SECTION A
BIOSYSTEMATICS
Studies on the taxonomy of Lepismatidae are fairly extensive and the earliest work in this field was published in 1758 by Linne. Since then, several taxonomists on the basis of the taxonomic characters of species collected from different regions, formulated their own keys for identifying them. The earliest of such attempts was made by Mac Gillivray (1893) who prepared a catalogue of the North American Thysanura. This and the keys prepared by Escherich (1905) for Lepismatidae in general and by Slabaugh (1940) on some domestic species are now considered by most workers as outdated.

For the first time, a key for generic determination of the Lepismatidae of the world was formulated by Wygodzinsky (1957) and this included 20 genera. Subsequently, Paclt (1969) prepared a similar key for the identification of 21 genera of Lepismatidae. Wygodzinsky (1959) further prepared a key for the identification of 11 species belonging to 6 genera of Thysanura and Machilida of the Lesser Antilles and Northern South America. In 1970, he published yet another key for the identification of 5 species belonging to 4 genera from Saint Helena and subsequently reviewed the
silver fish of the United States and the Caribbean areas, providing a key for the identification of 13 species belonging to 8 genera from the United States and 13 species belonging to 7 genera from the Caribbean areas. The key of Sharov (1967) has been prepared to identify 5 species belonging to 4 genera of Lepismatids from the European USSR. Much more work is required to settle some of the basic problems of identification of Lepismatidae and very little is reported on the taxonomy and biosystematics of the oriental Lepismatids. Annandale in 1906 recorded Lepisma (Acrotelsa collaris) from Calcutta as the only Indian species. Lefroy (1909) mentioned Lepisma saccharina as the Himalayan species. Silvestri (1913), after having studied the Thysanura collection of the Indian museum, described 8 species (4 new species) belonging to 6 genera of the family Lepismatidae and 2 species of the family Nicoletiidae. Apart from Gastrotheus indicus, as reported by Silvestri (1913) from Bangalore and Gastrotheus sp. as reported by Wygodzinsky (1967) from South India, there is no other record of South Indian species of Lepismatidae in literature. Therefore, it is considered expedient to make a more thorough investigation of the Silver fish fauna of Palghat gap, South India and to formulate a key for their identification.

A thorough survey of the Palghat gap for the past three and a half years for Thysanura has so far yielded nine species belonging to six genera. A brief description of the general character, a comprehensive account of the salient
features of individual species and a more detailed taxonomic key for the identification of the nine species of the Palghat gap have been attempted here. Inclusion of a number of characters in formulating the key may appear a rather elaborate procedure, especially for those who would rather prefer a short key for identification. But since more morphological characters have been identified, the author is tempted to include them for a clearer understanding of their taxonomic significance. In order to give a more precise description of the maxillary and labial palps, the proportinate size of the apical and subapical segments has been arrived at by taking the value of the longest/brodest segment as 100. This procedure has been followed for all the species.

Wygodzinsky (1972) recognized three families, namely Nicoletiidae, Lepismatidae and Lepidotrichidae under the order Thysanura. The same classification has been followed here. In the Palghat Gap no representative of the family Lepidotrichidae has been so far recorded. The Machilids were earlier included under Microcoryphia, a separate sub order of Thysanura (Remington, 1954). Later, Wygodzinsky (1959, 1967) elevated Microcoryphia to the status of an order, closely related to Thysanura. In the present survey, the Machilids are seldom represented and therefore not investigated.

1.2. MATERIALS AND METHODS:

Specimens were collected from book shelves, empty cardboard boxes, and table drawers and also from underneath
PLATE II

1. **Mango indica** Lin. silv.
2. **M. oleifera** B. L. Del.
3. **Lycium** sp. (b)
4. **Saccharina domestica** sp. nov.
5. **Saccharina domestic** Pack.
6. **Polypodium calycata** Mitt.
7. **Polypodium indica** Lindl. Sch.
8. **Polypodium diversifolium** silv.
9. **Polypodium nigra** Oudr.
the stones in different localities of the scrub jungles, of semiarid zones and tropical rain forests/Palghat gap. Insects were killed in chloroform for morphological studies and camera lucida diagrams of the entire specimens were drawn and photomicrographed, using Asahi Pentax photomicrographic attachment, under the binocular dissection microscope. For the study of the head capsule, the mouth parts, the legs and the genitalia, materials were treated in 10% Potassium hydroxide for 24-48 hours, washed in 5% acetic acid and then in water. Appendages were dissected out, dehydrated in cellosolve and mounted in Polyvinyl lactophenol. Potassium hydroxide treated materials when stored in cellosolve (2-methoxyethanol) for several days gave better results in micromorphological investigations.

I.3. GENERAL CHARACTERS OF THE ORDER THYSANURA:

Free living, mostly synanthropic and rarely myrmeco-philic or termophilic, body dorsoventrally flattened either elongate or short, club shaped or ovoid with a blanket of imbricate scales. Colouration vary from yellow to pale grey or black, occasionally giving mottled appearance (Plate II, 1-9). Bristles either simple, forked or feathery. Trichobothria varying in size with restricted distribution in different species (Plate III, 1-4). Head either bare or with scattered bristles or with well defined cephalic bristle combs, arranged on specific areas of the head capsule and designated as the frontal, the clypeal, the genal, infragenal etc. The fields of the bristle combs either laterally or
1. *C. italicum* - bristles and trichobothria 3600.
2. *C. collaris* - setae bristles 3600.
3. L. cylindracea - setae bristles X 600.
5. *L. jasminum* - maxillae (4) X 50.
7. *L. collaris* - maxillae (2) X 75.
8. *L. formica* - maxillae (3) X 150.
<table>
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<th>Description</th>
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<tr>
<td>1</td>
<td><em>S. indicum</em></td>
<td>- Bristles and trichobothria x 300</td>
</tr>
<tr>
<td>2</td>
<td><em>S. collaris</em></td>
<td>- Rectal bristles x 600</td>
</tr>
<tr>
<td>3</td>
<td>Equina sp. (?)</td>
<td>- Proximal bristles x 600</td>
</tr>
<tr>
<td>4</td>
<td><em>L. elongata</em></td>
<td>- Pectines x 3000</td>
</tr>
<tr>
<td>5</td>
<td><em>L. elongata</em></td>
<td>- Pectines (4) x 150</td>
</tr>
<tr>
<td>6</td>
<td><em>L. elongata</em></td>
<td>- Thin-bearing forked spine x 3000</td>
</tr>
<tr>
<td>7</td>
<td><em>L. collaris</em></td>
<td>- Pectines (2) x 75</td>
</tr>
<tr>
<td>8</td>
<td><em>L. collaris</em></td>
<td>- Pecornous (3) x 150</td>
</tr>
<tr>
<td>9</td>
<td><em>L. collaris</em></td>
<td>- Pecornous with claws x 150</td>
</tr>
</tbody>
</table>
1. *G. indicus* (multi-tuberculate condition) x150
2. *R. collaris* x75.
3. *Lepina sp (?)* x150.
4. *N. domestica* x150.
5. *T. domestica* x75.
6. *P. calva* x75.
7. *C. longicaudata* x75.
8. *C. diversiaquama* x150.
9. *C. nilgra* x100.

