Henrik Steinmann
Dermaptera
Catadermaptera II

DAS TIERREICH

The Animal Kingdom

Eine Zusammenstellung und Kennzeichnung der rezenten Tierformen

A Compilation and Characterization of the Recent Animal Groups

Πάντα ῥεῖ Sine systemate chaos

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To my beloved wife
Mrs. *Vilma Steinmann*
whose love, sympathy and aid
in countless ways
has made this work possible

Systematic Index

Section 2: **Mesodermaptera** sectio nova

Superfamilia typica: Carcinophoroidea STEINMANN 1975.
1911 Labiduriales (partim) ZACHER, Zool. Jahrb., Jena, **30**: 333.
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Literature: SAKAI (as Carcinophoridae and Labiduridae) 1971.

Description: In the majority these are wingless insects with a more or less flattened or cylindrical body. The forceps are thicker, frequently asymmetrical for male, and symmetrical in female. The pygidium curves downwards between the forceps, the telson is reduced. The group cannot be separated from the Eudermaptera on the basis of external morphological characteristics, since they are both of the forficuloid-type, but only after a thorough examination. Their separation is justified only by the different structure, or development, of the male genitalia. They have two functional genital lobes (one of which may be reduced). They have been classified in various ways, e.g. the Paradermaptera had been regarded as a family of this group, or as a subfamily of the Labiduridae.

MELANDER et al., in their system published in 1954, separated in essence the same species-groups under the name Labiduroidea, but they also assigned the Esphalmeninae with family rank, which, however, as they are of the blattoid-type, are members on the subfamily level of the Pygidicranidae.

1 superfamilia.

Superfamily 2: **Carcinophoroidea** STEINMANN

1902 Labiduridae VERHOEFF (partim), Zool. Anz., Leipzig, No. **665**: 189.
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satisfactory external characteristics, and those which occur often belong to the male only. Male genitalia with two genital lobes on paramere, one lobe directed anteriorad, the other posteriorad. The abdomen is fusiform and cylindrical, narrowed both anteriorly and posteriorly, sometimes slightly depressed dorsally, with the lateral tubercles on the third and fourth abdominal tergites usually small, occasionally absent, and rarely well developed. Male forceps more or less trigonal basally, cylindrical apically, and curved, symmetrical or asymmetrical. Female forceps approximately symmetrical, tapering, contiguous, slender.

2 families.

Identification key to the families

1 Tarsal joint 2 normal, not elongated under ventral surface of joint 3, scapiform (shaped like the antennal scapus). Male genital lobe with or without virgae, its base never with a basal vesicle, but a basal sclerotized plate, pouch or sac may occasionally occur ..... Family 2: **Carcinophoridae**, p. **2**

1′ Tarsal joint 2 distally slightly elongated and discernibly, originating on ventral surface of joint 3 (metatarsus), hence tarsus not scapiform. Male genitalia with two genital lobes, with virgae invariably present, the base always containing a smaller or larger but easily recognizable basal vesicle ..... Family 3: **Labiduridae**, p. **398**

Family 2: **Carcinophoridae** POPHAM

1902 Anisolabidae VERHOEFF (partim), Sber. Ges. naturf. Fr. Berlin, **1902**: 9.
1909 Psalinae BURR, Dtsch. ent. Zeitschr. Berlin, **1909**: 325. – Genus typicum: *Psalis* AUDINET-SERVILLE 1831.
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1965 Carcinophoridae POPHAM, Entomologist, London, **98**: 135. – Genus typicum: *Carcinophora* SCUDDER 1876.

Literature: BRINDLE 1978; POPHAM 1965; SAKAI 1971; STEINMANN 1975, 1977, 1984.

Description: Mainly wingless species, even tegmina undeveloped, often present approximately as lateral flaps. Dorsum nude, but also some winged species occur. The common characteristics of the species constituting the family is the presence of two genital lobes in the males, except for the species of Idolopsalinae in which one male genital lobe is reduced. The groups diverged phylogenetically in its evolution from the other species of the family as did the Karschiellinae in the Pygidicranidae (the reduction of the genital lobe shows a certain transition to the Labiidae species with a single genital lobe). Metatarsus normal. Head usually transverse, sometimes strongly so, and more or less convex dorsally; postfrontal and coronal sutures well developed, or absent. Each antenna has the first joint much shorter than in the Brachylabiinae, and the second joint is transverse or quadrate; the third joint is usually about twice as long as wide, and often more or less cylindrical, but it tends to vary, even in the antennae of a single specimen; the fourth joint is usually about as wide as long, and the fifth somewhat longer. The

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antennal joints towards the base of the antennae tend to be relatively uniform in their proportions, although the distal joints show greater variety in the various species. The number of antennal joints is much greater than in the Brachylabiinae, possibly up to 30, but it is rare that the antennae are complete in dried specimens. Abdomen cylindrical, more or less expanded to last tergite or abdominal tergites 5–6. At the sides the tergite may have a lateral longitudinal keel, which is usually oblique and rugoso-striate. There may also be a dorsolateral ridge, which may form an oblique crest, tending towards the midline posteriorly, or it may be represented by a tubercle. Pygidium in both sexes is usually flat but may be protruding. Forceps in both sexes are small, but in some the curvature of the male forceps is very strong and the forceps may be strongly asymmetrical. In most males the forceps are only weakly asymmetrical and in all females the forceps are more or less symmetrical, and nearly contiguous, although one branch may be shorter than the other.

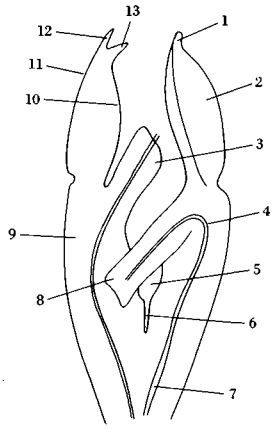

Fig. 1 Male genital armature of Carcinophorids-type. Original.
1 apex of external paramere
2 external paramere or metaparamere
3 left genital or distal lobe
4 virga or ejaculatory duct
5 median incision or rima genitalis
6 fissura medialis
7 base of virga
8 right genital or distal lobe
9 central or unpaired paramere
10 outer margin of external paramere
11 inner margin of external paramere
12 inner tooth of external paramere
13 outer or fore tooth of external paramere

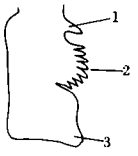

Fig. 2 Male genital lobe in apical portion of *Euborellia*-type. Original.
1 denticulus or denticle of genital lobe
2 reticular comb or denticulation pads of genital lobe
3 apex of genital lobe

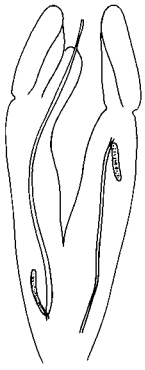

Fig. 3 Male genital armature of *Idolopsalis*-type. Original.

The male genitalia of the Carcinophoridae consist of unpaired central parameres with two functional genital lobes or only one functional and one reduced genital lobe. Genital lobes with or without virgae. As in other families of the order, the female genitalia have not been systematically studied, and it is the male genitalia which have been used in taxonomy.

The paired "Carcinophora-type" genital armature has two genital lobes which in dorsal view may be called "left" and "right". The left lobe projects forwards (Fig. 1: 3) and even in resting position it is next to the left external paramere (Fig. 1). On the other hand the right lobe (Fig. 1: 8) is directed backwards, pointing towards the base of the paramere. In the genital lobe, in the majority of the species, a virga (Fig. 1: 4) or an ejaculatory duct is present, at the base of which there is no basal vesicle. Base of virga (Fig. 1: 7) is simple. On the anterior margin of the unpaired paramere (Fig. 1: 9) a shallow or deep (Fig. 1: 5) rima genitalis or anterior incision is observable, dividing the paramere into two distinct parts. Thus, the paramere may be narrow or broad V-shaped, or Y-shaped. Below the medial incision a narrow fissure, the so-called fissura medialis (Fig. 1: 6) is present. On the anterior-lateral corners of the unpaired paramere which is highly variable both in shape and size, paired metaparameres or external parameres (Fig. 1: 2) are present. The inner margin of the external paramere (Fig. 1: 11) and the outer margin (Fig. 1: 10) bear very important features, such as the inner (Fig. 1: 12) or the fore tooth (Fig. 1: 13), very reliable in determination.

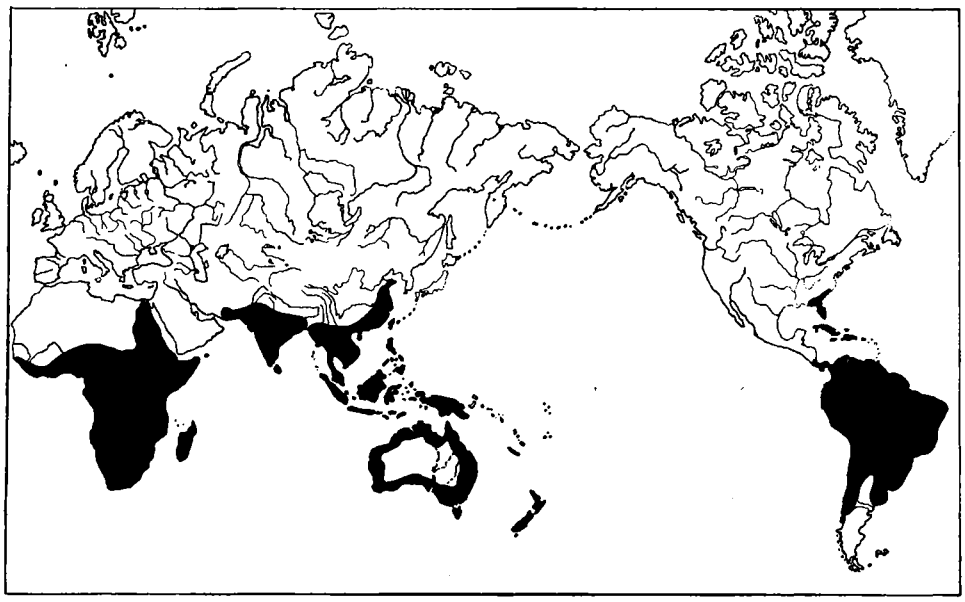

Fig. 4 Approximate recorded distribution of the family Carcinophoridae (without cosmopolitan species). Original.

The apex of the external paramere (Fig. 1: 1), also known as acumen or cuspis, varies from species to species, and is usually obtuse or acute. In the *Euborellia* species of Carcinophorinae the genital lobe is characteristic (Fig. 2), especially its apex (Fig. 2: 1), since in many species a so-called reticular comb (Fig. 2: 2) may be present, preceded generally by a denticulus lobi genitalis (Fig. 2: 3). Male genitalia of species of the Idolopsalinae STEINMANN are characteristic, one male genital lobe more or less reduced (Fig. 3), virga present or absent.

Some authors treated the taxon as subfamily Psalinae in the Labiduridae, until POPHAM gave it family rank in 1965, on the basis of the genital characteristics outlined above.

Distribution: nearly all over the World (Fig. 4).

9 subfamilies.

