

ALAN BRINDLE

*Bredin-Archbold-  
Smithsonian Biological  
Survey of Dominica:  
The Dermaptera  
(Earwigs) of Dominica*

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## ABSTRACT

Brindle, Alan. Bredin-Archbold-Smithsonian Biological Survey of Dominica: The Dermaptera (Earwigs) of Dominica. *Smithsonian Contributions to Zoology*, 63, 25 pages, 1971.—An account of the known Dermaptera of Dominica is presented, largely based on material collected during the Bredin-Archbold-Smithsonian Biological Survey of Dominica. This material is now in the United States National Museum. Of the nine species of the order in the material examined, six are new records for the island, and one of these is described as new. One additional new record for Dominica, based on a specimen in the Manchester Museum, is included, and all known previous records of Dermaptera from the island are given, making a total of thirteen species now known from Dominica.

The composition of the Dermaptera fauna of Dominica, and the relation of the various species to other species found in the West Indies, or species found on the mainland of South, Central, or North America, is discussed.

A short account of the structure of the male genitalia and the taxonomy of the Dermaptera is included, together with the biology and distribution of the order. Keys to all families or subfamilies of the New World Dermaptera are given, together with keys to, and figures of, all genera and species recorded from Dominica. The figures either show the entire insect, or show the male or female forceps, the structure of the male forceps being one of the most important characters in taxonomy.

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The Dermaptera form a relatively small, but well-defined order, closely allied to the Orthoptera. Usually three suborders have been recognized—Hemimerina or Diploglossata; Arixenina; and the Forficulina, although Popham (1961) has presented a case for ordinal status for the Hemimerina. The suborder Hemimerina includes a single genus *Hemimerus* Walker, which is associated with rats of the genus *Cricetomys* in Africa, and is much different from the Forficulina in structure. The suborder Arixenina includes the single genus *Arixenia* Jordan, which is associated with bats in Indonesia and Sarawak, and this genus is considerably different from the Forficulina. It is the Forficulina which represents the Dermaptera as generally understood.

The Dermaptera are distinctive by the possession of forceps on the end of the abdomen; these forceps are usually sexually dimorphic, those of the males being much more distinctive than those of the females. In the immature stages the forceps are simple, and resemble those of the females, except in certain primitive families in which the forceps of the immature stages are represented by segmented cerci. In the adults, elytra and wings are often present; the elytra extend down to about the second abdominal tergite when fully developed, while the wings, when fully developed, are folded beneath the elytra and only the tips project beyond. The description of the wings of earwigs always refers to this exposed portion only. When expanded the wings form a quadrant and are supported by radiating veins.

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Little is yet known of the biology and ecology of the Dermaptera, and such studies as have been made concern the more well distributed and common species. The eggs are laid in moist, dark, and sheltered situations and parental care on the part of the female is a notable feature. In temperate climates the adult stage may be reached after a few months but this period is probably reduced in the tropics.

Adult earwigs are mainly nocturnal, hiding by day under stones, beneath bark, or in other dark places, emerging at night to feed. At night some species are strongly attracted to light. Although Dermaptera are generally omnivorous, little is certain about the food of most species.

Dermaptera are characteristically tropical or subtropical in distribution, and the order reaches its maximum richness in the equatorial forests of the world; the main requirements of the species in general appear to be warmth and humidity, and the percentage of species which are found in arid climates is small. Isolated oceanic islands tend to have a very poor fauna of Dermaptera, but continental islands may support a relatively rich fauna, providing that the islands are tropical or subtropical, and are well forested. The Dermaptera fauna of islands tends to fall into three groups—(1) endemic species, (2) species common to neighboring countries, and (3) cosmopolitan species. The endemic species may represent relict forms, or they may have developed from a single or successive invasions from neighboring countries; the second group tends to be more dominant on continental than on oceanic

islands; while the cosmopolitan species may be equally dominant on both oceanic and on continental islands, and tend to supplant the endemic species.

The distribution of Dermaptera largely is controlled by climatic conditions, but the present distribution of some species appears to be the result of accidental introductions into various countries. The distribution of earwigs is not necessarily related to their ability to fly, and the most widely distributed earwig is *Euborellia annulipes* (Lucas), which has neither wings nor elytra, and was originally described from a specimen introduced into the Jardin des Plantes in Paris. Although many species have fully developed, and apparently functional, wings, flight in earwigs is rarely recorded, possibly partly because of their nocturnal habits. The worldwide distribution of the cosmopolitan species seems to be due to their habit of hiding in crevices during the day, especially in timber or other material which is transported from country to country by commerce. The importation of plants in particular tends to introduce specimens which are hiding in the basal leaves or other parts of the plants. Although stringent precautions are now taken in many countries, such precautions are relatively of modern origin, and it is probably this accidental introduction by commerce which is at least partly responsible for the wide distribution of the cosmopolitan species. These species have a relatively wide tolerance of environmental conditions, and introductions may lead to the establishment of the species. Many other species are also similarly introduced into various countries, but since these species are less tolerant of changes in environment, they only survive if the old and the new environments are similar.

### Distribution

The distribution of the West Indies Dermaptera is not adequately known, and the present recorded distribution may be misleading on account of the scarcity of records. Comparatively few species of the order are known from the West Indies, and a much richer fauna could be expected since the islands have a tropical or subtropical climate, and the larger islands at least offer suitable habitats. The main paper on the Dermaptera of the West Indies is that of Rehn and Hebard (1917) in which the distribu-

tion of the various species is well summarized. No previous paper on the Dermaptera of Dominica has been published, and only six previously recorded species have been traced by the present author. In the present paper a total of thirteen species are recorded from Dominica, of which seven are new to the island. One species is described as new. The present total of species is mainly based on the material collected in the present survey, but additional records from the literature have been added, so that the present paper attempts to present a complete account of the Dermaptera of Dominica, as far as yet recorded.

The Dermaptera of Dominica include the following three groups—(1) the endemic group, (2) the American group, and (3) the cosmopolitan group.

(1) THE ENDEMIC GROUP.—The endemic group may be divided into two sections—(a) the species endemic to the West Indies, and (b) the species endemic to Dominica.

(a) This section consists of three species—*Euborellia caraibea* Hebard; *Marava unidentata* (Beauvois); and *Doru albipes* (Fabricius). The first-named species is very closely related to *Euborellia ambigua* (Borelli) and *Euborellia janeirensis* (Dohrn), these three species forming a relatively well-defined section of the genus in which the elytra are short and the wings are not visible. *E. janeirensis* has a distribution extending from Brazil northward to Guyana, but is replaced further north, in Costa Rica, by *E. ambigua*, which extends northward to Florida. *E. ambigua* may have a localized habitat, since it seems to be restricted to mangrove swamps in coastal localities, but *E. janeirensis* apparently is widely distributed in the countries in which it occurs.

