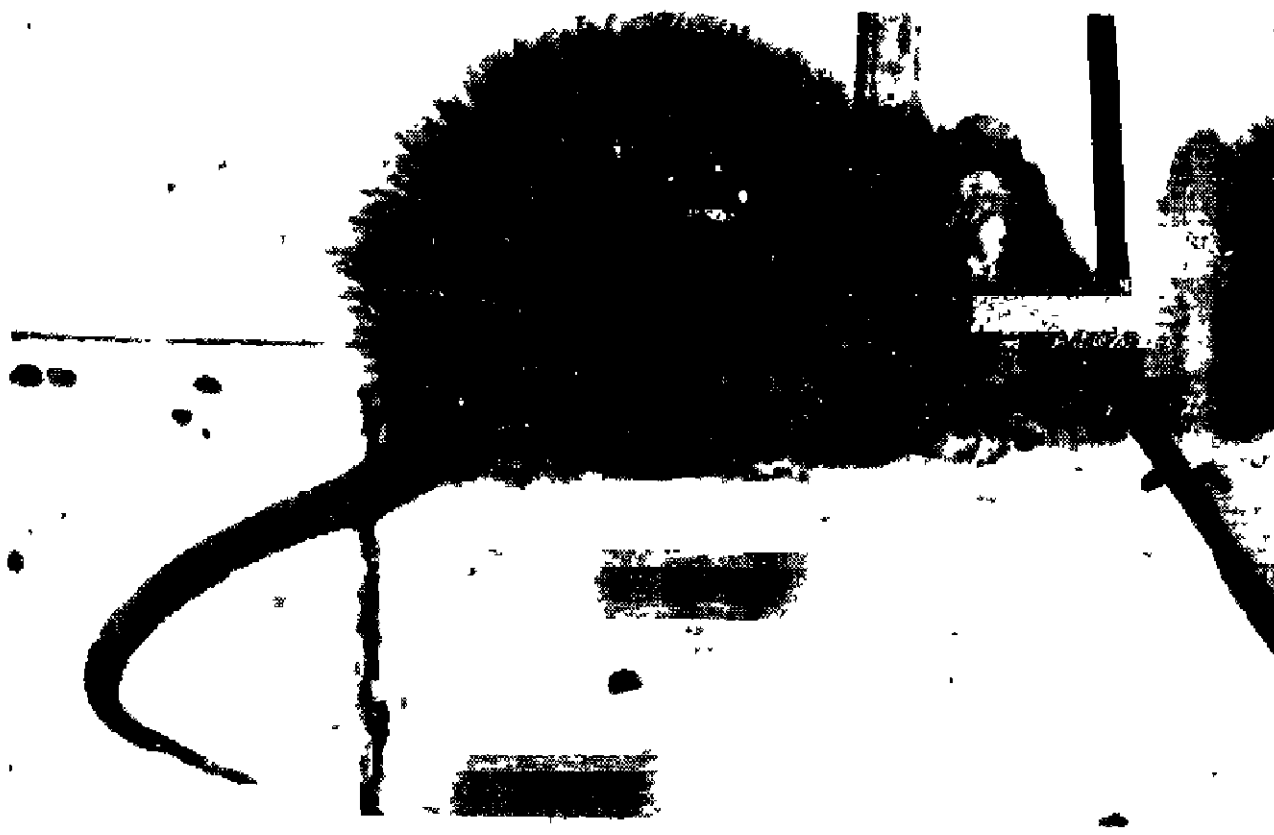


Distribution : Throughout the country.

Habits and Habitat : Generally but not always smaller than *Bandicota indica* : a robust rodent, rounded head, broad muzzle, tail short (80% of HB), fur usually short and harsh, darkish brown dorsum and pale below, feet and tail dark. Mammae 12-18. Extensive burrower, 1-12 burrow openings normally plugged with loose soil, depth 30 cm in black cotton soil, HB 140-255 mm, T 113-202 mm, HF 31-44 mm, E 20-25.5 mm, body wt. 300 g. Breeds all the year round, litter size 1-11, gestation period 22.3 days.

Damage : Prefers paddy and wheat generally but damages vegetable crops too and coconuts in storage, poultry farms. Hoards food grains in the burrows to the extent of 1q/ha.

The large bandicoot rat, *Bandicota indica* (Bechstein), 1800



Distribution : Except arid zones and mountainous area.

Habits and Habitat : Dorsum blackish brown or with a profusion of whitish hairs intermixed, many long hairs on back, fur sparse and harsh, ventrum lighter and greyish. Feet dark, tail wholly dark. Nocturnal, fossorial and strong excavator. HB 210-345 mm, T 167-340 mm, HF 39-61 mm, E 25-40 mm, mammae 12, abodes near human habitation, compounds, gardens, crop fields, godowns, single burrow system may spread over 300 sq m, openings are vary large, seasonal breeder, litter size 1-12.

Damage : Floors and walls of houses, grain etc in godowns