**MAXILLAE**

10. *G. indicus* - Notice the lacinial incisor process x150.
11. *A. collaris* - Lacinia showing membraneous connection with mandible x75.
12. *T. domestica* x75.
longitudinally elongate, varying widely in their extent. Eyes present or absent. Labrum epipharynx invariably broadly rectangular.

Mandibles monocondylic, strongly sclerotized with prominent sharp incisors, lancet like premolars and tuberculated molars; the cutting surface of the molars with fine denticles as well as spines showing varying degrees of development. Inner surface of the mandibles immediately behind the molar with a tuft of bristles that engage the maxillae (Plate IV, 1-9).

Maxillary palps invariably five segmented and rarely four segmented; lacinia simple or forked with one or two sharply pointed incisors and fringed marginally with bristles of different grades of organization (Plate IV, 10-12).

Labial palps always three segmented; the sensory papillae of the apical segments vary from five to many, spinous or smooth, arranged subapically either in a single row or in two rows or irregularly (Plate V, 1-10).

The terms such as prescutal combs, scutellar combs, paranotal expansions, presternal and eusternal expansions have been employed here to denote precisely the position of the bristle combs and the development of the various components of the thoracic segments.
PLATE V
LABIUM-SENSORY PAPILLAE

1. *G. indicus* X150.
2. *G. indicus* (Multiple condition of sensory papillae) X400.
3. *A. collaria* x75.
4. *Leonema sp (?)* X150.
5. *J. domestica* x150
6. *T. domestica* X75
7. *P. calva* x75
8. *C. longicaudata* X75
9. *C. diversisquama* X150
10. *C. nigra* X150.
Thorax with or without prominent paranotal expansions; prothoracic prescutal bristles when present are either contiguous or in isolated combs; the scutellar combs either present or absent; the thoracic sternites may be either simple or with varying degrees of elaborate development of presternal posterior expansion with 3+3, 2+2 or 1+1 bristle combs as well as eusternal expansions. Legs with 2-4 tarsomeres, pretarsus bearing a short and slender median claw and two prominent lateral claws (Plate III, 5-10).

Abdomen elongate or oval, with either scattered bristles or with definite number of bristle combs (3+3, 2+2 or 1+1 arrangement); not all tergites carry similar arrangement of bristle combs; sternites either with both median and lateral combs or only with lateral combs; supra anal plate (X and XI tergites) varying in shape - triangular, obtuse, truncate, emarginate or bifid, either longitudinally elongate extending far beyond the second gonocoxae or reduced; the bristles of the supra anal plate either scattered or arranged in lateral combs in the pattern 1+1, 5+5 or 6+6.

Gonostyles 1 to 4 pairs; cerci either shorter or longer than the body; gonapophyses either short and plate like and free extending not beyond the second gonocoxae or much elongated and fused, with or without terminal fossorial spines; males with or without parameres with incompletely
PLATE VI
FEMALE CRISTALIA

1. C. indicus x400.
2. A. rothleri x150.
3. T. donacica x150.
4. T. donacica x 600.
5. Locusta sp. (?) x400.
6. T. donacica x150.
7. T. donacica
8. P. colva x400.
9. C. ßonticida x150.
10. C. ßivora squama x400.
11. C. ßicora x400.
PLATE VII
HALE GENERALIA AND SUPRA ANAL PLATE

1. C. imitans
   x150.
2. Lepisma sp. (?)
   x150.
3. Lepisma sp. (?)
4. C. lancifer adata
   x100
5. A. sularis
   (triangular) x50
6. Lepisma sp. (?)
   (rectangular) x75.
7. A. domestic a
   (marginate) x100.
8. A. domestic a
   (obtuse) x75.
9. A. domestic a
   (truncate) x50.
partitioned aedeagus and rarely provided with retractile clasper on the second gonocoxae.

1.4. TAXONOMIC DESCRIPTION:

The following nine species have been presently recorded from the Palghat gap and a brief description of each species with a key for their identification have been provided here.

A. Family : NICOLETIIDAE
   1. Gastrotheus indicus

B. Family : LEPISMATIDAE
   2. Acrotelsa collaris
   3. Lepisma sp (?)
   4. Namunukulina domestica sp.n.
   5. Thermobia domestica
   6. Ctenolepisma longicaudata
   7. Ctenolepisma diversisquamis
   8. Ctenolepisma nigra
   9. Peliolepisma calva

A. Family : Nicoletiidae (Escherich) Remington.

The members of the family Nicoletiidae are known to be subterranean or caverniculous, myrmecophilous or termitophilous with scales devoid of pigmentation, though Remington (1954) and Bruce et al., (1954) have reported that scales are usually absent in free living species.
This family is divided into two sub families viz., the Nicoletiinae and Atelurinae, the former without scales and the latter with scales. The sub family Nicoletiinae is not represented. The sub family Atelurinae is represented by the genus Gastrotheus Casey and by only one species, G. indicus Silvestri in the Palghat gap. Wygodzinsky (1967) made mention of a species Gastrotheus as having been reported from Southern India. But no description of Indian species is available in the literature other than G. indicus Silvestri. The description was based on the specimens kept in the collections of the Indian Museum, Calcutta and reported to have been collected from Puri, Orissa Coast and Bangalore.

1. Gastrotheus indicus Silvestri (Plate II, 1)

   **Adult male**: (Plate VIII, 1) 2.45 mm long and 0.7 mm broad; nearly oval in shape, abruptly tapering at the rear; pale yellow with transparent scales.