*Marava unidentata* is very closely similar to *Marava pulchella* (Serville), and these names were regarded as synonymous by Burr (1911b). Rehn and Hebard (1917), however, regard these species as distinct, and this seems to be justified, but the main difference between the species is the distribution. Although *M. unidentata* is restricted to the West Indies, *M. pulchella* is confined almost completely to North America, and is the mainland species, except for a record by Rehn (1925) from Cuba: these specimens may have resulted from an accidental introduction from the United States. Both of these species have two forms, one form in which the elytra

and wings are normally developed, and one form in which the elytra are short and the wings absent or concealed. Although the males of these species can be separated by the form of the pygidia, the females appear to be identical externally, and isolated females are only determined from the locality.

*Doru albipes* is a larger and strikingly colored earwig which has a wide range in the West Indies, but is very distinct from the other known members of the genus which occur from South to North America, and it does not appear to be closely related to any one species in particular. *D. albipes*, therefore, shows no clear affinity to either South or North America.

(b) There are two species in the second section—*Marava dominicae* (Rehn and Hebard), and the species described as new in the present paper, *Parasparatta dominicana*. Both these species are closely related to other Neotropical species. Rehn and Hebard (1917) consider *M. dominicae* to be allied to *Marava modesta* (Bruner) from Trinidad, but *M. dominicae* is equally closely related to *Marava jamaicana* (Rehn and Hebard), *Marava silvestrii* (Borelli), and other species of this genus. *Parasparatta dominicana* possibly is most closely related to *Parasparatta quinquepunctata* from Brazil: the general shape of the male pygidium is similar in both species.

(2) THE AMERICAN GROUP.—The American group consists of four species—*Carcinophora percheron* (Guerin-Meneville and Percheron); *Labia dorsalis* (Burmeister); *Spongovostox ghiliani* (Dohrn); and *Parasparatta nigrina* (Stål), all of which occur in South and Central America, but not in North America. *Labia dorsalis* has the most northerly distribution, extending as far north as Cuba in the West Indies, and as far north as Mexico on the mainland.

(3) THE COSMOPOLITAN GROUP.—The cosmopolitan species consist of *Anisolabis maritima* (Bonelli); *Euborellia stáli* (Dohrn); and *Labia curvicauda* (Motschulsky), of which only the last species has fully developed elytra and wings. The first-named species has a wide distribution in almost all faunal Regions, and is typically maritime, occurring along seacoasts in the Palaearctic, Ethiopian, and Oriental Regions, as well as in the Neotropical and Nearctic Regions. Both *E. stáli* and *L. curvicauda* are almost circumtropical, and occur in the Ethiopian, Oriental, and Neotropical Regions.

Although *Anisolabis maritima* also is recorded from inland localities, all published records may not be correct, since the various species of *Anisolabis* sometimes differ very slightly and the main distinctions lie in the male genitalia; records of isolated females, therefore, should be regarded with some reserve. Both *Euborellia stáli* and *Labia curvicauda* are reasonably distinct on external characters, and records of these species usually are correct.

The position of *Labidura xanthopus* (Stål) is doubtful. It is very closely similar to the cosmopolitan species, *Labidura riparia* (Pallas), and indeed may only be a form of this species. *L. riparia* is quite variable and numerous synonyms, largely based on color or on minor structural differences, are known. Brindle (1966) regarded *xanthopus* as distinct from *riparia* because of the different shape of the parameres of the male genitalia in the specimens examined, but later studies have indicated that these differences may not be constant. *L. xanthopus* is Neotropical in distribution, and occurs along with *L. riparia* in the Neotropical Region.

The Dermaptera fauna of Dominica, as far as yet recorded, therefore, shows most affinity to that of the Neotropical Region, particularly that of the northern part of South America, and the southern part of Central America, and almost no affinity to that of the Nearctic Region. The preference of Dermaptera for tropical and subtropical climates, however, results in the Neotropical Region having by far the greatest number of species of the New World, and the Dermaptera fauna of the Nearctic Region is poor.

As regards the fauna of the West Indies as a whole, there are few endemic species which are not closely related to some mainland species. *Formicilabia caribea* Rehn and Hebard, from the Dominican Republic (island of Hispaniola), is an unusual genus and species which seems to be very distinctive, but this genus may prove to be related to genera of the Geracinae from Central America, rather than to the genera of the Spongiphorinae, in which it is at present placed: its affinities, thus, are likely to be with the Neotropical Region.

In the fauna of Dominica, only *Doru albipes* (Fabricius) is a West Indian species that is very different from other species of the genus which occur on the mainland: *albipes* has a number of characters, such as coloration, the type of pygidial spine, and the elongation of the parameres of the male

genitalia, which are unusual in the genus. The two endemic species of Dermaptera from Dominica are both related to mainland species.

If the Dermaptera fauna of Dominica has been derived from the mainland, the spread of these species obviously has been through Trinidad. The relatively small differences between the endemic species and some mainland species may suggest that such a spread has been of comparatively recent origin. Too little, however, is known of the West Indies Dermaptera, and further studies on this order in the islands are necessary before an adequate knowledge of the fauna is attained, and its possible origin can be assessed with some confidence.

### Taxonomy

The classification and taxonomy of the Dermaptera is based on the structure of the male genitalia, and the female genitalia have not been systematically studied. The male genitalia usually are distinctive in the more primitive families, as well as in some groups of the higher families; in the Forficulidae, however, the male genitalia tend to be uniform in structure so that they are less useful in taxonomy. The fact that the male genitalia form the basis of the present classification and taxonomy, however, means that only male specimens can be adequately determined, and that female specimens must be determined by their association with male specimens. This reliance on the male genitalia for taxonomy is further increased by the structure of the forceps, since those of the males are often distinctive, while those of the females are much more similar to each other.

Although females can be determined only in association with males, if the present keys are used, in practice isolated female specimens can often be satisfactorily determined on external characters. These characters, however, are derived from those of the male, and a knowledge of the male genitalia is essential in the determination of female specimens. The description of a number of species from the Neotropical Region in the past, based on single females, has led to considerable confusion, and it is now difficult to associate these females with any known males. New species should be based only on males, and preferably on a series containing both sexes. A future study of the female genitalia is highly

desirable, and such a study may enable a much more satisfactory system of keys to be devised.