Identification key to the subfamilies

1 Body extremely flattened, dorsal and ventral surfaces nearly parallel. Tegmina and wings present, latter just reaching base of articulation of hind leg. Ultimate tergite wide, medially slightly impressed. Male forceps strongly curved, female's elongated. Male genital armature elongate, narrow; external parameres rather wide ..... subfamily 1: **Platylabiinae**, p. 6

1′ Body only slightly flattened, rather cylindrical **2**

2 Prosternum evenly attenuating posteriorad; plate in a ventral view rounded cordiform. Male forceps curved like a finger, female's more slightly arcuate and with a discernible tooth on inner margins. Both male genital lobes well developed. Pygidium varying per species ..... subfamily 2: **Gonolabiinae**, p. 8

2′ Prosternum after a slight constriction usually widening posteriorad, plate not cordiform **3**

3 Posterior margin of mesosternum in both sexes rounded arcuately in a semicircle **4**

3′ Posterior margin of mesosternum in both sexes straight, transversely truncate **5**

4 Head without eyes, blind species; body long and narrow, legs short. Antennae 13-jointed. External paramere of male genitalia vestigial, strongly reduced, or even absent. The single species inhabiting the Galapagos Islands ..... subfamily 3: **Anophthalmolabiinae**, p. 13

4′ Head with well-developed eyes. External paramere of male genitalia well developed, longer or shorter, but never absent. Median incision of anterior margin of male paramere very deep, or medium deep, and median section of external paramere occasionally characteristically widened. Species winged or wingless, or only with tegmina ..... subfamily 4: **Carcinophorinae**, p. 15

5 First antennal joint (scape) long, longer than distance between antennal bases **6**

5′ First antennal joint short, shorter than the distance between antennal bases or sometimes as long as the frontal section between scapes **7**

6 Lateral margins of mesonotum with a ridge-like edge. Ultimate tergite visibly excised. Paramere of male genitalia wide or narrower; external parameres acute and small, or larger. Genital lobes wide and short, or elongate ..... subfamily 5: **Brachylabiinae**, p. 280

6′ Lateral margins of mesonotum without longitudinal ridges. Paramere of male genitalia attenuating like a spoon, its external parameres shorter or longer. Paramere occasionally also wider, its external parameres small, or elongate ..... subfamily 6: **Isolabiinae**, p. 311

7 Male genitalia united along all the midline, virga within genital lobe conspicuously sclerotized. Eyes very small; body strongly pubescent; forceps with branches cylindrical throughout and symmetrical. Very small species, body length 5 mm ..... subfamily 7: **Antisolabiinae**, p. 339

7′ Genital lobes of male genitalia united only at base, divergent distally, virga slender and not strongly sclerotized, often very inconspicuous **8**

8 Both male genital lobes well developed, functional. Abdomen strongly widened, oval. Male

paramere relatively wide, genital lobes nearly equal in size, and occasionally hightly characteristic in contrast to those of the other species in the family ..... subfamily 8: **Parisolabiinae**, p. 371

8′ One male genital lobe more or less reduced, but male genital apparatus of Carcinophorid-type. Forceps of male asymmetrical, or symmetrical, but comparatively small..... subfamily 9: **Idolopsalinae**, p. 386

Subfamily 1: **Platylabiinae** BURR

1876 Labidophora SCUDDER, Proc. Boston, Soc. nat. Hist., **18**: 297.
1910 Palicinae BURR, Fauna Brit. India, Dermaptera, London, Bombay: 67. – Genus typicum: *Palex* BURR 1910.
1911 Platylabiinae BURR, Genera Insectorum, Bruxelles, **122**: 43. – Genus typicum: *Platylabia* DOHRN 1867.
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Literature: BURR 1912, 1915; POPHAM & BRINDLE 1966; SAKAI 1970; STEINMANN 1975, 1977; ZACHER 1911.

Description: Body very strongly depressed. Antennae 19 or 20-jointed; first joint moderately small, a little shorter than the distance between antennal bases. Tarsi slender, third segment longer than first and second together. Tegmina and wings present. Abdomen elongated, flattened; ultimate tergite broad, strongly depressed medially. Forceps sickle-shaped. Male genitalia characteristic, comparatively narrow; external parameres specific; lateral margins almost parallel, apex with a small prolongation.

Distribution: Oriental Region.

1 genus.

Genus 1: **Platylabia** DOHRN

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Literature: BURR 1902, 1904, 1911, 1915; HANDLIRSCH 1925; SAKAI 1970; STEINMANN 1977; TOWNES 1945; ZACHER 1915.

Description: Body strongly flattened. Head smooth and depressed medially. Antennae with 19 or 20 joints; first joint long, subconical; second small, transverse, third joint long and cylindrical. Pronotum subquadrate, and convex anteriorly. Tegmina perfectly developed, but rather short, rounded at the apex, feebly developed at the axillary angles, thus exposing a small scutellum; ecarinate laterally. Mesosternum about as long as broad, more or less rounded, posterior margin truncate. Legs not very long; femora broad and compressed; tibiae short and slender; first tarsal segment short. Male forceps strongly curved.

Distribution: Oriental Region.

Single species.

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Genus 1: **Platylabia** DOHRN

1867 *Platylabia* DOHRN, Stettiner ent. Ztg., **28**: 347. – Species typica: *Platylabia major* DOHRN 1867.
1876 *Labidophora* SCUDDER (new name for *Platylabia* DOHRN, because of its similarity to *Platylabus* WESMAEL 1845). Proc. Boston, Soc. nat. Hist., **18**: 297. – Species typica: *Platylabia major* DOHRN 1867.
1910 *Palex* BURR, Fauna Brit., India, Dermaptera, London, Bombay: 68. – Species typica: *Platylabia sparattoides* BORMANS 1900.
Literature: BURR 1902, 1904, 1911, 1915; HANDLIRSCH 1925; SAKAI 1970; STEINMANN 1977; TOWNES 1945; ZACHER 1915.

Description: Body strongly flattened. Head smooth and depressed medially. Antennae with 19 or 20 joints; first joint long, subconical; second small, transverse, third joint long and cylindrical. Pronotum subquadrate, and convex anteriorly. Tegmina perfectly developed, but rather short, rounded at the apex, feebly developed at the axillary angles, thus exposing a small scutellum; ecarinate laterally. Mesosternum about as long as broad, more or less rounded, posterior margin truncate. Legs not very long; femora broad and compressed; tibiae short and slender; first tarsal segment short. Male forceps strongly curved.

Distribution: Oriental Region.

Single species.

1. Platylabia major DOHRN

1867 *Platylabia major* DOHRN, Stettiner ent. Ztg., **28**: 347. – Terra typica: Burma (Type male: Mus. civ. Stor. nat., Genova).
1876 *Labidophora major* SCUDDER, Proc. Boston, Soc. nat. Hist., **18**: 297. New name for *Platylabia major* DOHRN because of its similarity to *Platylabus* WESMAEL 1845 – Hymenoptera.
1900 *Platylabia sparattoides* BORMANS, Ann. Mus. civ. Stor. nat. Genova, (2) **20**: 459. – Terra typica: Burma (Type male: Mus. civ. Stor. nat., Genova).
1910 *Platylabia major* BURR, Fauna Brit. India, Dermaptera, London, Bombay: 125. Burma, Ceylon.
1911 *Platylabia major* BURR, Genera Insectorum, Bruxelles, **122**: 43; pl. 4, fig. 6 (male), 6a (tarsus). Burma, Sumatra, Java, India.
Literature: BURR 1902, 1908, 1911; HEBARD 1927; KIRBY 1904; POPHAM 1966; SAKAI 1970; STEINMANN 1977, 1984.

Description: Male colour dark brown. Head, pronotum, and abdomen depressed, flattened. Head smooth, frons a little tumid, occiput depressed medially. Postfrontal and coronal sutures obsolete. Eyes comparatively small, shorter than the length of head behind eyes. First antennal joint normal, shorter than the distance between antennal bases. Pronotum more or less narrower than the head, and convex anteriorly; lateral sides parallel; anterior angles rounded; posterior margin truncate; median longitudinal furrow distinct. Tegmina very flat, and well developed, rounded at apex, feebly developed at the axillary angles; ecarinate. Wings short, but usually visible. Prosternum of thorax parallel-sided, scarcely constricted; meso- and metasternum about as broad as long, more or less rounded, and truncate posteriorly. Legs not very long, femora broad and compressed; tibiae short and slender; tarsi slender, first segment short, the third longer than first and second combined. Abdomen depressed, without lateral tubercles, abdominal tergites a little expanded to tergites 5–6. Ultimate tergite ample, simple, subquadrate, smooth. Pygidium short, broad, flattened, vertical, fused with dorsal segment and without marked suture. Forceps (Fig. 5) remote at base, nearly straight at first, then bowed; inner margin with large tooth medially. Penultimate sternite quadrate, ample. Genitalia (Fig. 6) characteristic; paramere

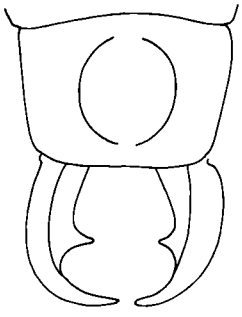

Fig. 5 Male ultimate tergite with forceps of *Platylabia major* DOHRN. After BURR.

Fig. 6 Male genital armature of *Platylabia major* DOHRN. After SRIVASTAVA.

elongate, median longitudinal incision between external parameres small. Genital lobes undeveloped, without virgae. External parameres with parallel inner and outer margins laterally. – **Female** similar to male, but forceps simple, contiguous, tapering. – **Length** of body with forceps: male: 11:12; female: 11–13,5 mm.

Distribution: India, Sri Lanka, Burma, Thailand, Vietnam, Java, Sumatra, and Celebes.

Subfamily 2: **Gonolabiinae** POPHAM & BRINDLE

1966 Gonolabinae POPHAM & BRINDLE, Entomologist, London **99**: 277. – Genus typicum: *Gonolabina* VERHOEFF 1902.
1975 Gonolabiinae – STEINMANN, Acta zool. Acad. Sci. hung., Budapest, **21**: 204.
Literature: SAKAI 1970; STEINMANN 1977, 1984.

Description: Apterous. Prosternum cordiform. Ultimate tergite of abdomen flattened and fused with the pygidium to form an anal process between the forceps. Forceps of male strongly curved, asymmetrical, elliptical in cross-section; female forceps remote at base, broad proximally, tapering distally, short, with or without inner tooth. Male genitalia very characteristic, immature-like, simple, as in fig. 8.

Distribution: Neotropical Region.

1 genus.

Genus 2: **Gonolabina** VERHOEFF

1902 *Gonolabina* VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 8 – Species typica: *Gonolabina kuhlgatzi* VERHOEFF 1902.
Literature: BRINDLE 1965, 1967; BURR 1908, 1911; KIRBY 1904; SAKAI 1970; STEINMANN 1977; ZACHER 1911.

Description: Wingless, body broad and depressed. Rudimentary tegmina are usually present on the lateral margins of the mesonotum. Abdomen narrower at the base, widening about the third segment, most of the abdomen parallel-sided. The last two abdominal segments are narrower, and this feature distinguishes *Gonolabina* from *Esphalmenus* (Pygidicranidae). Colour blackish or dark brown, with the thoracic segments, legs, and head lighter in colour. Male forceps strongly asymmetrical; left branch being sharply curved, while the right branch is only gently curved and may be almost straight. Female forceps symmetrical.

Distribution: South America.

3 species.

Identification key to the species

1 Posterior margin of male ultimate tergite with two tubercles, the distance between these being about the same as the width of a branch of the forceps at base (Fig. 7). Penultimate sternite of male as broad as long with margin evenly rounded; male genitalia with large sclerite in each genital lobe. Female pygidium long, more or less triangular, with apex pointed; female forceps without inner tooth ..... 1. **Gonolabina spectabilis**, p. 9

elongate, median longitudinal incision between external parameres small. Genital lobes undeveloped, without virgae. External parameres with parallel inner and outer margins laterally. – **Female** similar to male, but forceps simple, contiguous, tapering. – **Length** of body with forceps: male: 11:12; female: 11–13,5 mm.

Distribution: India, Sri Lanka, Burma, Thailand, Vietnam, Java, Sumatra, and Celebes.

Subfamily 2: **Gonolabiinae** POPHAM & BRINDLE

1966 Gonolabinae POPHAM & BRINDLE, Entomologist, London **99**: 277. – Genus typicum: *Gonolabina* VERHOEFF 1902.
1975 Gonolabiinae – STEINMANN, Acta zool. Acad. Sci. hung., Budapest, **21**: 204.
Literature: SAKAI 1970; STEINMANN 1977, 1984.