   **Head**: (Plate IX, 1-5) broadly elongate, 0.1 mm long and 0.41 mm broad; sharply pointed and forked, non feathery bristles scattered all over the head and not arranged in distinct combs. Eyes absent; antennae shorter than body (0.61 mm). Mandibular molar multituberculate with spines and fine denticles. Maxillary palp 4 segmented with the apical segment shorter than sub-apical segment (73:100); lacinia with an inner pectinate appendage having a row of
PLATE VIII
GASTRONHEUS INDICUS

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view.
PLATE IX
*CASTILLA螺 COMINE*

1. Head capsule
2. Mandible
3. Labial palp
4. Maxilla
5. Leg
6. Female genitalia
7. Male genitalia
denticles and elongated spines and the body of the lacinia terminating into sharply pointed incisor process. Labial palp 3 segmented; apical segment conspicuously enlarged and elongated, almost double the size of the sub apical segment (100 : 50), with an outer row of 5 prominent spinous sensory papillae and an inner row of 3-4 spinous papillae; their structure and arrangement appearing in marked contrast from all the other species described here.

**Thorax:** (Plate VIII, 1 & 2) 3.2 mm long and 2.1 mm broad with paranotal expansions and without distinct bristle combs; postero lateral edges of tergites with elongately sharp spines; antero lateral edges with small, sharp teeth like projections; no presternal posterior expansion in any of the thoracic segments; meso and metasternum each with 2 median bristles; tibia (with each) 3-4 forked spines, tarsi 4 segmented, their spines irregularly distributed and the claws short (Plate IX, 6).

**Abdomen:** (Plate VIII - 1 & 3) 1.5 mm long and 0.9 mm broad without any bristle comb; supra anal plate bifid with prominent sensory pegs and elongated spines (Plate VII, 1); lateral cerci not more than half as long as the median cercus; 4 pairs of gonostyles present; paired tuft of small bristles present inner to the last pair of gonostyles; parameres prominently found. In the females the 1st pair of gonapophyses not fused, but remain distinctly separate;
gonapophyses with recurved hooks, elongate spines and fine tubercles (Plate VI, 1 and Plate IX, 7 & 8).

B. **Family: Lepismatidae (Latreille) Burmeister.**

The family Lepismatidae is the largest one, the systematics of which has undergone radical change after the work of Remington (1954) who considered Lepismatidae and Nicoletiidae under the superfamily Lepismatoidea. He further divided the Lepismatidae into Lepismatinae Escherich and Maindroniinae. Paclt (1967) further elevated Maindroniinae to the family status (Maindroniidae (Escherich Paclt)). However, Wygodzinsky (1967) set to rest this controversy by ascertaining that the inclusion of the subfamily Maindroniinae, consisting of a single genus *Maindronia Bouvier*, under Lepismatidae needed clarification. This is a suggestion that the family Lepismatidae needs no further division into subfamilies.

Lepismatidae are the most common species, represented all over the world. Most of them are synanthropic and many of them are either myrmecophilous or termophilous and one species (*Namunukulina funambulus* Wygodzinsky) has been reported from the nest of the palm squirrel *Funambulus palmarum*. Some are reported from bird’s nests too. Most species are tropical or subtropical. They have dorsoventrally compressed body and their dorsal surface is
invariably covered with scales, presenting a complex pattern of hypodermal pigmentation. Escherich (1905) described 9 genera and Wygodzinsky (1957), after having modified the classification, recognized 20 genera. Recently, Paclt (1967) further modified the classification and erected 2 more new genera namely Anisolepisma and Paracrotelsa.

2. *Acrotelsa collaris* (Plate II, 2; Tables 2-4)

Synonyms: *Lepisma collaris* Fabricius, 1793.
*Lepisma mucronata* Packard, 1873.

**Adult female**: (Plate X, 1) 11.7 mm long and 3.62 mm broad across the thorax; dark brown with dark yellow patches at the posterior and postero lateral margins of the thorax and the bases of abdominal setal combs; antennae, cerci and legs dark brown with yellow rings; setae of setal combs pale yellow and black; prescutal combs of the pronotum exclusively black; entire body including tarsomeres densely clothed with scales.

**Head**: (Plate XI, 1-5) broadly elongate, 0.5 mm long and 1.9 mm broad; eyes small, black, hidden dorsally by setal combs; antennae half as long (6.5 mm) as the body; six prominent bristle combs consisting of 4 median frontal and two lateral genal combs with narrow longitudinally elongate
fields terminating behind the fronto-clypeal limit; paired clypeal combs present with transversely placed comb fields; maxillary palp 5 jointed, apical segment shorter than sub-apical segment (85:100); Labial palp 3 jointed, apical segment broader than sub apical segment (100:76) with 5 sensory papillae arranged in two rows.

Thorax: (Plate X, 1 & 2) 4.0 mm long and 3.7 mm broad; prescutal bristles of the prothorax arranged in two well isolated combs; pro, meso and meta tergites devoid of scutellar setal combs; thoracic sternites with simple presternal posterior expansions, fringed apically with bristles and the meso and metasternites with additional bifid, bare, eusternal expansions, fused on either side with the median presternal posterior expansion; prosternal expansion with a median bristle comb; legs with whorls of setae, the outer margin of coxa with 19-22 whorls, femur, tibia and tarsomeres each with 4-5 whorls of bristles; tarsomeres two only, the basitarsus much elongated (Plate XI, 6).

Abdomen: (Plate X, 1 & 3) 7.2 mm long and 2.8 mm broad, tapering acutely with a triangular supra anal plate (Plate VII, 5); terga I with 2+2, II to VII with 3+3, VIII with 2+2, IX bare and X with 5+5 or 6+6 bristle combs; abdominal sterna III to VIII with 2+2 bristle combs; 2 pairs of styles; gonapophyses short, stout and flat not extending
PLATE X
ACROTELSA COLLARIS

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE-X - ACROTELSA COLLARIS

1

2

3

GX1

GX2

GP

1.0 mm
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<tr>
<td>1.</td>
<td>head capsule</td>
</tr>
<tr>
<td>2.</td>
<td>mandible - lateral view</td>
</tr>
<tr>
<td>3.</td>
<td>mandible - inner view</td>
</tr>
<tr>
<td>4.</td>
<td>labium</td>
</tr>
<tr>
<td>5.</td>
<td>maxilla</td>
</tr>
<tr>
<td>6.</td>
<td>log</td>
</tr>
<tr>
<td>7.</td>
<td>female genitalia</td>
</tr>
<tr>
<td>8.</td>
<td>male genitalia</td>
</tr>
</tbody>
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beyond the second gonocoxae and provided apically with stout, recurved spines; median and lateral cerci relatively longer than the body (Plate VI, 2 and Plate XI, 7).