The male genitalia of the Dermaptera, following the nomenclature of Hincks (1956), consist of paired penes or a single penis, from which project parameres. There are two groups.

**GROUP 1.**—In the more primitive families the genitalia consist of paired penes, which are fused medially, sometimes along their length, or only at the bases (Figures 1, 2, PE). From the distal end of each penis arises a paramere (Figures 1, 2, P), and from the distal part of each penis arises a distal lobe (Figures 1, 2, DL), in which a virga (Figures 1, 2, V) is usually visible. The virga may be apparently absent (Figure 3) but this may be due to lack of sclerotization and the virga may not be readily seen without suitable staining techniques. Sclerites or denticulated areas or lobes may be associated with the distal lobe or virga.

In the families Diplatyidae and Pygidicranidae, both distal lobes are directed backward (Figure 1); in the families Carcinophoridae and Labiduridae, one lobe is directed backward and one directed forward, at rest (Figures 2,3,4). In erection, both distal lobes are directed forward, and mounted genitalia sometimes show this condition.

**GROUP 2.**—In the higher families, the male genitalia consist of a single penis (Figures 5,6, PE); this bears paired parameres on the distal edges (Figures 5,6, P), but in consequence of the single penis, only one distal lobe is present, and this is median in position (Figures 5,6, DL). In the distal lobe is a virga (Figures 5,6, V), with which is often associated sclerites and denticulated areas, frequently of some complexity in the Labiidae (Figure 5). In the Forficulidae (Figure 6), however, the virga usually is not associated with prominent sclerites or denticulated areas, but is short and broad and broadened basally to form a vesicle. When everted the distal lobe is extended well beyond the parameres, and the virga is reversed; any denticulated areas or sclerites passing into the anterior end of the distal lobe.

The above nomenclature differs from that of Burr (1915, 1916), and a comparison of the terms used is given below.

HINCKS (1956)	BURR (1915,1916)
Penis	= Metaparamere
Paramere	= Proparamere

Distal lobe = Praeputial sac  
Virga = Virga

The virga usually is considered as the sclerotized portion of the ductus ejaculatorius.

The males are easily distinguished from the females by the structure of the forceps, these usually being sexually dimorphic; or by the number of visible abdominal segments, the males having ten segments, and the females having eight segments. The male genitalia lie beneath the last free sternite, the penultimate sternite, and are exposed if this sternite is lifted.

### Nomenclature

The system of families as set out in Popham (1965) is generally adopted in the present paper, but superfamilies are not used, and the family Labiidae is placed immediately before the family Forficulidae. On this basis, the Diplatyidae are regarded as a distinct family, not as a subfamily of the family Pygidicranidae as in Burr (1911b) and Hicks (1955), while the Carcinophoridae and Labiduridae are recognized as distinct families, not as subfamilies of the Psalidae as in Burr (1911b). The name Psalidae is not now used, the modern name being the Carcinophoridae, following the substitution of the generic name *Carcinophora* Scudder for the preoccupied *Psalis* Serville.

Since Boeseman (1954) showed that *Marava grandis* (Dubrony), the type species of *Marava* Burr, was identical to *Prolabia arachidis* (Yersin),

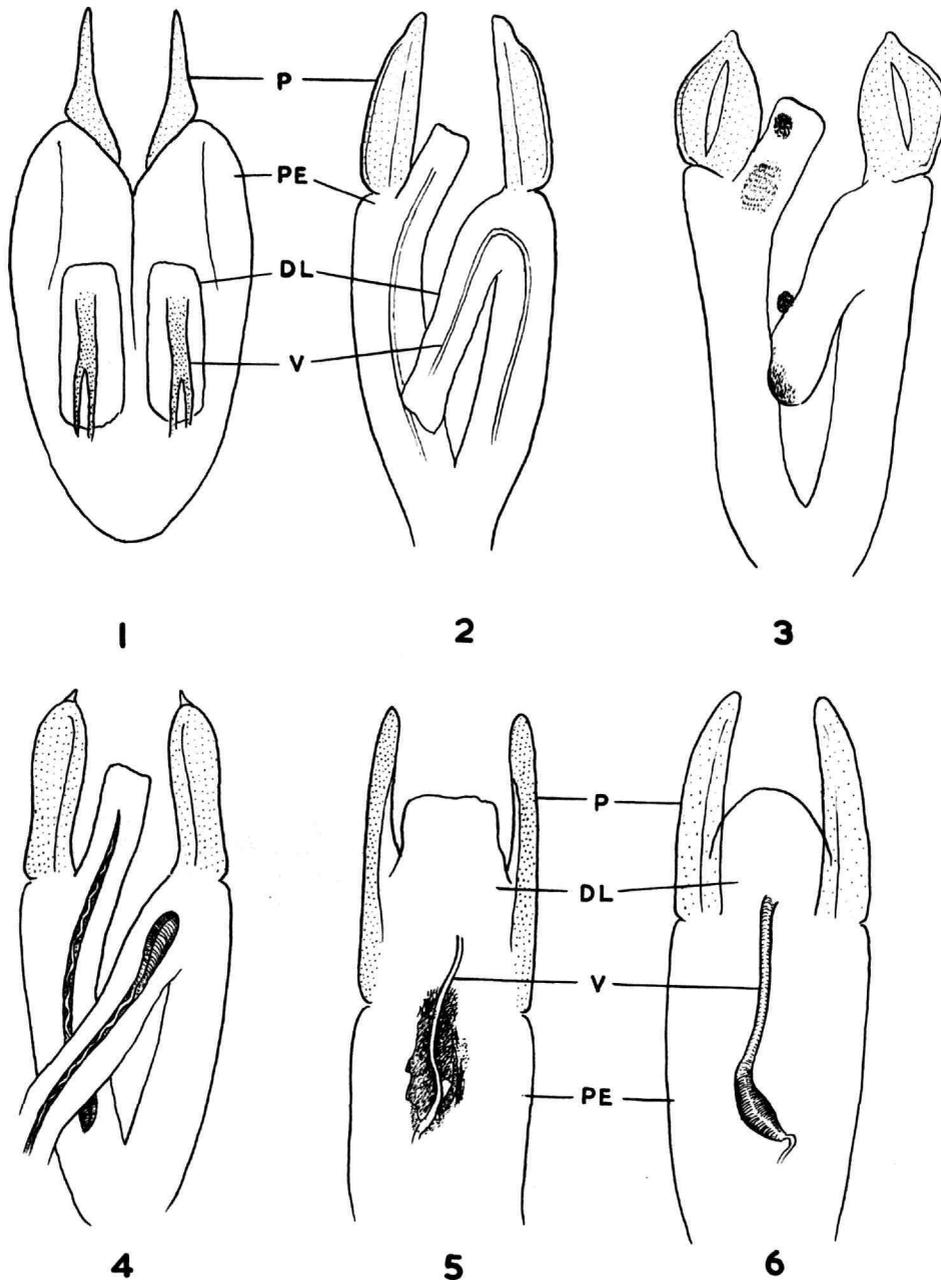
the type species of *Prolabia* Burr, the latter genus falls as a synonym of the prior name *Marava*. Brindle (1968 and in press (a) and (b)) has completed a revision of the New World Labiidae, and some re-allocation of species and genera has been found necessary in these papers. The nomenclature and synonymy of the Labiidae in the present paper follows this revision.