Description: Apterous. Prosternum cordiform. Ultimate tergite of abdomen flattened and fused with the pygidium to form an anal process between the forceps. Forceps of male strongly curved, asymmetrical, elliptical in cross-section; female forceps remote at base, broad proximally, tapering distally, short, with or without inner tooth. Male genitalia very characteristic, immature-like, simple, as in fig. 8.

Distribution: Neotropical Region.

1 genus.

Genus 2: **Gonolabina** VERHOEFF

1902 *Gonolabina* VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 8 – Species typica: *Gonolabina kuhlgatzi* VERHOEFF 1902.
Literature: BRINDLE 1965, 1967; BURR 1908, 1911; KIRBY 1904; SAKAI 1970; STEINMANN 1977; ZACHER 1911.

Description: Wingless, body broad and depressed. Rudimentary tegmina are usually present on the lateral margins of the mesonotum. Abdomen narrower at the base, widening about the third segment, most of the abdomen parallel-sided. The last two abdominal segments are narrower, and this feature distinguishes *Gonolabina* from *Esphalmenus* (Pygidicranidae). Colour blackish or dark brown, with the thoracic segments, legs, and head lighter in colour. Male forceps strongly asymmetrical; left branch being sharply curved, while the right branch is only gently curved and may be almost straight. Female forceps symmetrical.

Distribution: South America.

3 species.

Identification key to the species

1 Posterior margin of male ultimate tergite with two tubercles, the distance between these being about the same as the width of a branch of the forceps at base (Fig. 7). Penultimate sternite of male as broad as long with margin evenly rounded; male genitalia with large sclerite in each genital lobe. Female pygidium long, more or less triangular, with apex pointed; female forceps without inner tooth ..... 1. **Gonolabina spectabilis**, p. 9

elongate, median longitudinal incision between external parameres small. Genital lobes undeveloped, without virgae. External parameres with parallel inner and outer margins laterally. – **Female** similar to male, but forceps simple, contiguous, tapering. – **Length** of body with forceps: male: 11:12; female: 11–13,5 mm.

Distribution: India, Sri Lanka, Burma, Thailand, Vietnam, Java, Sumatra, and Celebes.

Subfamily 2: **Gonolabiinae** POPHAM & BRINDLE

1966 Gonolabinae POPHAM & BRINDLE, Entomologist, London **99**: 277. – Genus typicum: *Gonolabina* VERHOEFF 1902.
1975 Gonolabiinae – STEINMANN, Acta zool. Acad. Sci. hung., Budapest, **21**: 204.
Literature: SAKAI 1970; STEINMANN 1977, 1984.

Description: Apterous. Prosternum cordiform. Ultimate tergite of abdomen flattened and fused with the pygidium to form an anal process between the forceps. Forceps of male strongly curved, asymmetrical, elliptical in cross-section; female forceps remote at base, broad proximally, tapering distally, short, with or without inner tooth. Male genitalia very characteristic, immature-like, simple, as in fig. 8.

Distribution: Neotropical Region.

1 genus.

Genus 2: **Gonolabina** VERHOEFF

1902 *Gonolabina* VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 8 – Species typica: *Gonolabina kuhlgatzi* VERHOEFF 1902.
Literature: BRINDLE 1965, 1967; BURR 1908, 1911; KIRBY 1904; SAKAI 1970; STEINMANN 1977; ZACHER 1911.

Description: Wingless, body broad and depressed. Rudimentary tegmina are usually present on the lateral margins of the mesonotum. Abdomen narrower at the base, widening about the third segment, most of the abdomen parallel-sided. The last two abdominal segments are narrower, and this feature distinguishes *Gonolabina* from *Esphalmenus* (Pygidicranidae). Colour blackish or dark brown, with the thoracic segments, legs, and head lighter in colour. Male forceps strongly asymmetrical; left branch being sharply curved, while the right branch is only gently curved and may be almost straight. Female forceps symmetrical.

Distribution: South America.

3 species.

Identification key to the species

1 Posterior margin of male ultimate tergite with two tubercles, the distance between these being about the same as the width of a branch of the forceps at base (Fig. 7). Penultimate sternite of male as broad as long with margin evenly rounded; male genitalia with large sclerite in each genital lobe. Female pygidium long, more or less triangular, with apex pointed; female forceps without inner tooth ..... 1. **Gonolabina spectabilis**, p. 9

1′ Posterior margin of male ultimate tergite with three tubercles (Fig. 10), or with two tubercles more widely spaced (Fig. 13). Penultimate sternite of male about half as long as broad; male genitalia with two narrow unequal sclerites in each genital lobe. Female pygidium rounded; female forceps with inner tooth (Fig. 15) **2**

2 Pygidium of male with three tubercles (Fig. 10). Penultimate sternite of male with margin evenly rounded; genitalia of male with smaller sclerite in each genital lobe with a curved base (Fig. 11). Female pygidium transverse, not globular; female forceps with inner tooth nearer base ..... 2. **Gonolabina trinodosa**, p. 10

2′ Pygidium of male with two tubercles, the distance between these being greater than width of forceps at base (Fig. 13); penultimate sternite of male with distal emargination. Genitalia of male with smaller sclerite not possessing a curved base (Fig. 14). Female forceps (Fig. 15) with inner tooth almost at middle ..... 3. **Gonolabina bidonosa**, p. 11

1. Gonolabina spectabilis (PHILIPPI)

1863 *Forficula spectabilis* PHILIPPI, Z. Naturwiss., Leipzig, **21**: 218. – Terra typica: Chile (Type male: Santiago Mus.).

1902 *Gonolabina kuhlgatzi* VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 8. – Terra typica: Chile (Type male: Mus. Naturkunde, Berlin).

1911 *Gonolabina kuhlgatzi* – BURR, Genera Insectorum, Bruxelles, **122**: 26, pl. 2, fig. 11 (ultimate tergite and forceps), 11 a (sternum of thorax).

1911 *Anisolabis spectabilis* – BURR, Genera Insectorum, Bruxelles, **122**: 30.

1933 *Gonolabina kuhlgatzi* – REHN, Trans. amer. ent. Soc., Philadelphia, **59**: 162 (proposed synonymy with *spectabilis* PHILIPPI).

1967 *Gonolabina spectabilis* – BRINDLE, Entomologist's month. Mag., London, **103**: 8, fig. 1 (ultimate tergite and forceps of male). 7 (genital sclerite).

Literature: BRINDLE 1965, 1967; BURR 1910; KIRBY 1904; POPHAM & BRINDLE 1966; REICHARD 1968; SAKAI 1970.

Description: Male colour dark brown; pronotum yellowish-brown, abdomen shiny. Head rather longer than broad; postfrontal and coronal sutures distinct. Antennae ll-jointed; first joint dilated distally, and about half as long as distance between antennal bases; second joint quadrate, and equal to fourth in length.

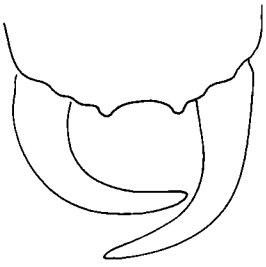

Fig. 7 Posterior margin of male ultimate tergite and forceps of *Gonolabina spectabilis* (PHILIPPI). After BRINDLE.

Fig. 8 Genital sclerite of male genital lobe of *Gonolabina spectabilis* (PHILIPPI). After BRINDLE.

Fig. 9 Male genital armature of *Gonolabina spectabilis* (Philippi). After BRINDLE.

Eyes small, triangular. Pronotum transverse, anterior angles rounded, posterior angles sharp; all margins straight; median longitudinal furrow impressed; sparsely punctate medially. Mesonotum with rudimentary tegmina on lateral margins. Wings entirely absent. Legs short. Abdomen strongly punctate, expanded to segments 7–8. Ultimate tergite transverse, rugose, with median area strongly declivous, posterior margin, so-called pygidium, with two tubercles (Fig. 7). Forceps remote at base, sparsely covered with deep punctation; left branch sharply curved mesad about mid-point; right branch slightly curved. Penultimate sternite broad, evenly rounded, about as long as broad at base. Genitalia (Fig. 9) characteristic, of *Gonolabina*-type, immature-like, genital lobe with a large double chitinous sclerite (Fig. 8). – **Female** similar to male, but ultimate tergite narrower, rugose, with median longitudinal impressed sulcus, slightly declivious on posterior border; forceps tapering distally, short, without inner tooth. – **Length** of body with forceps: male: 26–28 mm; female: 20–23 mm.

Distribution: Chile: Valparaiso, Santiago, San Antonio.

2. Gonolabina trinodosa BRINDLE

1967 *Gonolabina trinodosa* BRINDLE, Entomologist's month. Mag., London, **103**: 9; fig. 2 (ultimate tergite and forceps), 4 (posterior margin of ultimate tergite with forceps of female), 8 (genital sclerite of male genitalia). – Terra typica: Peru (Type male: Collect. F. BLANCAS, Univ. Mus. Lima, Peru).

Literature: SAKAI 1970, STEINMANN 1984.

Description: Male colour reddish-brown, antennae yellowish-brown, abdomen and forceps dark brown. Head broad, slightly wider than pronotum. Frons tumid, vertex with transverse depression. Postfrontal and coronal sutures distinct. Antennae 18-jointed, first one long, longer than distance between antennal bases; second quadrate. Eyes moderately small, shorter than the length of head behind eyes. Pronotum transverse, median longitudinal furrow distinct, all angles rounded, and all margins straight. Thoracic nota and legs as in *spectabilis*: mesonotum with rudimentary tegmina, wings absent. Abdomen broadened to segment 5, then parallel-sided to last tergite which is narrower. Ultimate tergite transverse, rugose, with slight median longitudinal impressed sulcus; posterior margin with three tubercles (Fig. 10). Forceps asymmetrical, left branch more sharply curved than in spectabilis, and right branch almost straight. Penultimate sternite broad and rounded posteriorly. Genitalia (Fig. 12) immature-like, of *Gonolabina*-type, genital lobe with apical denticulate area, with two sclerites, one long and narrow, the other short and broad (Fig. 11). – **Female** similar to male, but abdominal tergites less strongly punctate. Ultimate tergite narrow, not declivious as in male; pygidium rounded distally; forceps tapering, with ventral tooth on each inner margin near base. – **Length** of body with forceps: male: 23 mm; female: 22 mm.

Distribution: Peru.

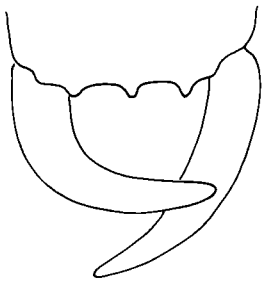

Fig. 10 Posterior margin of holotype ultimate tergite and forceps of *Gonolabina trinodosa* BRINDLE. After BRINDLE.

Fig. 11 Genital sclerite of holotype genital lobe of *Gonolabina trinodosa* BRINDLE. After BRINDLE.

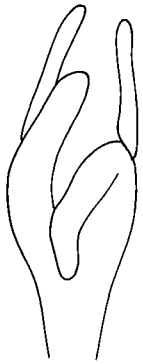

Fig. 12 Genital armature of holotype of *Gonolabina trinodosa* BRINDLE. After BRINDLE.

3. Gonolabina binodosa BRINDLE

1967 *Gonolabina binodosa* BRINDLE, Entmologist's month. Mag. London, **103**: 9; fig. 3 (posterior margin of male ultimate tergite and forceps), 5 (posterior margin of female ultimate tergite and forceps), 9 and 10 (genital sclerite). – Terra typica: Peru (Type male: Collect. F. BLANCAS, Peru).

Literature: SAKAI 1970.

Description: Apparently a variable species. BRINDLE described two series: a larger and broader one (forma *binodosa*), body length 16–20 mm, body width 4 mm, and a smaller and more narrow one (forma *llanguena*), body length 14–16 mm, and body width 3 mm. Forma *binodosa* possess rudimentary tegmina on the lateral margins of the mesonotum, but no trace of these are to be seen on the smaller species.

Distribution: South America (Peru).