The males are apparently similar to the females in their chaetotaxy and morphology of mouth parts and appendages. There are no parameres. The intromittent organ consists of a basal phallosoma and a distal endosoma which is apparently partitioned longitudinally and fringed with a single row of titilators (Plate XI, 8).

_Acrotelsa collaris_ of U.S.A. and Caribbean areas is reported to be synanthropic species and the males are described to have parameres (Wygodzinsky, 1972). But the present investigation shows that _Acroptesa collaris_ of Palghat gap is free living, occupying concealment microhabitats underneath the stone and never found to be synanthropic. In India, this was the first recorded species, known only from Calcutta (Annandale, 1960 and Silvestri, 1913). This is the first record from the Palghat gap.

3. **Lepisma sp (?)** (Plate II, 3; Table 2-4)

   _Adult female:_ (Plate XII, 1) 4.72 mm long and 1.44 mm broad with a club shaped body, tapering abruptly at the rear; black; antennae, cerci and legs pale yellow; scales covering the body excluding the tibiae and tarsomeres.
Head: (Plate XIII, 1-5) broadly elongate; 0.32 mm long and 0.72 mm broad; eyes prominent, antenna half as long as the body (2 mm); bristles scattered on the head and not concentrated into bristle combs; maxillary palp 5 jointed, the apical segment longer than the subapical segment (100:89); labial palp 3 segmented with the apical segment broader than the subapical segment (100:83) and the 5 sensory papillae arranged in two rows.

Thorax: (Plate XII, 1 & 2) 1.68 mm long and 1.44 mm broad, with prominent paranotal expansions and without any prescutal and scutellar bristle combs; the presternal posterior expansions of pro, meso and metathorax with 1+1 bristle combs; tarsomeres 3; tibiae and tarsomeres furry. (Plate XIII, 6).

Abdomen: (Plate XII, 1 & 3) 2.72 mm long and 0.96 mm broad, abdominal tergites I to III with 1+1 and IV to VIII with 2+2 bristle combs; dorso median bristle combs formed of a single macrochaeta; segment IX bare and segment X with 1+1 bristle combs; abdominal sterna I to VIII with medial sternal as well as sublateral bristle combs; supra anal plate very much elongate, emarginate and rectangular (Plate VII, 6); styles 2 pairs; gonapophyses short, not extending far beyond the supra anal plate; (Plate VI, 5 and Plate XIII, 7); cerci shorter than the body (0.83 mm).
PLATE XII

ILPISA sp. (?)

1. Entire
2. Thorax - ventral view
3. Abdomen - ventral view
PLATE XII LEPISMA Sp.(?)

1 mm

1

2

3

GX_1
GX_2
GP

1 mm
PLATE XIII
LEPISTMA sp (?)

1. Head capsule
2. Mandible - Lateral view
3. Mandible - Inner view
4. Labium
5. Maxilla
6. Leg
7. Female genitalia
8. Male genitalia
Males with short and broad parameres covered with dense bristles; aedeagus apparently partitioned with two conspicuous pores; second gonocoxae with retractile claspers, the apical portion having highly imbricate surface (Plate VII, 2 and Plate XIII, 8).

This species is the only representative of the genus Lepisma in the Palghat gap. It differs markedly from L. nigra and L. gravelyi (Silvestri, 1913) in the arrangement of bristle combs of the abdominal sternites and tergites. Since the original descriptions of L. myrmecobia Silvestri and L. Indica Esch., are not readily available for comparison, its specific confirmation is not possible at present. It is a strictly myrmecophilous species and the two characters namely apically emarginate tenth Urotergite and simple but apically bifurcate setae, as enumerated by Wygodzinsky (1970) for L. myrmecobia, are applicable to this species. However, presence of a clasper apart from parameres is a unique feature found in this species not so far reported in Lepismatidae and for that reason it appears to be a new species record.

4. Namunukulina domestica sp. n. (Plate II, 4; Table 2-4)

   Adult female: (Plate XIV, 1) 4.73 mm long and 0.918 mm broad, body grey or brownish yellow, antennae, cerci and legs pale yellow.
PLATE XIV

HARUNUKULINA DOMESTICA

1. entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE XIV NAMUNUKULINA DOMESTICA Sp. nov

1 mm

1

2

3

GX1
GP
GX2
PLATE XV
*NAUROMACULATA DOMESTICA*

1. Head capsule
2. Mandible - Lateral view
3. Mandible - Inner view
4. Labium
5. Maxilla
6. Leg
7. Female genitalia
Head: (Plate XV, 1-5) broadly elongate; 0.37 mm long and 0.71 mm broad; genal and frontal combs with very few bristles; clypeal combs most prominent, supra genal combs obscure; antennae less than half the length of the body (1.94 mm); maxillary palp 5 segmented and the apical segment longer than sub-apical segment (100:89); the labial palp 3 jointed and the apical segment somewhat broader than the subapical segment (100:82) with five sensory papillae arranged in two rows (outer row of three and inner row of two); the mandibular pro-molar sharply pointed like the incisors and the molar consisting of a single tubercle.

Thorax: (Plate XIV, 1 & 2) 1.56 mm long and 0.918 mm broad; protergum without prescutal combs; pro, meso and meta terga with 1+1 scutellar combs formed of a few bristles; pro, meso and metasterna with presternal expansions, each having 1+1 bristle combs; tarsomeres 3, tibia and tarsomeres furry (Plate XV, 6).