### Acknowledgments

The material on which the present paper is based is that collected during the Bredin-Archbold-Smithsonian Biological Survey of Dominica, and contained in the United States National Museum. A few additional records have been added from the literature and these are indicated in the text. I am indebted to Dr. Karl V. Krombein for permission to examine the collection, and to Dr. Ashley B. Gurney who kindly arranged for the loan of the material. Dr. Gurney also assisted in other ways, including giving details of the various localities, and checking the manuscript, a task which was also undertaken by Dr. O. S. Flint. Any errors which may occur in the paper are, however, the responsibility of the present author. The following collectors are represented in the material of Dermaptera from Dominica—D. M. Anderson; R. T. Bell; Dale F. Bray; J. F. G. Clarke; Thelma M. Clarke; D. R. Davis; O. S. Flint, Jr.; R. Gagné; A. B. Gurney; P. J. Spangler; T. J. Spilman; and W. W. Wirth.

### Key to families or subfamilies of the NEOTROPICAL DERMAPTERA

1. Male genitalia with paired distal lobes (Figures 1-4) ..... 2  
Male genitalia with a single median distal lobe (Figures 5-6) ..... 10
2. Both distal lobes directed backward (Figure 1) ..... 3  
One distal lobe directed backward, one directed forward (Figures 2-4) ..... 6
3. Femora without, or with only indistinct longitudinal ridges ..... 4  
Femora with well marked longitudinal ridges ..... 5
4. Elytra and wings normally developed; claws with a large arolium ..... **Pygidicranidae** (Pyagrinae)  
Elytra and wings absent; claws without an arolium ..... **Pygidicranidae** (Esphalmeninae)
5. Small slender earwigs, 15 mm or less in total length ..... **Diplatyidae**  
Large broad earwigs, 20-30 mm in total length ..... **Pygidicranidae** (Pygidicraninae)
6. Prosternum evenly narrowed posteriorly ..... **Carcinophoridae** (Gonolabiinae)  
Prosternum not evenly narrowed posteriorly ..... 7
7. Mesosternum rounded posteriorly ..... **Carcinophoridae** (Carcinophorinae)  
Mesosternum truncate posteriorly ..... 8
8. Antennae with 25-35 segments; elytra always present,  
wings often present and visible ..... **Labiduridae**  
Antennae with less than 20 segments; elytra absent or rudimentary,  
wings absent or concealed ..... 9



FIGURES 1-6.—Male genitalia: 1, *Diplatys* sp. (Diplatyidae); 2, *Anisolabis maritima* (Bonelli) (Carcinophoridae); *Euborellia annulipes* (Lucas) (Carcinophoridae); 4, *Labidura xanthopus* (Stål) (Labiduridae); 5, *Marava unidentata* (Beauvois) (Labiidae); 6, *Doru albipes* (Fabricius) (Forficulidae). (DL = distal lobe; P = paramere; PE = penis; V = virga).

- 9. First antennal segment shorter than the distance between the antennal bases; abdomen depressed; forceps trigonal basally ..... **Carcinophoridae (Parisolabiinae)**  
 First antennal segment longer than the distance between the antennal bases; abdomen fusiform; forceps usually cylindrical throughout ..... **Carcinophoridae (Brachylabiinae)**
- 10. Second tarsal segment simple ..... **Labiidae**  
 Second tarsal segment flattened and bilobed ..... **Forficulidae**

Only the Carcinophoridae (Carcinophorinae), Labiduridae, Labiidae, and Forficulidae, have representatives on the island of Dominica, as far as present records are concerned, although species belonging to the Diplatyidae and Pygidicranidae (Pyragrinae) are known from other islands in the West Indies.

**Family CARCINOPHORIDAE**

**Subfamily CARCINOPHORINAE**

This is one of the largest subfamilies of the order. The species are typically dark in coloration, and apterous. In some species, however, rudimentary

elytra may be present, and all degrees of development of the elytra are found in the subfamily, from the small lateral flaps of *Euborellia stâli* to the fully developed elytra of *Carcinophora percheron*. Wings are visible in a minority of species. The posterior segments of the abdomen in the males are often more strongly punctured or rugose laterally, and each segment may have a longitudinal ridge on each side associated with the rugose area. The forceps are usually short, the branches broad and usually more curved in the males than in the females. The male genitalia have paired penes, united at the base only in most species, and a virga may not be visible (Figures 2,3).

Distributed in all faunal Regions, but principally Ethiopian and Oriental.

**Key to Dominican genera of the CARCINOPHORINAE**

- 1. Virga of male genitalia absent, or at least often not visible; distal lobes with prominent and sharply defined denticulated pads, parameres short and broad (Figure 3); smaller species ..... ***Euborellia* Burr**  
 Virga of male genitalia visible; distal lobes without prominent and sharply defined denticulated pads, parameres longer and more slender (Figure 2); larger species ..... 2
- 2. Elytra and wings absent (Figure 7); male forceps with branches more strongly curved and more asymmetrical (Figure 7) ..... ***Anisolabis* Fieber**  
 Elytra always present, wings usually visible (Figure 8); male forceps with branches less widely separated, less strongly curved and more symmetrical (Figure 8) ... ***Carcinophora* Scudder**

**Genus *Anisolabis* Fieber**

*Anisolabis* Fieber, 1853, p. 257 [type-species: *Forficula maritima* Bonelli, by designation of Scudder, 1876a, p. 289].

Medium to large earwigs, always entirely without elytra or wings; blackish or partly reddish brown; abdomen widened medially, depressed; male forceps with branches widely separated basally, usually asymmetrical; those of female with branches closer together, and much less curved. Parameres of male genitalia long, virga slender (Figure 2).