3a. Gonolabina binodosa bidonosa BRINDLE

1967 *Gonolabina binodosa bidonosa* BRINDLE, Entomologist's month. Mag., London, **103**: 10.

Description: Original description by BRINDLE: "**Male**: variable in colour, ranging from almost uniformly dark brown to specimens in which the thoracic segments are lighter brown than the abdomen. Very similar to *trinodosa* in external structure, from which it differs by having only two tubercles on the pygidium. Antennae yellowish-brown, 25-jointed in type. Pronotum rather less transverse than in *trinodosa*. Mesonotum usually with rudimentary elytra on the lateral margins. Ultimate tergite rugose, blackish, declivous, with two widely spaced tubercles on pygidium. Forceps reddish-brown, shorter than in *trinodosa* but somewhat variable, most specimens having forceps similar to those of

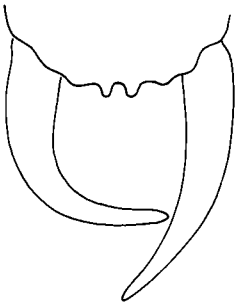

Fig. 13 Posterior margin of holotype ultimate tergite and forceps of *Gonolabina binodosa* BRINDLE. After BRINDLE.

Fig. 14 Genital sclerite of holotype of *Gonolabina binodosa* BRINDLE. After BRINDLE.

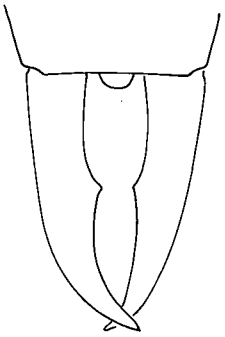

Fig. 15 Posterior margin of female ultimate tergite and forceps of *Gonolabina binodosa* BRINDLE. After BRINDLE.

trinodosa (Fig. 13), in which the right branch is almost straight. Genitalia of usual type (Fig. 12), distal lobe with two sclerites arising from the apical denticulate area, the sclerites unequal, one long and narrow, the second short and broad (Fig. 14). – **Female** as male but ultimate tergite narrowed posteriorly, and not declivous; pygidium globose, forceps almost straight, short, broad at base, tapering distally, each branch with prominent ventral tooth on inner margin, placed almost at mid-point." – **Length** of body with forceps: male: 19–22,5 mm, female: 19–21 mm.

Distribution: Peru: Zaráte.

3b. Gonolabina binodosa llanguena BRINDLE

1967 *Gonolabina binodosa llanguena* BRINDLE, Entomologist's month. Mag., London, **103**: 10.

Description: Original description by BRINDLE: "**Male**: narrower than in form *binodosa*, and without any trace of rudimentary elytra on the mesonotum, otherwise similar in external structure. Head brown, thoracic nota yellowish-brown with darker transverse and longitudinal bands and spots, variable in pattern. Legs brownish-yellow, and abdomen blackish-brown. The structure of the ultimate tergite, pygidium and forceps appears to be identical to those of the form *bidonosa* except that both branches of the forceps are usually curved (Fig. 13) and short. Genitalia as in form *binodosa*, with the smaller sclerite narrow in dorsal view (Fig. 14). – **Female** as male, but ultimate tergite narrowed, not declivous, pygidium globose. Forceps almost straight, broad proximally, narrowed distally, with ventral tooth on each inner margin near the mid-point (Fig. 15)." – **Lenght** of body with forceps: male: 16–18 mm, female: 16–17 mm.

Distribution: Peru: Hda Llanguen.

Subfamily 3: **Anophthalmolabiinae** STEINMANN

1975 Anophthalmolabiinae STEINMANN, Acta zool. Acad. Sci. hung., Budapest, **21**: 205. – Genus typicum: *Anophthalmolabis* BRINDLE 1968.

Description: Small depressed blind earwigs. Prosternum after a slight constriction usually widening posteriorad, thereby plate not cordiform. Body long and narrow, legs short, eyes absent. Posterior margin of mesosternum rounded arcuately in a semicircle. External paramere of male genitalia vestigial, strongly reduced, or even absent in *leleupi* BRINDLE; virgae furcate (Fig. 16).

Distribution: Galapagos Islands and Argentina.

Single genus.

Genus 3: **Anophthalmolabis** BRINDLE

1968 *Anophthalmolabis* BRINDLE, Miss. zool. belge, Galapagos-Ecuador, **1**: 172. – Species typica: *Anophthalmolabis leleupi* BRINDLE 1968.

Literature: SAKAI 1970; STEINMANN 1977, 1978.

Description: Slender, elongated species; body ant-like, depressed dorso-ventrally, yellowish or reddish-brown in colour. Head rather cordiform in shape, without any trace of eyes or ocelli. Pronotum longer than broad, mesonotum transverse, with or withouth traces of lateral folds; metanotum transverse, simple, posterior margin straight or concave. Prosternum narrow, long, posterior margin truncate; mesosternum broad, posterior margin rounded; metasternum broad with posterior margin truncate. Legs with femora strongly dilated. Forceps simple in both sexes, broad at base, more or less contiguous, narrowing distally. Male genitalia very short and with almost aborted external parameres.

Distribution: Galapagos Islands and Argentina.

2 species.

Identification key to the species (after BRINDLE)

1 Smaller, body length at most 7 mm, antennae 13-jointed; metanotum with posterior margin straight. Abdominal segments without lateral ridges; ultimate tergite more transverse and without a median longitudinal sulcus. Forceps broad, relatively shorter, and completely contiguous ..... 1. **Anophthalmolabis leleupi**, p. 13

1′ Larger, body length at least 9 mm, antennae 16-jointed; metanotum with posterior margin concave. Abdominal segments 5–9 (males) and 5–8 (females) with lateral ridges; ultimate tergite more quadrate, and with a prominent median longitudinal sulcus. Forceps more slender, relatively longer, and not completely contiguos ... 2. **Anophthalmolabis caeca**, p. 14

1. **Anophthalmolabis leleupi** BRINDLE

1968 *Anophthalmolabis leleupi* BRINDLE, Miss. zool. belge, Galapagos-Ecuador, **1**: 172; fig. 1 (male), 2 (genitalia of holotype). – Terra typica: Galapagos Islands: Santa Cruz (Type male: Inst. r. Sci. nat. belg., Bruxelles).

Literature: SAKAI 1982; STEINMANN 1975, 1977, 1978.

Subfamily 3: **Anophthalmolabiinae** STEINMANN

1975 Anophthalmolabiinae STEINMANN, Acta zool. Acad. Sci. hung., Budapest, **21**: 205. – Genus typicum: *Anophthalmolabis* BRINDLE 1968.

Description: Small depressed blind earwigs. Prosternum after a slight constriction usually widening posteriorad, thereby plate not cordiform. Body long and narrow, legs short, eyes absent. Posterior margin of mesosternum rounded arcuately in a semicircle. External paramere of male genitalia vestigial, strongly reduced, or even absent in *leleupi* BRINDLE; virgae furcate (Fig. 16).

Distribution: Galapagos Islands and Argentina.

Single genus.

Genus 3: **Anophthalmolabis** BRINDLE

1968 *Anophthalmolabis* BRINDLE, Miss. zool. belge, Galapagos-Ecuador, **1**: 172. – Species typica: *Anophthalmolabis leleupi* BRINDLE 1968.

Literature: SAKAI 1970; STEINMANN 1977, 1978.

Description: Slender, elongated species; body ant-like, depressed dorso-ventrally, yellowish or reddish-brown in colour. Head rather cordiform in shape, without any trace of eyes or ocelli. Pronotum longer than broad, mesonotum transverse, with or withouth traces of lateral folds; metanotum transverse, simple, posterior margin straight or concave. Prosternum narrow, long, posterior margin truncate; mesosternum broad, posterior margin rounded; metasternum broad with posterior margin truncate. Legs with femora strongly dilated. Forceps simple in both sexes, broad at base, more or less contiguous, narrowing distally. Male genitalia very short and with almost aborted external parameres.

Distribution: Galapagos Islands and Argentina.

2 species.

Identification key to the species (after BRINDLE)

1 Smaller, body length at most 7 mm, antennae 13-jointed; metanotum with posterior margin straight. Abdominal segments without lateral ridges; ultimate tergite more transverse and without a median longitudinal sulcus. Forceps broad, relatively shorter, and completely contiguous ..... 1. **Anophthalmolabis leleupi**, p. 13

1′ Larger, body length at least 9 mm, antennae 16-jointed; metanotum with posterior margin concave. Abdominal segments 5–9 (males) and 5–8 (females) with lateral ridges; ultimate tergite more quadrate, and with a prominent median longitudinal sulcus. Forceps more slender, relatively longer, and not completely contiguos ... 2. **Anophthalmolabis caeca**, p. 14

1. **Anophthalmolabis leleupi** BRINDLE

1968 *Anophthalmolabis leleupi* BRINDLE, Miss. zool. belge, Galapagos-Ecuador, **1**: 172; fig. 1 (male), 2 (genitalia of holotype). – Terra typica: Galapagos Islands: Santa Cruz (Type male: Inst. r. Sci. nat. belg., Bruxelles).

Literature: SAKAI 1982; STEINMANN 1975, 1977, 1978.

Description: Male colour yellowish or reddish-brown. Head longer than broad, tumid, rather cordiform; postfrontal and coronal sutures obsolete; posterior margin of head rounded. Eyes entirely absent. Antennae 13-jointed; first antennal joint or scapus relatively long, about as long as the distance between antennal bases; second joint quadrate, third joint rather longer than broad, fourth joint quadrate but wider than third; the distal joints about twice as long as broad, narrower basally. Pronotum longer than broad, a little widened posteriorly; median longitudinal furrow absent, posterior margin almost straight. Tegmina and wings absent. Mesonotum transverse, with indications of lateral folds on each side; metanotum longer than mesonotum, posterior margin straight. Legs with femora strongly dilated, especially the anterior pair. Abdomen elongated, almost parallel-sided laterally, segments without lateral ridges. Ultimate tergite a little transverse, posterior margin angular, with a median emargination. Forceps (Fig. 16) short, broad, symmetrical. Penultimate sternite simple, posterior margin straight. Genitalia (Fig. 17) characteristic; paramere broad, oval, without median longitudinal incision between external parameres; one genital lobe directed posteriorly, and one anteriorly; virga partially sclerotized and with an associated hookshaped sclerite, distal part of virga narrower and membranous. External parameres reduced to membranous plate, with sclerotized margins confined to base, externally. – **Female** similar to male. – **Length** of body with forceps: in both sexes: 6,5 mm.

Distribution: Galapagos Islands: Santa Cruz.

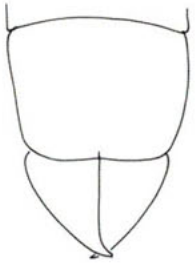

Fig. 16 Ultimate tergite with forceps of holotype of *Anophthalmolabis leleupi* BRINDLE. After BRINDLE.

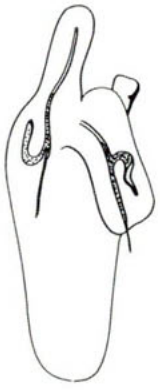

Fig. 17 Genital armature of holotype of *Anophthalmolabis leleupi* BRINDLE. After BRINDLE.

2. Anophthalmolabis caeca (BORELLI) comb. nov.

1902 *Anisolabis caeca* BORELLI, Boll. Mus. Zool. Anat. comp. Univ. Torino, **17**: 2; fig. 1 (female). – Terra typica: Argentina: Prov. Santa Fé (Type female: SILVESTRI's Collect. Univ. Mus., Milano).

Literature: BRINDLE 1968; SAKAI 1970; STEINMANN 1977, 1978.