Abdomen: (Plate XIV, 1 & 3) 2.86 mm long and 1.02 mm broad; abdominal terga I and II with 1+1, III to VIII with 2+2, IX bare and X with 1+1 bristle combs; abdominal sterna IV to IX with 2+2 combs (one sublateral and one lateral at the extreme lateral margin on either side); III abdominal sternum alone with single median sternal comb and sterna I and II without bristle combs; only one pair of
gonostyles present on the second gonocoxa; gonapophyses short, segmented and cone shaped, not extending beyond the second gonocoxae and apically fringed with fine elongated bristles (Plate VI, 6 & 7 and Plate XV, 7); supra anal plate broader than long and emarginate (Plate VII, 7); cerci shorter than the body; median cercus (1.44 mm) shorter than the lateral cerci (1.60 mm); 5 to 6 proximal segments of the median cercus with a single whorl of 2 to 4 much elongated macrochaetae and with 2 whorls of bristles in between; Males not found in this species.

Wygodzinsky (1957) described for the first time the genus Namunukulina from Namunukula (ceylon) consisting of only one species, namely N. funambuli collected from the nest of the palm squirrel Funambulus palmarum. The present species is similar to N. funambuli in having single pair of gonostyles, short and cone shaped segmented gonapophyses, better developed clypeal combs, abdominal sternites I and II without any bristle combs, III abdominal sternite with single median bristle comb, sensory papilla of the labial palp arranged in two rows and supra anal plate emarginate but broadly elongate. But the present species differs from N. funambuli in having 2+2 bristle combs in the abdominal terga III to VIII (3+3 from III to VII and 2+2 on VIII in N. funambuli) and 2+2 bristle combs of the abdominal sterna IV to IX (1+1 from IV to IX in N. funambuli). Thus the
arrangement of the bristle combs in the abdomen has been considered as the diagnostic features of *N. domestica*.

*N. funambuli* has been recorded exclusively from the squirrel's nest whereas *N. domestica* has been collected from book shelves and cardboard boxes. Interestingly, like *N. funambuli*, not a single male specimen has been found in spite of close observation of a large number of specimens and Wygodzinsky (1957) has suggested parthenogenesis to take place in this genus. Available informations tempt the author to corroborate Wygodzinsky's suggestion. The holotype is kept in the collection of the Division of Entomology, University of Madras P.G. Centre, Coimbatore.

5. *Thermobia domestica* (Packard) (Plate II, 5; Table 2-4)

**Synonym:**

*Lepismodes domestica* Packard, 1873.

**Adult female:** (Plate XVI, 1) 11.86 mm long and 3.76 mm broad, broadly elongate; terga pale yellow with dark bands across the posterior margins, antennae pink, cerci and legs pale yellow with pink rings, bristles pink and terminally brown; tergal scales forming complex patterns; ventral scales pale brown; tarsi furry and devoid of scales.

**Head:** (Plate XVII, 1-5) broadly elongate; 1.06 mm long and 1.63 mm broad; eyes black and dorsally visible;
PLATE XVI
THERMOBIA DOMESTICA

2. Entire
2. Thorax - Ventral view
3. Maxillae - Ventral view
PLATE XIV

TURDUS IMMIGRANS

1. Head topology
2. Maxilla - lateral view
3. Mandible - inner view
4. Labium
5. Maxilla
6. Leg
7. Female genitalia
8. Male genitalia
antennae twice as long as the body (26.13 mm); six bristle combs of the head consisting of paired triangular frontal combs, marginal elongated genal combs continuing as supra ocular extension and paired insignificant supra genal combs; maxillary palp elongate, five jointed and the apical segment shorter than sub apical segment (82:100); labial palp 3 jointed, the apical segment broader than the sub apical segment (100:80) and with 5 sensory papillae all arranged in a single row.

**Thorax:** (Plate XVI, 1 & 2) 4.97 mm long and 3.76 mm broad; paired prescutal bristle combs of prothorax juxtaposed, with circle of bristles; pro, meso and metanota with paired dorso lateral scutellar bristle combs; presternal expansions of thoracic sternites with crenate margin and prominent 1+1 bristle combs in distinct notches, the margins fringed by bristles; tarsi 3 segmented (Plate XVII, 6).

**Abdomen:** (Plate XVI, 1 & 3) comparatively shorter; 5.68 mm long and 2.56 mm broad; abdominal terga I with 1+1, II to VII with 2+2, VIII and X with 1+1 bristle combs and IX bare; abdominal sterna IV to VIII with paired sub lateral combs and III-VI with less prominent median sternal combs; supra anal plate obtuse (Plate VII, 8); 3 pairs of styles present; gonapophyses long, invariably extending 1/5th the length of the median cerci (Plate VI, 3 & 4 and Plate XVII, 8).
median cerci (21.37 mm) twice as long as the body; lateral cerci (13.63 mm) not more the 3/4 th the length of the median cercus.

Males without parameres; the incompletely partitioned aedeagus fringed with a row of titilators (Plate XVII, 8), and the males resemble the females in their morphological features such as arrangement of bristle combs and the nature of mouth parts and appendages.

This is reported to be a common domestic insect in Lahore (North India) and is reported for the first time from Palghat Gap, South India.

6. Peliolepisma calva Ritter, 1940 (Plate II, 6; Table 2-4)

Adult female: (Plate XVIII, 1) 6.67 mm long and 1.21 mm broad; body black, antennae, cerci and legs brown, with pale yellow 2nd and 3rd tarsomeres.

Head: (Plate XIX, 1-5) broadly elongate; 0.49 mm long and 0.85 mm broad; antennae half as long as the body (3.55 mm); bristle combs of the head similar to those of the Ctenolepisma species; maxillary palps 5 segmented with apical and sub apical segments of equal length (100:100); three jointed labial palp with broad apical segment in comparison with the subapical segment (100:54); 5 sensory papillae all arranged in a single row.
PLATE XVIII

PESTOLEPTES CALVA

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE LIX

PELIOLEPTA CALVA

1. Head capsule
2. Mandible - lateral view
3. Mandible - inner view
4. Labium
5. Maxilla
6. Log
7. Female gonitalia
8. Male gonitalia
Thorax: (Plate XVIII, 1 & 2) 1.63 mm long and 1.21 mm broad; protergum with contiguous prescutal bristle combs; scutellar combs of the thoracic terga with a single, elongate macro-chaeta; presternal expansions with 1+1 setal combs; tibia and the 3 tarsomeres furry (Plate XIX, 6).

Abdomen: (Plate XVIII, 1 & 3) 4.54 mm long and 1.13 mm broad; pre genital segments almost equal in size; abdominal terga I with 1+1, II to VI with 3+3, VII and VIII with 2+2 bristle combs, IX bare, and X with 1+1 bristle combs; supra anal plate truncate; abdominal sterna with sublateral sternal combs in segments III to VIII; 2 pairs of styles; gonapophyses a little shorter than the median cercus (Plate VI, 8 and Plate XIX, 7).