Distributed in all faunal Regions, but possibly best represented in the Ethiopian Region. Most species have a restricted distribution, but one species,

*maritima* (Bonelli), is cosmopolitan in distribution, and this is the only species recorded from Dominica.

***Anisolabis maritima* (Bonelli)**

FIGURES 2, 7

*Forficula maritima* Bonelli in Gén , 1832, p. 224 [Mediterranean Region].

*Anisolabis maritima* (Bonelli), Burr, 1911b, p. 29. Rehn and Hebard (1917), p. 638.

This species is not represented in the present collection, but is recorded from Dominica by Rehn and Hebard (1917) without exact locality. The species

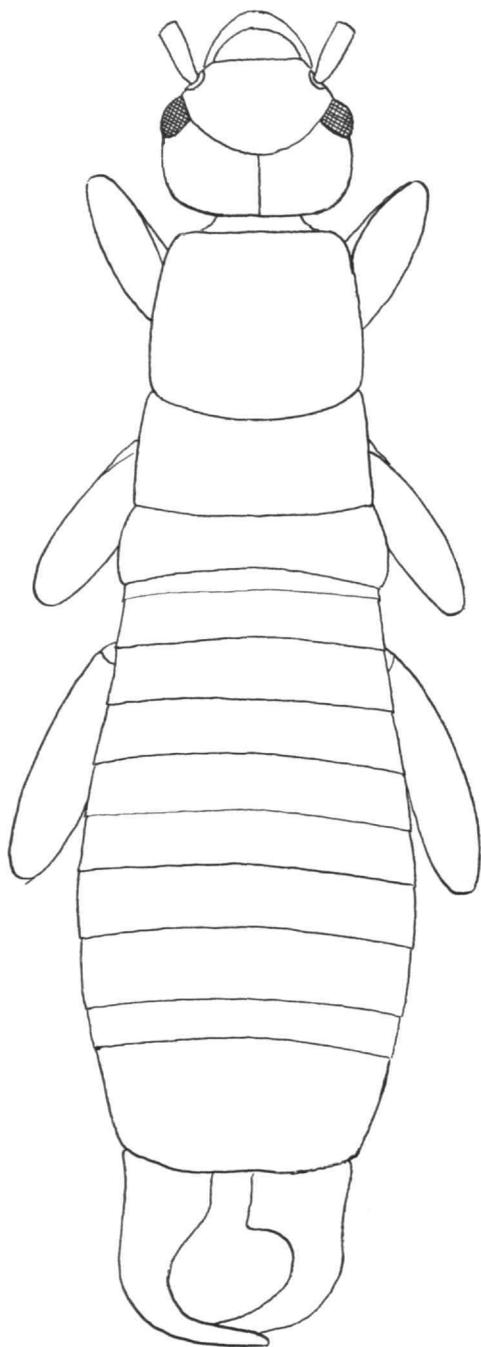


FIGURE 7.—*Anisolabis maritima* (Bonelli), male dorsal.

is widely distributed in the West Indies, in both the Greater and Lesser Antilles.

LENGTH.—Body 15-18 mm., forceps 3-3.5 mm (males), 2.5-3 mm (females). Shining black; antennae brown; legs yellowish or brown, usually unicolorous; cuticle almost impunctate, very sparsely and weakly punctured on some abdominal tergites. Head broad, eyes small, pronotum large and transverse, widened posteriorly; abdomen widened medially and depressed. Each branch of male forceps trigonal at base, cylindrical distally, strongly curved, branches asymmetrical; those of female with branches closer together, and almost straight except for curved apices.

WORLD DISTRIBUTION.—Cosmopolitan; found in all faunal Regions except Australasian; typically maritime, and occurs along seacoasts. It is, however, subtropical or tropical in distribution and does not extend into the temperate zones for any appreciable distance.

#### Genus *Euborellia* Burr

*Borellia* Burr, 1909, p. 325 [type-species: *Anisolabis moesta* Gén , by original designation] [generic name preoccupied by *Borellia* Rehn 1906, Orthoptera].

*Euborellia* Burr, 1910, p. 448 [new name for *Borellia* Burr 1909].

Mainly rather smaller earwigs, and more slender than *Anisolabis*; brown to black, shining. Originally the genus was erected for those species of the Carcinophorinae in which the elytra were represented by lateral flaps on the mesonotum, but Burr (1915) amended this to include those species in which the male genitalia have short and broad parameres. This amendment leads to the inclusion in this genus of four groups of species, based on the degree of development of the elytra, or the absence of the elytra, and the presence or absence of visible wings.

1. Elytra entirely absent (Figure 9).
2. Elytra rudimentary, represented by lateral flaps on the mesonotum (Figure 10).
3. Elytra larger, and meeting along sutures; wings absent or concealed (Figure 11).
4. Elytra normally developed, and wings visible (as Figure 8).

The last group are almost entirely Old World in distribution, but the African *Euborellia cincticollis* (Gerstaecker), recorded from the Nearctic Region

(Gurney, 1950) as an adventive, appears to be variable in the development of the elytra, and may belong to either groups 3 or 4 above. Recent studies, however, have suggested that more than one species may be represented in the present concept of *E. cincticollis*.

Distribution in all faunal Regions, but possibly mainly Oriental. One species, *Euborellia annulipes* (Lucas) is cosmopolitan in distribution, and has the widest distribution of all earwigs, while *E. stáli* (Dohrn) is almost circumtropical.

Two species are recorded from Dominica.

#### Key to Dominican species of *Euborellia*

1. Elytra reduced to lateral flaps on the mesonotum (Figure 10); smaller species *E. stáli* (Dohrn)  
Elytra larger, meeting or overlapping along sutures (Figure 11); larger species  
*E. caraibea* Hebard

*E. annulipes* (Lucas) (Figure 9) is recorded from Jamaica and Barbados by Rehn and Hebard (1917), and from Cuba, Trinidad, and Guadeloupe, by Burr (1910). This species is easily distinguished from the two species keyed out above by the total absence of elytra.

#### *Euborellia stáli* (Dohrn)

##### FIGURE 10

*Forcinella stáli* Dohrn, 1864, p. 286 [Java].

*Anisolabis minuta* Caudell, 1907, p. 168 [Puerto Rico].

*Euborellia stáli* (Dohrn); Burr, 1911b, p. 31.

*Euborellia minuta* (Caudell); Burr, 1911b, p. 31 [thought to be the same species as *stáli*]. —Rehn and Hebard, 1917, p. 639.

*Euborellia stáli* (Dohrn): Hebard, 1923, p. 206 [confirmation of synonymy of *minuta* with *stáli*].