Description: Female general colour yellowish-brown. Body elongate, finely punctate, a little shining. Head oval, longer than broad; postfrontal and coronal sutures finely distinct, not well marked. Eyes absent. Antennae 16-jointed, first antennal joint comparatively long, about as long as the distance between antennal bases; second transverse, the distal joints about twice as long as broad. Pronotum oval, all margins rounded; median longitudinal furrow present. Tegmina and wings entirely absent. Mesonotum with posterior margin straight, metanotum with posterior margin concave. Legs moderately short, femora dilated. Abdomen a little expanded to middle; abdominal tergites 5–8 with lateral longitudinal ridges. Ultimate tergite more quadrate; median longitudinal sulcus present. Forceps more slender, trigonal basally, cylindrical apically; relatively longer, and not completely contiguous. Penultimate sternite simple. – **Male** similar to female, but abdominal tergites 5–9 with lateral longitudinal ridges; forceps a little shorter, contiguous. Genitalia unknown. – **Length** of body with forceps: in both sexes: 9 mm.

Distribution: Argentina: Province of Santa Fé.

Subfamily 4: **Carcinophorinae** HINCKS

1902 Anisolabidae VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 9. – Genus typicum: *Anisolabis* FIEBER 1853.
1909 Psalinae BURR, Dtsch. ent. Zeitschr., Berlin, **1909**: 325. – Genus typicum: *Psalis* AUDINET-SERVILLE 1831.
1911 Anisolabinae ZACHER, Zool. Jahrb., Jena, **30**: 370.
1915 Psalidae BURR, Journ. r. microsc. Soc., London, **1915**: 422.
1954 Psalididae BRUES, MELANDER & CARPENTER, Classification of Insects, Cambridge, Mass.: 116.
1954 Carcinophorinae HINCKS, Ark. Zool. Uppsala, **394**: 4. – Genus typicum: *Carcinophora* SCUDDER 1876.
1959 Anisolabinae – BEIER in: BRONN's Klassen und Ordnungen des Tierreichs, 4B, **3**: 562.
Literature: BORELLI 1932; BORMANS 1900; BRINDLE 1978; BURR 1908, 1910; GÜNTHER 1930; HEBARD 1923; HINCKS 1947; REICHARDT 1968; SAKAI 1970; STEINMANN 1975.

The Carcinophorinae are, beyond any doubt, the most problematic taxon of Dermaptera, especially if we consider their present generic arrangement. The superspecific system may be constructed only on the base of a solid taxonomic knowledge of the species. BURR & ZACHER first prepared a generic system and subfamiliar level, rendering a generic outline of the family not modified since the sixties. The external morphological features were usefully complemented by the thorough investigation of the genital apparatus. In 1911 ZACHER, subsequently, in 1915–1916, BURR published very comprehensive works in which they employed extensively the specific differences perceived in the genital paramere and external parameres of the males. In the 1960, POPHAM & BRINDLE, in a series of contribution: "Genera and species of the Dermaptera" drew together in several genera in the various families including Carcinophorinae. In other words, they synonymized genera erected by BURR and ZACHER, and the majority of the

Description: Female general colour yellowish-brown. Body elongate, finely punctate, a little shining. Head oval, longer than broad; postfrontal and coronal sutures finely distinct, not well marked. Eyes absent. Antennae 16-jointed, first antennal joint comparatively long, about as long as the distance between antennal bases; second transverse, the distal joints about twice as long as broad. Pronotum oval, all margins rounded; median longitudinal furrow present. Tegmina and wings entirely absent. Mesonotum with posterior margin straight, metanotum with posterior margin concave. Legs moderately short, femora dilated. Abdomen a little expanded to middle; abdominal tergites 5–8 with lateral longitudinal ridges. Ultimate tergite more quadrate; median longitudinal sulcus present. Forceps more slender, trigonal basally, cylindrical apically; relatively longer, and not completely contiguous. Penultimate sternite simple. – **Male** similar to female, but abdominal tergites 5–9 with lateral longitudinal ridges; forceps a little shorter, contiguous. Genitalia unknown. – **Length** of body with forceps: in both sexes: 9 mm.

Distribution: Argentina: Province of Santa Fé.

Subfamily 4: **Carcinophorinae** HINCKS

1902 Anisolabidae VERHOEFF, Sber. Ges. naturf. Fr. Berlin, **1902**: 9. – Genus typicum: *Anisolabis* FIEBER 1853.
1909 Psalinae BURR, Dtsch. ent. Zeitschr., Berlin, **1909**: 325. – Genus typicum: *Psalis* AUDINET-SERVILLE 1831.
1911 Anisolabinae ZACHER, Zool. Jahrb., Jena, **30**: 370.
1915 Psalidae BURR, Journ. r. microsc. Soc., London, **1915**: 422.
1954 Psalididae BRUES, MELANDER & CARPENTER, Classification of Insects, Cambridge, Mass.: 116.
1954 Carcinophorinae HINCKS, Ark. Zool. Uppsala, **394**: 4. – Genus typicum: *Carcinophora* SCUDDER 1876.
1959 Anisolabinae – BEIER in: BRONN's Klassen und Ordnungen des Tierreichs, 4B, **3**: 562.
Literature: BORELLI 1932; BORMANS 1900; BRINDLE 1978; BURR 1908, 1910; GÜNTHER 1930; HEBARD 1923; HINCKS 1947; REICHARDT 1968; SAKAI 1970; STEINMANN 1975.

The Carcinophorinae are, beyond any doubt, the most problematic taxon of Dermaptera, especially if we consider their present generic arrangement. The superspecific system may be constructed only on the base of a solid taxonomic knowledge of the species. BURR & ZACHER first prepared a generic system and subfamiliar level, rendering a generic outline of the family not modified since the sixties. The external morphological features were usefully complemented by the thorough investigation of the genital apparatus. In 1911 ZACHER, subsequently, in 1915–1916, BURR published very comprehensive works in which they employed extensively the specific differences perceived in the genital paramere and external parameres of the males. In the 1960, POPHAM & BRINDLE, in a series of contribution: "Genera and species of the Dermaptera" drew together in several genera in the various families including Carcinophorinae. In other words, they synonymized genera erected by BURR and ZACHER, and the majority of the

species were placed under two genera only: *Anisolabis* FIEBER 1853, and *Euborellia* BURR 1910.

My extensive, comparative studies of the higher taxa have shown that the old classification is better than the modern one. The evaluation of common characteristics at the order or superfamily level has revealed that BURR's system was basically right. Accordingly, I have accepted ZACHER and BURR's works as suitable for separating taxa higher than species, all the more so, since several experts still use the old genera in their publications.

Description: The head is usually transverse, sometimes strongly so, and is more or less convex dorsally. Postfrontal sutures are usually distinct, coronal suture present but may be weak or not visible. Antennae multisegmentated, antennal joints 4, 5 and 6 short. Eyes present, moderately prominent. Prosternum subparallel. Posterior margin of mesosternum rounded arcuately in a semicircle. Metasternum broad, truncate posteriorly or produced to a prominent rounded lobe. Tegmina and wings fully developed, rudimentary or absent. Legs normal, short. Abdomen feebly dilated about the middle or at the apex. The sides of the posterior abdominal tergites of the male may be produced laterally, forming blunt rugoso-striate lateral longitudinal ridges; in many species these tergites have a narrower well marked and more or less smooth lateral longitudinal ridge which is not necessarily associated with a rugosostriate cuticle. Ultimate tergite with a median longitudinal sulcus. The pygidium is usually flat but may be protruding. Penultimate sternite broad, various, usually simple and rounded. Male genital armature which have been used in taxonomy. Paramere with two genital lobes, left lobe directed distally, short, the right lobe directed basally. If the lobes are erected, however, the short left lobe becomes elongated. Genital lobes with or without virgae. The virga is seldom prominent, and is usually visible as a slender tube. Median incision between external parameres well developed, deep. External parameres various in size.

Distribution: Nearly in all through out the world.

11 genera.

Identification key to the genera

1 External parameres of male genitalia extremely long, at least 10 times longer than wide; apex pointed ..... Genus 4: **Epilandex**, p. 17

1′ External parameres of male genitalia significatly shorter, length at most 6–7, 3–4 times, or twice as long as wide, or quadrate, as long as wide **2**

2 External parameres at antero-lateral angles of the parameral plate about 6–7 times longer than their width **3**

2′ External parameres at anterior-lateral angles of central parameral plate less than 5 times longer than wide **6**

3 Paired genital lobes of male genital armature very long, much longer than the length of central parameral plate; virgae within genital lobe very long **4**

3′ Paired genital lobes of male genital armature comparatively short, and without virgae ... **5**

4 Very large species, body length with forceps more than 25 mm. Tegmina and wings entirely

absent. Forceps of male more or less straight. Indo-Austral group ..... Genus 5: **Titanolabis**, p. 25

4′ Smaller species, body length with forceps less than 20 mm. Tegmina and wings fully developed. Forceps of male strongly curved. Neotropical group . Genus 6: **Capralabis**, p. 27

5 Genital lobes of male genitalia without sclerotized plates; genital lobes comparatively small, narrow, undeveloped, significatly shorter than the external paramere ..... Genus 7: **Zacheria**, p. 30

5′ Genital lobes of male genitalia with sclerotized plates; genital lobes fully developed, large and broad ..... Genus 8: **Thekalabis**, p. 32

6 External parameres of male genitalia 3–4 times longer than broad **7**

6′ External parameres of male genitalia twice as long as wide or quadrate **11**

7 Apices of external parameres of male genital armature bifid. Ultimate tergite with characteristic lateral carinae. Forceps of male of *Anisolabis*-type .. Genus 9: **Indolabis**, p. 33

7′ Apices of external parameres of male genital armature not bifid, pointed or obtuse **8**

8 Apex of external paramere of male genitalia curved, characteristic; genital lobes with slender virgae **9**

8′ Apex of external paramere of male genitalia more or less straight, not curved strongly outwards **10**

9 External paramere more or less parallel-sided medially, not expanded; genital lobes without sclerotized plate apically ..... Genus 10: **Flexiolabis**, p. 34

9′ External paramere strongly expanded medially; genital lobes with characteristic sclerotized plates apically ..... Genus 11: **Paraflexiolabis**, p. 37

10 Male genitalia elongated, narrow, external parameres originating on frontal margin, small, about a third as long as the paramere itself, or less elongated, broader, stouter; external parameres originating on frontal margin larger, at least twice longer than those of latter taxon. Virga of genital lobe cordiform, usually thick, well discernible. Tegmina developed, wings present or absent ..... Genus 12: **Carcinophora**, p. 38

10′ Male genitalia robust, genital lobe with unchitinized sclerotized plate, sometimes dentate; genital lobes usually characteristic, external parameres gently obtuse ..... Genus 13: **Anisolabis**, p. 60

11 External paramere about twice longer than wide **12**

11′ External paramere quadrate, more or less as long as wide ..... Genus 22: **Euborellia**, p. 231

12 Vertex with conspicuous, deep cavea between the frons and occiput ..... Genus 14: **Foramenolabis**, p. 152

12′ Vertex without cavea **13**

13 External paramere with characteristic inner lobe basally ..... Genus 15: **Aborolabis**, p. 155

13′ External paramere without conspicuous inner lobe at basal margin **14**

14 External parameres excised apically (Fig. 271) ..... Genus 16: **Ornatolabis**, p. 166

14′ External paramere not excised apically **15**

15 External paramere egg-shaped (Fig. 274) ..... Genus 17: **Anisolabella**, p. 168

15′ External paramere not egg-shaped **16**

16 Virga within genital lobe with specific slerotized plate basally (Fig. 274) ..... Genus 18: **Heterolabis**, p. 169

16′ Virga without specific sclerotized plate basally **17**

17 Virga within genital lobe thickened (Fig. 277) ..... Genus 19: **Epilabis**, p. 170

17′ Virga within genital lobe not thickened **18**

18 Abdomen parallel-sided laterally in dorsal view, not expanded strongly to last tergite ..... Genus 20: **Metalabis**, p. 180

18′ Abdomen strongly expanded to last tergite in dorsal view ..... Genus 21: **Gonolabis**, p. 186