The males differ very little from the females in the general morphology of mouthparts and legs and arrangements of bristle combs. The aedeagus is incompletely partitioned and without any trace of parameres (Plate XIX, 8).

Peliolepisma calva has been reported to be a free living species in ceylon, and domestic in Guyana, cuba, caribbean areas (Wygodzinsky, 1972). The specimens presently collected from the Palghat gap are free living. It resembles Ctenolepisma nigra in size and in general appearance and more closely Ctenolepisma longicaudata in the arrangement of
bristle combs and in its general morphology, the mouth parts and the appendages. But it differs from all other genera in being smaller in size and the scutellar combs of the pro, meso and meta thorax having only 1+1 macrochaetae.

Wygodzinsky (1957) is fully justified in his view that *Peliolepisma calva* resembles *Ctenolepisma* so closely that it is very difficult to maintain a "generic status". Paclt (1967) however synonymised this species with *Ctenolepisma* Escherich. But Wygodzinsky (1972) continued to use the name *Peliolepisma calva* with a comment that Paclt had not given any reason for this synonymy. The presence of a single macrochaeta on the thoracic tergites has been taken as the sole criterion for giving this species a generic status (Wygodzinsky, 1972) and in the present investigation the same status has been maintained.

This is the first report of *Peliolepisma calva* from India.

7. *Ctenolepisma longicaudata* Escherich (Plate II, 7; Table 2-4)

**Synonyms:**

*Ctenolepisma longicaudata* Escherich, 1905.

*Ctenolepisma urbana* Slabaugh, 1940.

**Adult female:** (Plate XX, 1) 12.43 mm long and 3.05 mm broad; dark grey but black immediately after moultting;
antennae and cerci pale brown; femur black, tibia and tarsomeres pale yellow.

**Head:** (Plate XXI, 1-5) 1.06 mm long and 1.84 mm broad, with bristle combs similar to those of Thermobia domestica; antennae apparently a little longer than the body; maxillary palp five segmented, the apical segment longer than sub apical segment (100:92); labial palp 3 jointed, the apical segment broader than subapical segment (100:75) with five sensory papillae, all arranged in a single row.

**Thorax:** (Plate XX, 1 & 2) 3.91 mm long and 3.05 mm broad; prescutal bristle combs of prothorax juxtaposed and all the thoracic terga with dorso lateral scutellar combs; presternal expansions of pro, meso and metathorax with 2+2, 1+1 and 1+1 setal combs respectively in distinct notches; tibia and the three tarsomeres furry (Plate XXI, 6).

**Abdomen:** (Plate XX, 1 & 3) 7.31 mm long and 2.13 mm broad; abdominal terga I with 1+1, II to VI with 3+3, VII and VIII with 2+2 bristle combs; IX bare and X with 1+1 bristle combs; abdominal sterna III to VIII with 1+1 bristle combs; supra anal plate truncate (Plate VII,9); median and lateral cerci shorter than the body; 2 pairs of styles present; gonapophyses slender and much elongate but not exceeding half the length of the median cercus. (Plate VI, 9 and Plate XXI, 7).
PLATE XX
CYANOLOTIS MA LONGICAUDA

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE XX CTENOLEPISMA LONGICAUDATA

1

2

3

2 mm
PLATE XII
CTENOLEPISMA LONGICAUDATA

1. Head capsule
2. Mandible - lateral view
3. Mandible - mesal view
4. Labium
5. Maxilla
6. Leg
7. Genital plate
8. Genitalia
Males with incompletely partitioned aedeagus which is apically provided with titilators and without any trace of parameres (Plate XXI, 8).

*Ctenolepisma longicaudata* is found to be synanthropic species in Palghat Gap and it has been already reported from Calcutta, Darjiling (Silvestri, 1913) and Manipur as well as from other parts of India (Wygodzinsky, 1954).

8. *Ctenolepisma diversisquamis* Silvestri (Plate II, 8; Table 2-4).

**Synonyms:**

*Ctenolepisma diversisquamis* Silvestri, 1908.

*Ctenolepisma reducta* Folsom, 1923.

**Adult female:** (Plate XXII, 1) 10.43 mm long and 2.48 mm broad; black with pale yellow patches on the head and bases of all dorsomedian and dorso-lateral tergal bristle combs, imparting a four spotted appearance to the tergites II to V; a median yellow line extending from meso tergum to supra anal plate; antennae, cerci and legs brown; black patches at the distal ends of tibia and tarsomeres.

**Head:** (Plate XXIII, 1-5) broadly elongate 0.49 mm long and 1.28 mm broad; antennae and cerci shorter than the body (6.461 mm); cephalic bristle comb arrangement apparently similar to that of *Ctenolepisma longicaudata* and *Thermobia domestica*; maxillary palp 5 segmented, the apical segment
PLATE XII

CHIROPELMA DIVERSELUSQUAMIS

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE XXIII
CTENOLEPISMA DIVERSISQUAMIS

1. Head capsule
2. Mandible - Lateral view
3. Mandible - Inner view
4. Labium
5. Maxilla
6. Leg
7. Female genitalia
8. Male genitalia
longer than the subapical segment (100:95); labial palp 3 jointed, the apical segment broader than the subapical segment (100:92); sensory papillae five in number and all arranged in a single row.

**Thorax:** (Plate XXII, 1 & 2) 3.40 mm long and 2.49 mm broad with paired prescutal bristle combs juxtaposed; pro, meso and metatergites with 1+1 dorso lateral scutellar combs; presternal expansions of pro, meso and metathorax with 3+3, 3+3 and 2+2 bristle combs respectively and with crenate margins; tarsi 3 segmented; tibia and tarsomeres furry (Plate XXIII, 6).

**Abdomen:** (Plate XXII, 1 & 3) 6.53 mm long and 2.20 mm broad; abdominal terga I with 1+1, II to V with 3+3, VI to VIII with 2+2 bristle combs, IX bare and X with 1+1 bristle combs; 1+1 sublateral combs of the abdominal sternites from III to VIII prominently visible; supra anal plate truncate; 2 pairs of styles present; median cercus (5.75 mm) almost half as along as the body (Plate VI, 10 and Plate XXIII, 7).