This species is known from the Greater Antilles, but it has not, apparently, previously been recorded from the Lesser Antilles; the present records are the first for Dominica.

LENGTH.—Body 7–9 mm., forceps 1–1.5 mm (males), 1 mm (females). A small, narrow, shining black earwig; antennae brown, one or more distal segments whitish; legs yellow, femora banded with dark brown or black. Head less broad than *Anisolabis*; pronotum as broad as long, or almost so, widened posteriorly; elytra represented by elliptical flaps on each side of the mesonotum; abdominal tergites lightly punctured, and abdominal tergites 7–9 with sides rugose and with lateral ridges on each side. Branches of male forceps less strongly curved than *Anisolabis*, and almost symmetrical. Female forceps with branches rather similar, but somewhat straighter and closer together.

MATERIAL.—Dominica, Roseau, 7 February 1964, Dale F. Bray, 1 ♂, 1 ♀; 1.6 miles West of Pont

Casse, 24 May 1964, O. S. Flint, Jr., 2 ♀; Grande Savane, 14 July 1965, D. M. Anderson, 1 ♂.

WORLD DISTRIBUTION.—Almost circumtropical, but apparently absent from the Pacific. Occurs in the Oriental, Ethiopian, Neotropical, and Nearctic Regions, but is restricted to tropical or subtropical areas.

#### *Euborellia caraibea* Hebard

##### FIGURE 11

*Euborellia ambigua* (Borelli 1909), Rehn and Hebard, 1917, p. 638 [partim].

*Euborellia caraibea* Hebard, 1922, p. 322.

Not represented in the present material, but recorded by Rehn and Hebard (1917) from Roseau, Dominica.

Shining black or dark brown; antennae brown, basal segments paler; legs yellowish brown, femora darker on external faces. Head and pronotum similar to those of *stáli*; elytra relatively large, meeting or overlapping along sutures; wings absent or concealed; a small scutellum visible. Abdominal tergites 6–9 of male rugose laterally and each tergite with a lateral ridge on each side. Branches of forceps of both sexes similar to those of *stáli*.

WORLD DISTRIBUTION.—Restricted to the West Indies. Recorded from Bahamas, Cuba, and Jamaica, as well as Dominica, by Hebard (1922).

#### Genus *Carcinophora* Scudder

*Psalis* Serville, 1831, p. 34 [no type-species cited] [preoccupied by *Psalis* Huebner, 1823, Lepidoptera].

*Carcinophora* Scudder, 1876a, p. 291 [type-species: *Chelidura robusta* Scudder, 1869, by original designation].

*Spandex* Burr, 1915, p. 537 [type-species: *Psalis pulchra* Rehn 1903, by original designation].

Rather small to very large species; elytra always present, and wings usually visible; dark brown to blackish, sometimes partly yellow or red; elytra with yellow spots or patches or entirely dark, wings dark or partly yellow. Pronotum relatively small; abdomen not greatly widened or depressed. Male genitalia similar to those of *Anisolabis*, but virga usually more prominent and more or less indurated; parameres generally acuminate.

Entirely Neotropical in distribution.

One species is recorded from Dominica.

***Carcinophora percheron* (Guerin-Meneville and Percheron)**

**FIGURE 8**

*Forficula percheron* Guerin-Meneville and Percheron, 1839, p. 6 [French Guiana].

*Forficula flexuosa* Burmeister, 1838, p. 753 [French Guiana; Guyana].

*Spongophora bipunctata* Scudder, 1862, p. 415 [? Mass., U.S.A.].

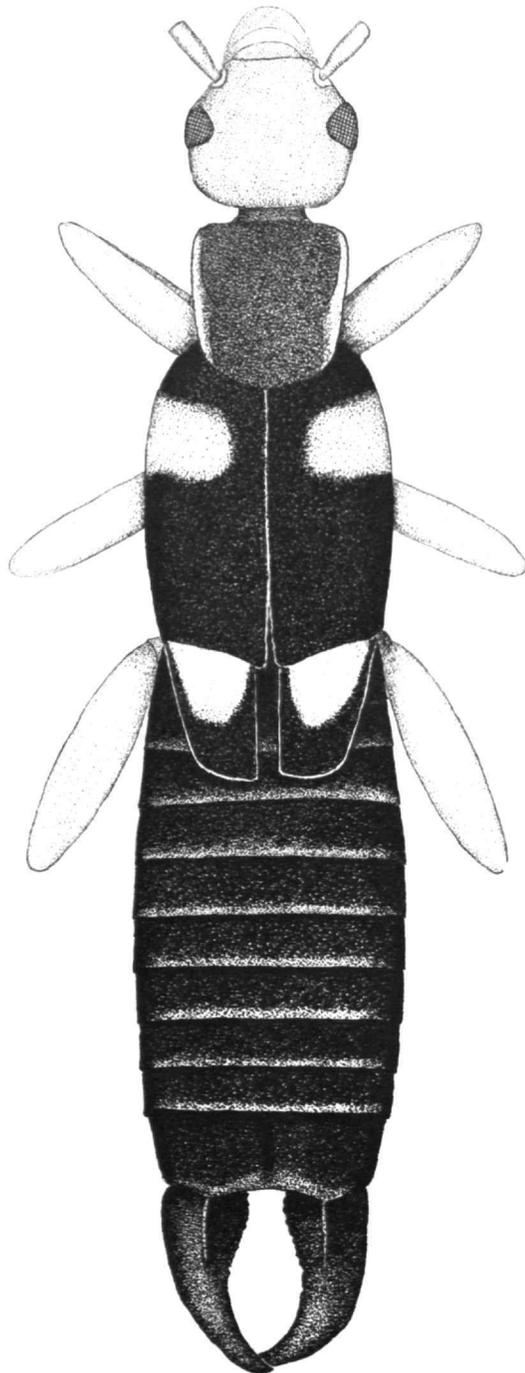
*Psalis pulchra* Rehn, 1903, p. 303 [Costa Rica].

*Labia pictipennis* Bruner, 1906, p. 138 [Trinidad].