Genus 4: **Epilandex** HEBARD

1915 *Landex* BURR, J. r. microsc. Soc., London, **1915**: 445. – Species typica: *Labidura femoralis* DOHRN 1863.

absent. Forceps of male more or less straight. Indo-Austral group ..... Genus 5: **Titanolabis**, p. 25

4′ Smaller species, body length with forceps less than 20 mm. Tegmina and wings fully developed. Forceps of male strongly curved. Neotropical group . Genus 6: **Capralabis**, p. 27

5 Genital lobes of male genitalia without sclerotized plates; genital lobes comparatively small, narrow, undeveloped, significatly shorter than the external paramere ..... Genus 7: **Zacheria**, p. 30

5′ Genital lobes of male genitalia with sclerotized plates; genital lobes fully developed, large and broad ..... Genus 8: **Thekalabis**, p. 32

6 External parameres of male genitalia 3–4 times longer than broad **7**

6′ External parameres of male genitalia twice as long as wide or quadrate **11**

7 Apices of external parameres of male genital armature bifid. Ultimate tergite with characteristic lateral carinae. Forceps of male of *Anisolabis*-type .. Genus 9: **Indolabis**, p. 33

7′ Apices of external parameres of male genital armature not bifid, pointed or obtuse **8**

8 Apex of external paramere of male genitalia curved, characteristic; genital lobes with slender virgae **9**

8′ Apex of external paramere of male genitalia more or less straight, not curved strongly outwards **10**

9 External paramere more or less parallel-sided medially, not expanded; genital lobes without sclerotized plate apically ..... Genus 10: **Flexiolabis**, p. 34

9′ External paramere strongly expanded medially; genital lobes with characteristic sclerotized plates apically ..... Genus 11: **Paraflexiolabis**, p. 37

10 Male genitalia elongated, narrow, external parameres originating on frontal margin, small, about a third as long as the paramere itself, or less elongated, broader, stouter; external parameres originating on frontal margin larger, at least twice longer than those of latter taxon. Virga of genital lobe cordiform, usually thick, well discernible. Tegmina developed, wings present or absent ..... Genus 12: **Carcinophora**, p. 38

10′ Male genitalia robust, genital lobe with unchitinized sclerotized plate, sometimes dentate; genital lobes usually characteristic, external parameres gently obtuse ..... Genus 13: **Anisolabis**, p. 60

11 External paramere about twice longer than wide **12**

11′ External paramere quadrate, more or less as long as wide ..... Genus 22: **Euborellia**, p. 231

12 Vertex with conspicuous, deep cavea between the frons and occiput ..... Genus 14: **Foramenolabis**, p. 152

12′ Vertex without cavea **13**

13 External paramere with characteristic inner lobe basally ..... Genus 15: **Aborolabis**, p. 155

13′ External paramere without conspicuous inner lobe at basal margin **14**

14 External parameres excised apically (Fig. 271) ..... Genus 16: **Ornatolabis**, p. 166

14′ External paramere not excised apically **15**

15 External paramere egg-shaped (Fig. 274) ..... Genus 17: **Anisolabella**, p. 168

15′ External paramere not egg-shaped **16**

16 Virga within genital lobe with specific slerotized plate basally (Fig. 274) ..... Genus 18: **Heterolabis**, p. 169

16′ Virga without specific sclerotized plate basally **17**

17 Virga within genital lobe thickened (Fig. 277) ..... Genus 19: **Epilabis**, p. 170

17′ Virga within genital lobe not thickened **18**

18 Abdomen parallel-sided laterally in dorsal view, not expanded strongly to last tergite ..... Genus 20: **Metalabis**, p. 180

18′ Abdomen strongly expanded to last tergite in dorsal view ..... Genus 21: **Gonolabis**, p. 186

Genus 4: **Epilandex** HEBARD

1915 *Landex* BURR, J. r. microsc. Soc., London, **1915**: 445. – Species typica: *Labidura femoralis* DOHRN 1863.

1927 *Epilandex* HEBARD, Proc. Acad. nat. Sci. Philadelphia, **79**: 26. – Species typica: *Landex burri* BORELLI 1921.
1954 *Landicinae* BOESEMAN, Zool. Verh., Leiden, **21**: 46.
Literature: BRINDLE 1970; SAKAI 1970; STEINMANN 1979; TOWNES 1945.

Notes by HEBARD: "This *Epilandex* name is proposed for the genus described under *Landex* by BURR and later more fully characterized by BORELLI in the discussion before the description of his *burri*. In his genus *Landex* BURR originally included without question only one species: "*Psalis*" *femoralis* DOHRN, and *femoralis* is, therefore, inevitably the genotype. BORELLI has found that BURR confused two species belonging to very distinct genera, but unfortunately did not consider the generotype situation, which obliges the use of *Landex* for DOHRN's *femoralis*. As a result his *burri* can not be referred to that genus and we propose *Epilandex* for its reception."

Description: Rather small species, reddish or yellowish brown in colour, and shiny; more or less glabrous. Tegmina always distinct, wings present or absent. Abdomen moderately elongate, ultimate tergite broad; male forceps asymmetrical, trigonal basally, curved and cylindrical apically; those of female symmetrical. Male genitalia characteristic; paramere with distinct median incision between external parameres; the latter very long, nearly 10 times longer than their basal width; characteristically attenuating, apically acicular and slightly exclinate. Genital lobes with strikingly long virgae, projecting far from genital lobes even at rest, their basal section wide, terminating in a concave, strongly sclerotized curvature.

Distribution: Oriental and Indo-austral species.

6 species.

Identification key to the species

1 Indo-Australian endemic species, known from the Solomon Islands. External parameres of male genitalia about ten times longer than its basal width (Fig. 19); virga long, widening and dividing at the base. Carinae of penultimate sternite of male weak, not produced into a process. Male forceps (Fig. 18) with specific left branch, the latter with conspicuous inner teeth medially ..... 1. **Epilandex solomonensis**, p. 19
1' Oriental species 2
2 External parameres of male genitalia originating on antero-lateral margin of parameral central plate thin and long, more than ten times longer than their basal width 3
2' External parameres of male genitalia originating on antero-lateral margin of paramere long and narrow, at most ten times as long as their basal width. Penultimate sternite of male with a distinct carina on caudal half, produced into a process 4
3 Male forceps (Fig. 20) very long, slender; inner margin concave based, with a distinct hump at middle, gently curved beyond, smooth; ..... 2. **Epilandex handschini**, p. 20
3' Male forceps (Fig. 22) short, robust; inner margin entire, left branch abruptly narrowed near apex and with or without a sub-apical tooth. Male genitalia as in fig. 23..... ..... 3. **Epilandex peterseni**, p. 21
4 No sclerotized plate, appendage or lobe near basal section of virga in genital lobe (Fig. 25). Forceps of male (Fig. 24) with a distinct cleft based on inner margin..... ..... 4. **Epilandex undulata**, p. 22
4' A sclerotized plate or appendage near basal section of virga in genital lobe present 5

5 A longer (median) section of external paramere parallel-sided, attenuating only insignificatly, narrowing only short of apex; apex therefore rapidly acute (Fig. 26). Virga short and thick, without a characteristic basal widening. Sclerotized plate wide .... 5. **Epilandex burri**, p. 23

5′ External paramere evenly and gradually attenuating from wide base to aciculate apex (Fig. 28). Virga thin and long, basally conspicuously widening, terminating in a characteristic, concave, strongly sclerotized curvature. A narrow, distinct, sclerotized plate present..... ..... 6. **Epilandex bazyluki**, p. 23

1. Epilandex solomonensis BRINDLE

1970 *Epilandex solomonensis* BRINDLE, Pacific Insects, Honolulu, (3) **12**: 654; fig. 9 (male), 10 (male genitalia), 11 (male forceps of form minor), 12 (female forceps), 13 (penultimate sternite of male). – Terra typica: Solomon Islands (Type male: Brit. Mus. nat. Hist., London).

Literature: STEINMANN 1979, 1984.

Description: Male dark reddish brown to blackish brown; lateral margins of pronotum yellow, basal third of distal antennal joints, apices of femora and tibiae, and tarsi, yellow. Head broad, frons tumid, vertex with small depression in area around coronary suture. Eyes comparatively small, shorter than the length of head behind eyes, not protruding. First antennal joint long, but a little shorter than the distance between antennal bases, second transverse. Cuticle of head almost entirely glabrous. Pronotum more or less as broad as long, slightly widened posteriorly; lateral margins straight, posterior margin convex, all angles rounded. Tegmina well developed, a little longer than pronotum, wings absent or concealed, cuticle of tegmina coriaceous, glabrous. Abdomen depressed, broad, finely punctate and pubescent, hairs short and yellow; abdominal tergites 7–8 each with well-defined longitudinal ridges laterally, and tergite 5 with a small projection on lateral margin on each side. Ultimate tergite transverse, forming a depressed area on each side, the depression being bordered on median side by a longitudinal ridge which extends for distal 2/3 of tergite. Forceps (Fig. 18)

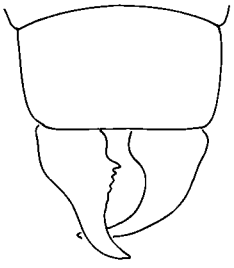

Fig. 18 Ultimate tergite with forceps of holotype of *Epilandex solomonensis* BRINDLE. After BRINDLE.

Fig. 19. Genital armature of holotype of *Epilandex solomonensis* BRINDLE. After BRINDLE.

asymmetrical; triangular basally, and cylindrical apically; left branch with specific dentation at inner margin medially. Penultimate sternite broad, posterior margin convex. Genitalia (Fig. 19) characteristic; paramere narrow, median longitudinal incision of anterior margin deep; genital lobes well developed, virga very long, but basal section of virga without sclerotized plates. External parameres about 10 times longer than broad, apices acute. – **Female** similar to male, but only 7 tergites visible, no lateral longitudinal ridges on any tergites, nor longitudinal ridges on ultimate tergite; forceps simple, straight, broad at base, evenly narrowed distally, apex incurved, inner margin dentated. – **Length** of body with forceps: male: 12–12,5 mm, female: 9,5–10,5 mm.

Distribution: Solomon Islands: Guadalcanal.

2. Epilandex handschini HINCKS

1954 *Epilandex handschini* HINCKS, Verh. naturf. Ges. Basel, **65**: 12; fig. 3 (male genitalia). – Terra typica: West Sumba (Type male: Naturhist. Mus., Basel).

Literature: POPHAM & BRINDLE 1966; SAKAI 1970; STEINMANN 1979, 1984.

Description: Male colour uniformly brown, including antennae, legs, mouthparts, sides of pronotom and small inner apical spot on wingscales somewhat lighter. Head more or less as broad as long, frons moderately convex, postfrontal and coronal sutures absolete. Eyes comparatively small, shorter than the length of head behind eyes. Antennae 16-jointed; first long, slender, but a little shorter

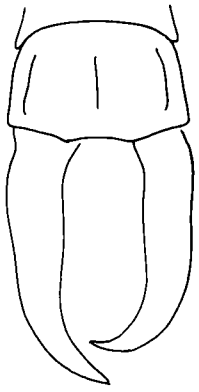

Fig. 20 Male ultimate tergite with forceps of *Epilandex handschini* HINCKS. Original.

Fig. 21 Genital armature of holotype of *Epilandex handschini* HINCKS. After HINCKS.

than the distance between antennal bases. Pronotum broader than long, lateral margins divergent caudad; posterior margin broadly rounded. Tegmina present, ample, twice as long as pronotum, truncate distad, very shallowly and sparsely punctate. Wings well developed, slightly longer than pronotum. Abdomen having 6th to 9th tergites very acute and carinate laterad. Ultimate tergite with lateral carinae; posterior margin slightly concave mesad, concavity terminating laterad in a tubercle which coincides with a projection on the upper median ridge of forceps. Forceps (Fig. 20) trigonal basally, asymmetrical. Penultimate sternite with caudal margin rounded, bearing mesad a very short, feeble rudiment of the longitudinal median process present in *E. burri*. Genitalia (Fig. 21) specific; paramere very narrow, genital lobes with very long virgae. External parameres very slender, long, as in fig. 21. – **Female** unknown. – **Length** of body with forceps: 13 mm.