Males with incompletely partitioned aedeagus and devoid of parameres (Plate XXIII, 8).

This synanthropic species of Palghat Gap has not been so far reported from India and therefore it is the first record from this region.
9. *Ctenolepisma nigra* Silvestri, 1913 (Plate II, 9; Table 2-4).

**Adult female:** (Plate XXIV, 1) 8.32 mm long and 2.00 mm broad; black with brown and yellow bristles; antennae pale brown; cerci pale brown, with pale yellow rings; legs pale yellow; 1st tarsomere alone brown.

**Head:** (Plate XXV, 1-5) broadly elongate; 0.64 mm long and 1.20 mm broad; antennae shorter than the body (6.32 mm long); bristle combs of the head similar to those of *C. longicaudata*, but with additional labral combs; maxillary palp 5 segmented with apical and subapical segments of equal length (100:100); labial palp 3 jointed, apical segment broader than the subapical segment (100:71) with 5 sensory papillae, all arranged in a single row.

**Thorax:** (Plate XXIV, 1 & 2) 3.20 mm long and 2.00 mm broad, prescutal combs of prothorax prominent and juxtaposed; scutellar combs of pro, meso and metatergites with 1+1 bristle combs, each with more than one macrochaeta; tibia and the three segmented tarsomeres furry (Plate XXV, 6).

**Abdomen:** (Plate XXIV, 1 & 3) 4.48 mm long and 1.68 mm broad, oblong with an emarginate supra anal plate; abdominal terga I with 1+1, II to V with 3+3, VI to VIII with 2+2 bristle combs; IX bare and X with 1+1 bristle combs;
PLATE XXXIV
CHELIDOPTERA NEBRA

1. Entire
2. Thorax - Ventral view
3. Abdomen - Ventral view
PLATE XXV
CERCOLEPIZMA NIGRA

1. Head capsule
2. Mandible - lateral view
3. Mandible - inner view
4. Labium
5. Maxilla
6. Leg
7. Female genitalia
8. Male genitalia
Table 2: Morphometric Analysis of Head, Thorax and Abdomen of Adult Females

(in mm, n=6) Mean ± S.E.

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<th>Thorax Width</th>
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### Table: 3a Morphometric Analysis of Head, Thorax and Abdomen of Adult Males (in mm, n=6)

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<td>±0.08</td>
<td>±0.04</td>
<td>±0.01</td>
</tr>
</tbody>
</table>

### Morphometric Analysis of Length of the Appendages of Adult Males (in mm, n=6)

<table>
<thead>
<tr>
<th>Species</th>
<th>Antenna</th>
<th>Median cercus</th>
<th>Lateral cercus</th>
<th>Style I</th>
<th>Style II</th>
<th>Style III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrotela collaris</td>
<td>6.54</td>
<td>7.11</td>
<td>7.50</td>
<td>1.02</td>
<td>1.25</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>±0.33</td>
<td>±0.26</td>
<td>±0.14</td>
<td>±0.02</td>
<td>±0.03</td>
<td></td>
</tr>
<tr>
<td>Thermobia domestica</td>
<td>25.33</td>
<td>20.00</td>
<td>12.99</td>
<td>0.50</td>
<td>0.70</td>
<td>0.97</td>
</tr>
<tr>
<td></td>
<td>±0.70</td>
<td>±1.73</td>
<td>±0.97</td>
<td>±0.02</td>
<td>±0.06</td>
<td>±0.07</td>
</tr>
<tr>
<td>Ctenolepisma longicaudata</td>
<td>11.11</td>
<td>8.80</td>
<td>6.91</td>
<td>0.69</td>
<td>0.99</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>±0.12</td>
<td>±0.31</td>
<td>±0.17</td>
<td>±0.02</td>
<td>±0.05</td>
<td></td>
</tr>
</tbody>
</table>

L = Length
W = Width
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Species</th>
<th>Maxillary Palp (L)</th>
<th>Labial Palp (W)</th>
<th>Ratio</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sub apical segment</td>
<td>Apical segment</td>
<td>Subapical segment</td>
<td>Apical segment</td>
</tr>
<tr>
<td>1.</td>
<td>Gastrotheus indicus</td>
<td>0.128</td>
<td>0.176</td>
<td>73 : 100</td>
<td>0.080</td>
</tr>
<tr>
<td>2.</td>
<td>Arotelsa collaris</td>
<td>0.448</td>
<td>0.384</td>
<td>100 : 85</td>
<td>0.208</td>
</tr>
<tr>
<td>3.</td>
<td>Lepisma sp (?)</td>
<td>0.272</td>
<td>0.304</td>
<td>89 : 100</td>
<td>0.160</td>
</tr>
<tr>
<td>4.</td>
<td>Namunukulina domestica</td>
<td>0.128</td>
<td>0.144</td>
<td>89 : 100</td>
<td>0.112</td>
</tr>
<tr>
<td>5.</td>
<td>Thermobia domestica</td>
<td>0.752</td>
<td>0.672</td>
<td>100 : 82</td>
<td>0.192</td>
</tr>
<tr>
<td>6.</td>
<td>Peliolepisma calva</td>
<td>0.256</td>
<td>0.256</td>
<td>100 : 100</td>
<td>0.112</td>
</tr>
<tr>
<td>7.</td>
<td>Ctenolepisma longicaudata</td>
<td>0.384</td>
<td>0.416</td>
<td>92 : 100</td>
<td>0.240</td>
</tr>
<tr>
<td>8.</td>
<td>Ctenolepisma diversisquamis</td>
<td>0.288</td>
<td>0.304</td>
<td>95 : 100</td>
<td>0.176</td>
</tr>
<tr>
<td>9.</td>
<td>Ctenolepisma nigra</td>
<td>0.304</td>
<td>0.304</td>
<td>100 : 100</td>
<td>0.160</td>
</tr>
</tbody>
</table>

$L = \text{Length}$  \hspace{1cm} $W = \text{Width}$
the dorso median combs in segments II to IV with 1 to 2 bristles; abdominal sterna III to VIII with sub lateral combs; 2 pairs of styles; gonapophyses 1/3rd the length of the median cercus (Plate VI, 11 and Plate XXV, 7).

Males with incompletely partitioned aedeagus and without parameres (Plate XXV, 8).