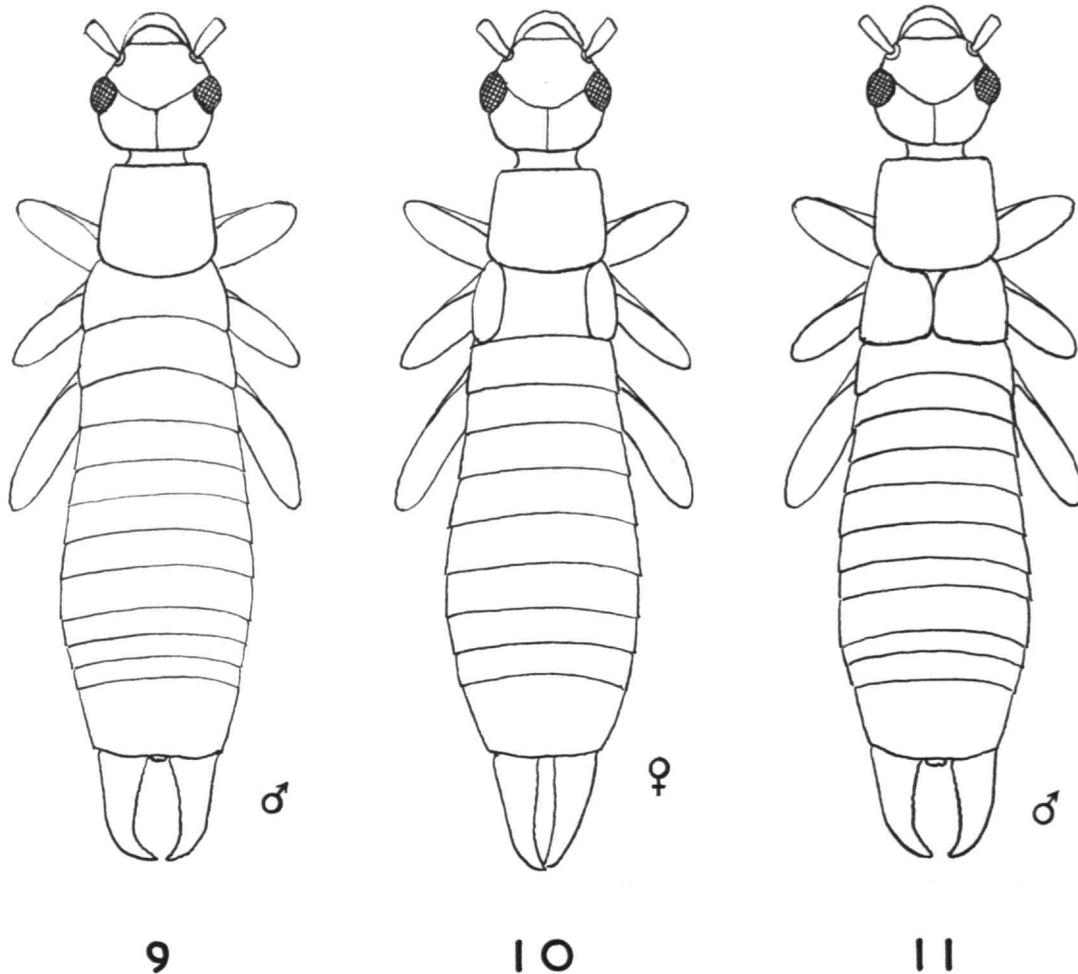
*Carcinophora percheron* (Guerin-Meneville and Percheron), Popham and Brindle, 1966, p. 275.

This species appears to be most common in Trinidad, which may be its main center, but it has also been recorded from South and Central America. It does not appear to have been previously recorded from Dominica. The above record for Massachusetts is doubtful, since Scudder (1876a) when suggesting the synonymy of *bipunctata* with the present species, remarked that the specimen was presumably from Massachusetts, but, if so, "very probably imported." Reichardt (1968) has published the above synonymy.

Length: body 13–18 mm., forceps 2–3 mm. Blackish, shining; head reddish, sometimes darker; antennae blackish, first two segments yellow and one or more distal segments white; pronotum yellow laterally; each elytron with a large yellow or reddish yellow spot; wings reddish yellow at base; legs yellow. Head broad, eyes small, pronotum narrow, widest anteriorly; elytra and wings always fully developed. Abdominal tergites punctured. Male forceps with branches trigonal at base, cylindrical distally, each branch not strongly curved; those of



Percheron), male, dorsal.



FIGURES 9-11.—*Euborellia*: 9, *annulipes* (Lucas); 10, *stáli* (Dohrn); 11, *carai-bea* Hebard.

female similar but branches straighter and more contiguous.

**MATERIAL.**—Dominica, Pont Casse, 23-26 November 1964, P. J. Spangler, 1 ♀; Virgin Rain Forest, Central Forest Reserve, L-11, 30 December 1964, Bell and Bell, 1 ♂; 1.6 miles west of Pont Casse, 24 May 1964, O. S. Flint, Jr., 1 ♂, 3 ♀; 1.5 miles east of Pont Casse, 20 January 1965, in rotting banana trunks, D. M. Anderson, 1 ♂, 1 ♀.

**WORLD DISTRIBUTION.**—West Indies (Trinidad, Dominica); South America (Brazil, Guyana, French Guiana) and the southern part of Central America (Panama, Costa Rica, Nicaragua).

#### Family LABIDURIDAE

This family, according to Popham (1965), includes three subfamilies, the Apachyinae, the Allostethinae, and the Labidurinae. The first two subfamilies are entirely Old World in distribution, as also are most species of the Labidurinae, but this latter subfamily has four New World species.

#### Subfamily LABIDURINAE

A small subfamily of small to very large species, always with elytra and often with visible wings; legs short or long; antennae long. Male forceps of vari-

able length, branches either short and stout or greatly elongated and slender, branches always widely separated at base and with or without inner teeth; those of female shorter, branches contiguous.

Four species of this subfamily occur in the New World—*Forcipula americana* (Bormans) and *Forcipula quelchi* Burr, both of which are restricted to South America, and two species of *Labidura*, which are more widely distributed.

### Genus *Labidura* Leach

*Labidura* Leach, 1815, p. 48 [type-species: *Forficula gigantea* Fabricius, by monotypy].

*Demogorgon* Kirby, 1891, p. 513 [type-species: *Demogorgon batesi* Kirby, by original designation].

Usually large or very large earwigs; general coloration yellowish to black, often variegated in color; branches of male forceps stout, only slightly curved, not greatly elongated, and with one inner tooth; those of female with branches contiguous and shorter, inner margins dentated. Virga of male genitalia broad at base, and with an inner sinuous tube (Figure 4).

Two species of the genus occur in the New World, *Labidura riparia* (Pallas), and *Labidura xanthopus* (Stål), but the relation of these two species to each other is uncertain, and has been briefly mentioned earlier in the present paper.