Distribution: West Sumba.

3. **Epilandex peterseni** RAMAMURTHI

1967 *Epilandex peterseni* RAMAMURTHI, Ent. Meddr., København, **35**: 234; fig. 6 (ultimate tergite and forceps of male), 7 (ultimate tergite and forceps of female), 8 (male genitalia). – Terra typica: Philippines: Tawi Tawi (Type male: Zool. Mus., København).

Literature: STEINMANN 1979, 1984.

Description: Male colour black and brownish, paler: head black, rest of the body brownish, legs paler. Head transverse, smooth, tumid; postfrontal and coronal sutures indistinct. Eyes comparatively small, shorter than the length of head behind eyes. Antennae 17-jointed; first long, but a little shorter than the distance between antennal bases; clavate, joints 12–17 whitish and more narrowly elongated basally than the rest. Pronotum a little longer than broad, narrower than head anteriorly, slightly expanded caudad; sides truncate. Tegmina less than one and a half time longer than pronotum; wings well developed. Abdomen expanded to last tergite; tergites 6–9 acute and carinate laterad. Ultimate tergite transverse, with well marked lateral longitudinal

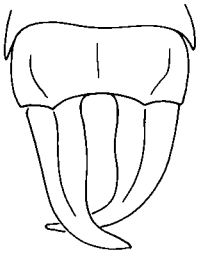

Fig. 22 Ultimate tergite and forceps of holotype of *Epilandex peterseni* RAMAMURTHI. After RAMAMURTHI.

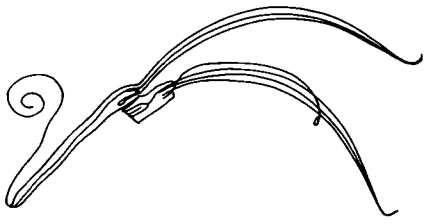

Fig. 23 Genital armature of holotype of *Epilandex peterseni* RAMAMURTHI. After RAMAMURTHI.

carinae; plate with a distinct median longitudinal sulcus and shallow caudal depression. Forceps (Fig. 22) asymmetrical, trigonal basally, cylindrical and strongly curved apically; left branch abruptly narrowed at apex, right branch gently arcuate. Penultimate sternite with broadly rounded posterior margin. Genitalia (Fig. 23) typical to genus; paramere very narrow, genital lobes with very long virgae; external parameres very similar to *handschini*. – **Female** similar to male, but forceps symmetrical, trigonal, very broad at base. – **Length** of body with forceps: male: 7,5–9 mm, female: 8–10 mm.

Distribution: Philippines: Tawi Tawi, Palawan, Bismarck Islands, New Britain, New Ireland.

4. Epilandex undulata RAMAMURTHI

1964 *Epilandex undulata* RAMAMURTHI, Ann. Mag. nat. Hist., London, (13) **6**: 672; fig. 1 (ultimate tergite and forceps of male), 2 (caudal margin of penultimate sternite of male), 3 (male genitalia). – Terra typica: India: Coimbatore (Type male: RAMAMURTHI's Collect.).

Literature: SAKAI 1970; STEINMANN 1979.

Description: Male general colour reddish-brown. Head as wide as long; frons distinctly tumid; postfrontal and coronal sutures absolete. Eyes prominent, longer than genae. Antennae 13-jointed (+?); first joint comparatively long, but a little shorter than the distance between antennal bases. Pronotum broader than long; prozona tumid, median longitudinal furrow weak; posterior margin broadly rounded, sides truncate. Brachypterous. Legs normal. Abdomen moderately depressed, gradually widened caudad. Ultimate tergite ample, transverse; median longitudinal sulcus distinct; lateral margins carinate. Forceps (Fig. 24) characteristic, with a deep incision near the base at inner margins. Penultimate sternite broadly rounded. Genitalia (Fig. 25) specific; paramere

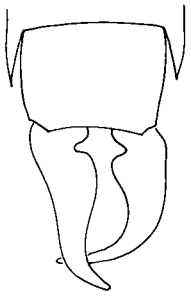

Fig. 24 Ultimate tergite and forceps of holotype of *Epilandex undulata* RAMAMURTHI. After RAMAMURTHI.

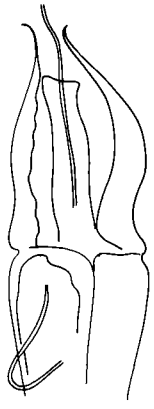

Fig. 25 Genital armature of holotype of *Epilandex undulata* RAMAMURTHI. After RAMAMURTHI.

broad, median longitudinal incision not visible; genital lobes well developed, virga long, basal section without sclerotized plate. External parameres as in fig. 25. – **Female** unknown. – **Length** of body with forceps: 11 mm.

Distribution: India.

5. Epilandex burri (BORELLI)

1921 *Landex burri* BORELLI, Bull. Mus. nation. Hist. nat., Paris, **1921**: 81. – Terra typica: Siam (Type male: Acad. nat. Sci., Philadelphia).
1927 *Epilandex burri* – HEBARD, Proc. Acad. nat. Sci., Philadelphia, **79**: 27.
Literature: BRINDLE 1971; KAPOOR 1967; SAKAI 1970; STEINMANN 1979.

Description: Male colour brown or reddish-brown. Head transverse; frons distinctly tumid. Postfrontal sutures and coronal suture present. Eyes prominent, a little longer than genae. First antennal joint long, but a little shorter than the distance between antennal bases. Pronotum broader than long, prozona tumid, median longitudinal furrow weak; posterior margin rounded. Tegmina well developed, wings concealed, not visible, but the tegmina are nearly one and one-half times the length of the pronotum. Legs normal. Abdomen moderatelly depressed, widened to last tergite. Ultimate tergite ample, quadrate. Pygidium short and quadrangular with slightly spinous angles. Forceps typical, asymmetrical; trigonal basally, cylindrical apically. Penultimate sternite broad, rounded caudad. Genitalia (Fig. 26) relatively broad; paramere well developed, its basal section with sclerotized plate, genital lobes with short virgae, median section of external paramere long, parallel-sided, narrowing only short of apex. – **Female** similar to male, but forceps symmetrical, tapering. – **Length** of body with forceps: male: 11–12 mm, female: 12–13 mm.

Distribution: Thailand and Sri Lanka, Sumatra, Java (var. *brachyptera* BORELLI 1921: Sri Lanka).

Fig. 26 Male genital armature of *Epilandex burri* (BORELLI). After BRINDLE.

6. Epilandex bazyluki STEINMANN

1979 *Epilandex bazyluki* STEINMANN, Fol. ent. hung., Budapest, **32**: 155; fig. 15 (male pronotum, tegmina and wings), 16 (male ultimate tergite and forceps), 17 (genitalia of holotype). – Terra typica: Ceylon (Type male: Zool. Inst., Warszawa).

Description: Male colour pale yellowish brown. Head and pronotum as well as tegmina, brown. Head broad, frons tumid, occiput depressed medially. Postfrontal and coronal sutures obsolete. Antennae broken in holotype, but first joint long, more or less as long as the distance between antennal bases. Pronotum a little longer than broad, slightly expanded to posterior margin: lateral margins straight; posterior margin arcuately rounded. Tegmina comparatively long, nearly twice as long as pronotum. Wings fully developed, pale brown, projecting far from under tegmina. Abdomen a little shiny, normal, ultimate tergite wide, posterior margin apparently sinuous owing to the two smaller projections of forceps at median line. Forceps (Fig. 27) asymmetrical, basally only moderately widened, basal section of inner margin with an irregular small tooth or concavity. Penultimate sternite typical. Genitalia (Fig. 28, gen. prep. No. 366, det. Dr. H. STEINMANN) considerably elongate; paramere broad, median longitudinal incision between external parameres insignificant. Genital lobes with strikingly long virgae projecting far from genital lobes even at rest, their basal section wide, terminating in a concave, strongly sclerotized curvature. Base of virgae with sclerotized narrow lobes, their rounded apices slightly dentate. External parameres about ten times longer than their basal width. – **Female** unknown. – **Length** of body with forceps: 14 mm.

Distribution: Sri Lanka.

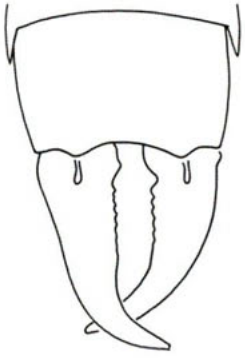

Fig. 27 Ultimate tergite and forceps of holotype of *Epilandex bazyluki* STEINMANN. After STEINMANN.

Fig. 28 Genital armature of holotype of *Epilandex bazyluki* STEINMANN. After STEINMANN.

Genus 5: **Titanolabis** BURR

1910 *Titanolabis* BURR, Trans. ent. Soc., London, **1910**: 168. – Species typica: *Forcinella colossea* DOHRN 1864.

Literature: BURR 1911, 1915; GÜNTHER 1930; POPHAM & BRINDLE 1966; SAKAI 1970; STEINMANN, 1975, 1977, 1978; TOWNES 1945; ZACHER 1911.

Description: Body very large; wingless species. Metasternum produced posteriorly into a rounded lobe; agrees otherwise with *Anisolabis* FIEBER. Colour dark, reddish or dark yellowish brown. Abdomen very long, a little expanded to abdominal tergite 6. Male genitalia very large, anterior margin of paramere deeply incised but parts close to each other, central plate narrow, V-shaped. Lobus genitalis extremely long and thin.

Distribution: Indo-Australia.

2 species.

Identification key to the species

1 Pronotum quadrate or a little longer than broad. Male genitalia (Fig. 30) with long genital lobes, as long as paramere; external parameres comparatively large ..... 1. **Titanolabis colossea**, p. 25

1′ Pronotum less quadrate or a little broader than long. Male genitalia (Fig. 32) with very long genital lobes, which are twice as long as the central paramere; external parameres comparatively small ..... 2. **Titanolabis gigas**, p. 26

1. Titanolabis colossea (DOHRN)

1864 *Forcinella colossea* DOHRN, Stettiner ent. Ztg., **25**: 286. – Terra typica: Australia: Queensland (Type male: unknown locality, paratype male: Inst. zool., Warszawa).

1894 *Anisolabis colossea* – BORMANS, Ann. Mus. civ. Stor. nat., Genova, (2) **14**: 379.

1900 *Anisolabis colossea* – BORMANS, Das Tierreich, Berlin, **11**: 47; fig. 19 (male) Neu-Kaledonien, Neu-Hebriden, Fidschi-Inseln, Birma.

1902 *Anisolabis colossea* var. *minor* BURR, Természetrajzi Füzetek, Budapest, **25**: 479. – Terra typica: Australia: New South Wales (a pair of usually small size, the length of the male, including the forceps, is only 18 mm, and of the female, 13,5 mm).

1910 *Titanolabis colossea* – BURR, Trans. ent. Soc., London, **1910**: 168.

1911 *Titanolabis colossea* – BURR, Genera Insectorum, Bruxelles, **122**: 27; pl. 2., fig. 16 (pro-, meso- and metasternum). Australia, ? Burma.

1915 *Titanolabis colossea* – BURR, Journ. r. microsc. Soc. London, **1915**: 532; pl. 10, fig. 2 (male genitalia).

1979 *Titanolabis colossea* – STEINMANN, Fol. ent. hung., Budapest, **32**: 155; fig. 13 (lectotype, abdominal end with forceps of male), 14 (male genitalia of lectotype; gen. prep. No. 347, det. Dr. H. STEINMANN).

Literature: BOESEMAN 1954; HEBARD 1933; SAKAI 1970; STEINMANN 1977; TILLYARD 1926; ZACHER 1911.