This synanthropic species has been reported from Puri and Orissa coast by Silvestri (1913). For the first time it is recorded from the Palghat Gap.

I.5. **KEY FOR THE IDENTIFICATION OF THYSANURA OF THE PALGHAT GAP, SOUTH INDIA.**

1. Eyes absent, bristles scattered all over, not arranged in combs; mandibular molars multituberculate, lacinia cleft with single incisor process, maxillary palp 4 segmented; sensory papillae of the labial palp more than five, each closely beset with spines and arranged irregularly; no presternal posterior expansion in all the three thoracic segments; tarsi 4 segmented, supra anal plate bifid, provided with sensory pegs, bristles and trichobothria; lateral cerci relatively very short; gonapophyses extending a little beyond the second gonocoxae; gonapophyses deeply grooved and closely beset with short hooked spines; parameres present and prominently enlarged. .............. **Gastrotheus indicus**
Eyes always present; bristles sparse and scattered or when abundant arranged in combs; mandibular molars less prominent with single tubercle; lacinia not cleft but with two prominent incisor processes; maxillary palps invariably five segmented; labial palp with not more than five simple less spinous sensory papillae, all arranged sub apically in single or two rows; presternal posterior expansions always present in all the three thoracic segments; tarsomeres 2 to 3; supra anal plate never bifid, but with 1 to 5 bristle combs; lateral cerci almost as long as the median cercus; gonapophyses either short or elongated, often extending beyond the second gonocoxae and the first gonapophyses invariably fused; parameres absent or obscure

2. Cephalic bristle combs highly developed with four median frontal combs and two genal combs and their fields narrow and more elongated longitudinally, not reaching the fronto-clypeal line; the pro, meso and meta presternal posterior expansions simple and with marginal bristles and fused with the bifid, bare eusternal expansions; presternal posterior expansion of prosternum with a median bristle comb and the protergum with a pair of well isolated prescutal combs; inner margin of the coxa with a single prominent bristle comb and the outer margin with several rows of bristles; tarsomeres two in number; tibiae and tarsomeres with 4 to 5 whorls of bristles and covered with scales; 3+3 arrangement of bristle combs in
II to VII abdominal tergites, 2+2 in I & VIII abdominal tergites; supra anal plate triangular extending beyond the gonapophyses and possessing not less than 5+5 bristle combs; gonapophyses short, flat and terminally provided with short hooks (fossorial hooks); parameres absent; two pairs of gonostyles present

.................. Acrotelisa collaris

Cephalic bristle combs prominent to obscure; when present, the fields of frontal bristle combs broad and reaching the fronto-clypeal line; prescutal bristle combs of protergum present or absent; preserternal expansions simple and always present; no eusternal expansions; tarsi always 3 segmented and their bristles not arranged in whorls; bristle combs of the abdominal tergites and sternites vary considerably; supra anal plate with 1+1 bristle combs; lateral cerci almost as long as median cercus; gonostyles 1 to 3 pairs, gonapophyses short to very much elongated; bristles bare or barbed

........................................ 3.

3. Cephalic bristle combs insignificantly developed; no prescutal bristle combs in protergum; median sternal combs in I - VIII sternae either prominently present or absent; gonostyle either one or two pairs; supra anal plate rectangular and unusually elongated, almost/long as the gonapophyses or broader than long ............................ 4.

Cephalic bristle combs prominent and their fields triangular, reaching the anterior fronto-clypeal line; prescutal combs
of the prothorax prominent and juxtaposed; bristle combs of the abdominal tergites vary from 3+3 to 2+2; median sternal combs obscure; gonostyles 2 to 3 pairs; gonapophyses invariably very much elongated and parameres short and broad ....5

4. Cephalic bristles scattered and not in the form of combs; bristles bare, not feathery; sensory papillae of labial palp arranged in 2 rows; paranotal expansions of thorax prominent without prescutal or scutellar bristle combs; abdominal terga I-III with 1+1 and IV-VIII with 2+2 bristle combs, the inner comb of which having only one macrochaeta each; median sternal comb present in addition to a pair of ventro-lateral (sub-lateral) combs; 2 pairs of gonostyles present; gonapophyses slender and elongate; aedeagus incompletely partitioned and parameres short and broad. Lateral and median cerci almost equal in length. Second gonocoxae with retractile claspers in males .......................... Lepisma sp(?)

Genal and clypeal combs represented by sparsely set bristles; sensory papillae of the labial palp arranged in two rows; paranotal expansions not prominent; scutellar combs distinctly present; bristles barbed; abdominal terga I & II with 1+1 and III-VII with 2+2, and VIII with 1+1 bristle combs, the inner combs formed of more than one macrochaetae each; median sternal combs present only in III abdominal sternite; 2 pairs of lateral sternal combs; ventro lateral and lateral
bristle combs present; styles only one pair; gonapophyses stout, short, cone shaped and fringed with slender elongated bristles; median cercus shorter than lateral cerci; males not known .......... Namunukulina domestica sp.n.

5. Supra anal plate very short and obtuse; maxillary palp very much elongated, the apical segment shorter than the sub apical segment; 2+2 bristle combs in abdominal terga II-VIII; median sternal combs in abdominal sterna III-VI very much reduced; gonapophyses very much elongated; gonostyles always 3 pairs; cerci twice as long as the body; colour significantly marked by dark and light bands .... Thermobia domestica

The supra anal plate truncate or emarginate; maxillary palp moderately elongate and the apical segment almost equal or longer than sub apical segments; 3+3 bristle combs in atleast a few abdominal terga; median sternal combs absent; gonapophyses moderately elongate; gonostyles always 2 pairs; cerci comparatively shorter; colour grey to black ........... 6

6. Abdominal terga II-VI with 3+3 bristle combs; supra anal plate truncate. ............... 7

Abdominal terga II-V with 3+3 bristle combs; supra anal plate truncate or emarginate ............... 8
7. Scutellar bristle combs of the thoracic terga with one prominent macrochaeta each; size less than 7 mm; black.

........................ Peliolepisma calva

Scutellar bristle combs of the thoracic terga with many bristles; size not less than 12 mm; grey.

............... Ctenolepisma longicaudata

8. Supra anal plate truncate; size not more than 12 mm; grey with prominent yellow spots. .... Ctenolepisma diversisquamis

Supra anal plate emarginate; size less than 10 mm. black.

............... Ctenolepisma nigra.