Description: Male large, dark yellowish or reddish-brown. Head rounded, broad, broader than pronotum; frons and vertex tumid; postfrontal and coronal sutures distinct; eyes relatively short, shorter than the first antennal joint. First antennal joint broad, comparatively small, shorter than the distance between antennal bases. Pronotum slightly longer than broad; lateral margins paralell,

straight; posterior margin truncate, all angles rounded. Median longitudinal furrow present, long. Tegmina and wings entirely absent. Meso- and metanotum normal, narrow. Abdomen expanded to 5th and 6th tergites. Metasternum long and narrow, lobe well produced between posterior coxae, and rounded. Ultimate tergite as long as wide; posterior margin straight. Forceps (Fig. 29) more or less symmetrical, trigonal basally, cylindrical apically. Genitalia (Fig. 30) large; paramere long and relatively narrow, median incision of anterior margin deep and wide or narrow, plate therefore V-shaped. Genital lobes elongate, but shorter than central parameral plate; virga present. External paramere comparatively large, about two and a half to three times longer than wide; basally not widened, but slightly narrowed, apically rounded. – **Female** very similar to male, forceps with branches subcontiguous at the base, stout and robust; trigonal, broad, gradually tapering, with the inner margin crenulate. – **Length** of body with forceps: male and female: size variable from 20 to 50 mm.

Distribution: Australia: New South Wales, Queensland; New Caledonia, New Hebrides, Fiji-Islands.

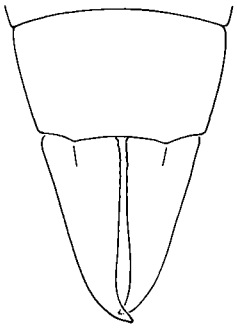

Fig. 29 Male ultimate tergite with forceps of *Titanolabis colossea* (DOHRN). Original.

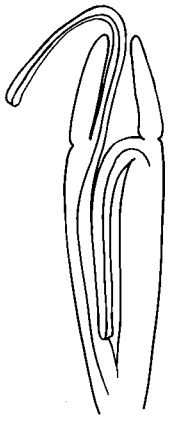

Fig. 30 Male genital armature of *Titanolabis colossea* (DOHRN). Original.

2. Titanolabis gigas sp. nov.

Terra typica: Australia, New South Wales, Mt. Corigudges, 20.11.1967, legit: HANGAY, gen. prep. No. 577, det. Dr. H. STEINMANN. (Type male: Természettudományi Múz., Budapest; 1 female in the same museum).

Description: Male general colour dark reddish-brown; legs brown, forceps black. Head rounded, large; frons tumid, postfrontal and coronal sutures distinct. Eyes very small, shorter than the first antennal joint, or the length of head behind eyes. Antennae broken, first joint normal, shorter than the distance between antennal bases; second transverse, third joint twice as long as the fourth

joint. Pronotum a little transverse; lateral margins straight, but a little expanded to posterior angles; caudal margin truncate; median longitudinal furrow distinct. Tegmina and wings entirely absent. Meso- and metanotum typical. Legs comparatively short. Abdomen elongated, a little expanded to median segments. Ultimate tergite well developed, simple; forceps (Fig. 31) symmetrical, trigonal basally, cylindrical apically. Genitalia (Fig. 32) characteristic; paramere with deep median incision between external parameres; plate V-shaped, genital lobes fully developed, very long, about twice as long as the length of central parameral plate; virga very long. External parameres comparatively small, as in fig. 32. – **Female** similar to male, but forceps a little longer, tapering, straight. – **Length** of body with forceps: male: 29 mm, female: 35 mm.

Distribution: Australia.

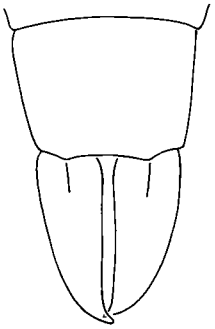

Fig. 31 Ultimate tergite and forceps of holotype of *Titanolabis gigas* sp.n. Original.

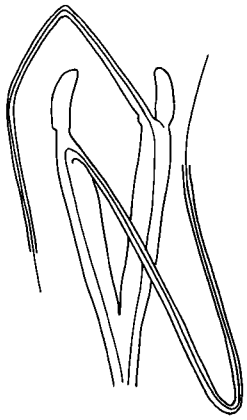

Fig. 32 Genital armature of holotype of *Titanolabis gigas* sp.n. Original.

Genus 6: **Capralabis** BRINDLE

1981 *Capralabis* BRINDLE, Entomologist's month. Mag., London, **117**: 77. – Species typica: *Capralabis ashmolei* BRINDLE 1981.

Description: Body colour dark, more or less glabrous and rather shiny. Head a little elongated, eyes small or normal. Pronotum quadrate or a little longer than broad. Tegmina short and wings absent or concealed, or tegmina and wings fully developed. Male forceps asymmetrical. Male genitalia characteristic, external parameres very long, both genital lobes directed posteriorly at rest.

Distribution: Central and South America.

3 species.

joint. Pronotum a little transverse; lateral margins straight, but a little expanded to posterior angles; caudal margin truncate; median longitudinal furrow distinct. Tegmina and wings entirely absent. Meso- and metanotum typical. Legs comparatively short. Abdomen elongated, a little expanded to median segments. Ultimate tergite well developed, simple; forceps (Fig. 31) symmetrical, trigonal basally, cylindrical apically. Genitalia (Fig. 32) characteristic; paramere with deep median incision between external parameres; plate V-shaped, genital lobes fully developed, very long, about twice as long as the length of central parameral plate; virga very long. External parameres comparatively small, as in fig. 32. – **Female** similar to male, but forceps a little longer, tapering, straight. – **Length** of body with forceps: male: 29 mm, female: 35 mm.

Distribution: Australia.

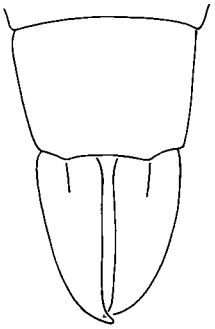

Fig. 31 Ultimate tergite and forceps of holotype of *Titanolabis gigas* sp.n. Original.

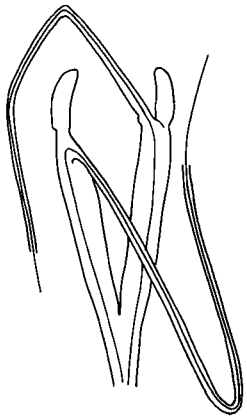

Fig. 32 Genital armature of holotype of *Titanolabis gigas* sp.n. Original.

Genus 6: **Capralabis** BRINDLE

1981 *Capralabis* BRINDLE, Entomologist's month. Mag., London, **117**: 77. – Species typica: *Capralabis ashmolei* BRINDLE 1981.

Description: Body colour dark, more or less glabrous and rather shiny. Head a little elongated, eyes small or normal. Pronotum quadrate or a little longer than broad. Tegmina short and wings absent or concealed, or tegmina and wings fully developed. Male forceps asymmetrical. Male genitalia characteristic, external parameres very long, both genital lobes directed posteriorly at rest.

Distribution: Central and South America.

3 species.

Identification key to the species

1 Wings absent or concealed. Eyes comparatively large, but shorter than length of head behind eyes. Tegmina smooth. Postfrontal and coronal sutures almost absent ..... 1. **Capralabis ashmolei**, p. 28

1′ Wings visible **2**

2 Tegmina wrinkled, wings broadly pale basally; male penultimate sternite with apex rounded; dorso-lateral ridge on ultimate tergite absent or almost so. Male penultimate sternite transverse, rounded ..... 2. **Capralabis steinmanni**, p. 29

2′ Tegmina smooth or almost so, wings dark; male penultimate sternite triangular; dorso-lateral ridge on ultimate tergite strongly present; smaller species ... 3. **Capralabis srivastavai**, p. 29

1. Capralabis ashmolei BRINDLE

1981 *Capralabis ashmolei* BRINDLE, Entomologist's month. Mag., London, **117**: 77; fig. 1 (holotype), 2 (penultimate sternite of male), 4 (holotype genital armature). – Terra typica: Ecuador (Type male: Manchester Mus.).

Description: Male general colour dark brown; body shiny. Head slightly longer than broad; frons tumid, postfrontal and coronal sutures finely; eyes moderately large, but shorter than length of head behind eyes, and a little longer than first antennal joint. Antennae 15-jointed (+?); first joint long, but shorter than distance between antennal bases; second quadrate, third joint a little long, cylindrical, remaining joints conical. Pronotum with rounded posterior margin; lateral margins straight, but expanded posteriorly. Tegmina well developed, shiny, posterior margin truncate. Abdomen slender, tergites 8–9 with lateral spines. Ultimate tergite broad, lateral longitudinal ridges distinct. Forceps (Fig. 33) asymmetrical, strongly trigonal basally, curved and cylindrical apically.

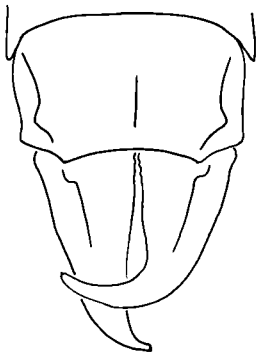

Fig. 33 Holotype ultimate tergite and forceps of *Capralabis ashmolei* BRINDLE. After BRINDLE.

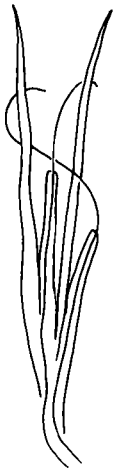

Fig. 33a Holotype genital armature of *Capralabis ashmolei* BRINDLE. After BRINDLE.

Penultimate sternite with posterior margin broadly rounded. Genitalia (Fig. 33a) characteristic, strongly of *Epilandex*-type, external parameres very long; genital lobes directed posteriorly; virga very long. – **Female** similar to male, but posterior abdominal tergites not produced, nor with lateral longitudinal ridges; forceps symmetrical. – **Length** of body with forceps: male: 13,5 mm, female 13 mm.

Distribution: Ecuador.

2. Capralabis steinmanni BRINDLE

1981 *Capralabis steinmanni* BRINDLE, Entmologist's month. Mag., London, **117**: 80. – Terra typica: Panama (Type male: Természettudományi Múz., Budapest; holotype without penis).

Description: Male bicolorous, body dark brown, head black, wings yellow, and legs lighter brown. Head a little elongated, postfrontal and coronal sutures distinct. Eyes large, a little longer than first antennal joint. Antennae broken, 14-jointed (+?) in holotype; first antennal joint long, but shorter than distance between antennal bases; second transverse, third long, longer than fourth; joints 11–12 whitish. Pronotum more or less quadrate; lateral margins expanded posteriorly; posterior margin rounded; median longitudinal furrow distinct. Tegmina and wings fully developed. Abdomen of *Euborellia*-type, tergites 6–9 with lateral spines. Ultimate tergite broad. Forceps (Fig. 34) strongly asymmetrical; trigonal basally, cylindrical and curved apically. Penultimate sternite with tubercle at posterior margin medially. Distal lobes fully developed, similar to *ashmolei* BRINDLE, very long; external parameres absent from genitalia. – **Female** similar to male, but lateral longitudinal ridges and spines absent at abdominal tergites 6–9; forceps symmetrical. – **Length** of body with forceps: male: 14,5 mm, female: 12–13,5 mm.

Distribution: Panama to Venezuela.

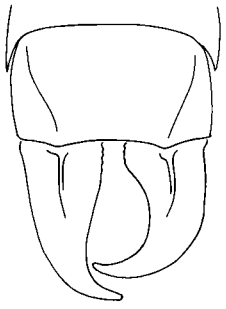

Fig. 34 Holotype ultimate tergite and forceps of *Capralabis steinmanni* BRINDLE. After BRINDLE.

3. Capralabis srivastavai BRINDLE

1981 *Capralabis srivastavai* BRINDLE, Entomologist's months. Mag., London, **117**: 79. – Terra typica: Panama (Type male: Nation. Collect. zool. Survey India, Calcutta).