*Labidura riparia* is cosmopolitan in distribution, and is very variable in certain structural features as well as in color. *Labidura xanthopus* is entirely Neotropical in distribution, and is only distinct from *riparia* externally on one character—this is the presence of short longitudinal ridges on the median part of the posterior abdominal tergites, resembling the milling of a coin (Figure 12). These ridges are only present in males, and may be weakly indicated or almost absent. *L.xanthopus* is often without visible wings and strikingly colored, being yellow or orange-yellow, variegated with dark brown or blackish, but since these features are variable, little reliance can be placed on them. *Demogorgon longipennis* Borelli is a form of this species with fully developed elytra and visible wings, while *Labidura livida* Dubrony is an extremely pale form, almost uniformly light yellowish brown. The genus *Demogorgon* was erected by Kirby (1891) mainly on the presence of these ridges on the abdominal tergites, but these are certainly not of generic rank and it is

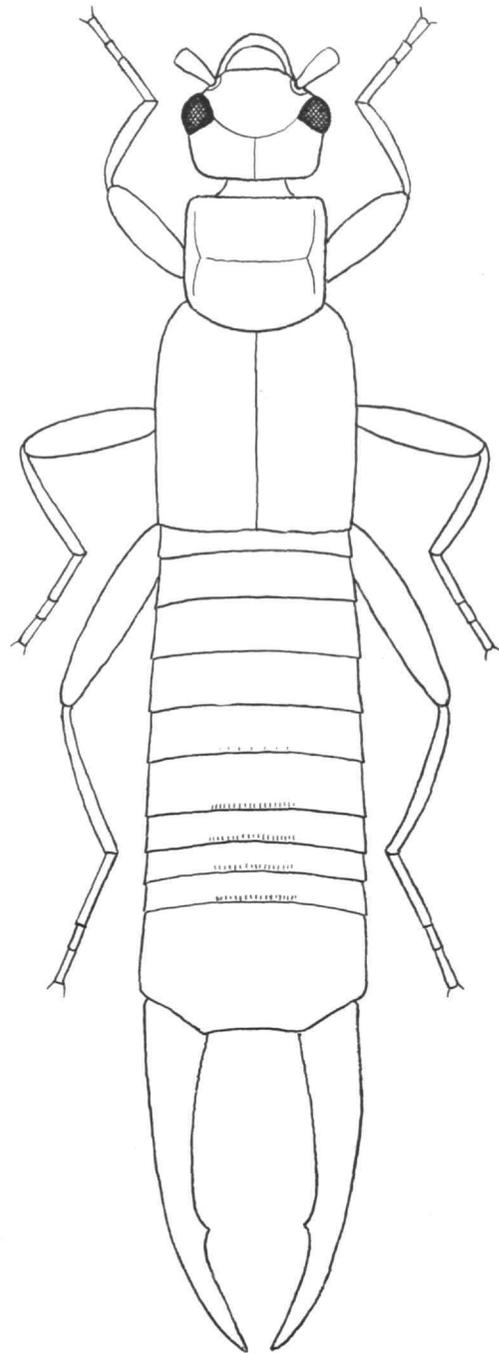


FIGURE 12.—*Labidura xanthopus* (Stål), male, dorsal.

doubtful if they are of specific rank. An account of such variation is given in Brindle (1966), in which *xanthopus* is considered as a distinct species, but future studies may show that it is only a form of *riparia*.

The present female from Dominica is referred to *Labidura xanthopus* since it corresponds better with females of this species in the Manchester Museum than with females of *Labidura riparia*. The females of *xanthopus* are usually more slender than those of *riparia*, and are more contrastingly colored, but there are no certain distinguishing characters between them.

### *Labidura xanthopus* (Stål)

FIGURES 4, 12

*Forficula xanthopus* Stal, 1855, p. 48 [Brazil].

*Labidura livida* Dubrony, 1879, p. 93 [Brazil].

*Demogorgon batesi* (Brazil), *D. bicolor* [South America], *D. adelphus* [Brazil], *D. patagonicus* (Argentine), Kirby, 1891, pp. 514-515.

*Demogorgon longipennis* Borelli, 1904, p. 4 [Argentine].

*Labidura xanthopus* (Stål), Burr, 1911b, p. 37.

*Labidura brasiliensis* Moreira, 1932, p. 16 [Brazil].

This species has not been previously recorded from the West Indies, but forms of *Labidura riparia* have been noted from the Bahamas, Cuba, Jamaica, and Puerto Rico. This is the species recorded as *Labidura bidens* (Olivier) by Rehn and Hebard (1917).

LENGTH.—Body 14–25 mm, forceps 6–9 mm (males), 3.5–5 mm (females). Generally yellowish, variegated with dark brown or blackish, but variable in color. Elytra blackish, sutures and lateral margins broadly yellow, abdomen yellow, with a broad median longitudinal blackish band, the edges of which are irregular. The general color, however, may range from uniformly light yellow or brown to the more strongly marked varieties or forms. Most of the synonymy quoted above concerns color varieties. Elytra often short and wings often not visible, but both elytra and wings may be normally developed. Male forceps with branches well separated

at base, trigonal basally and cylindrical distally, almost straight, inner margin of each branch with one tooth (Figure 12); forceps of female with branches contiguous, almost straight, and with the inner margin of each branch dentated for basal half or more.

MATERIAL.—Dominica, Clarke Hall, 8 May 1964, O. S. Flint, Jr., 1 ♀.

WORLD DISTRIBUTION.—Neotropical Region only; previously recorded from Brazil, Argentine, Bolivia, and Surinam.

### Family LABIIDAE

This is one of the largest families of the order, and mainly consists of small species, although some Neotropical species are large. The family is well represented in the New World, and 126 species of this family are included in a revision of the Neotropical and Nearctic Labiidae in course of publication (Brindle, 1968, and in press (a) and (b)). The species of the family are distinct by the simple second tarsal segment and by the single penis and single distal lobe of the male genitalia. The distal lobe is usually associated with sclerites and denticulated areas of some complexity. The forceps are almost always sexually dimorphic, those of the males being longer and with the branches well separated at the base, while those of the females have short branches which are more or less contiguous throughout.

Of the nine subfamilies recognized at present, the Vandicinae are confined to tropical Africa, and the Isopyginae to Madagascar, while the Nesogastrinae are entirely Oriental and Australasian in distribution. The other six subfamilies are represented in the New World, but both the Pericominae and the Strongylopsalinae are restricted to South America, while the Geracinae so far are known from South and Central America, and there are no present records from the West Indies. Three subfamilies have representatives in Dominica.

### Key to Dominican subfamilies of the LABIIDAE

1. Body strongly depressed; pronotum narrow and usually with a narrowed anterior part forming a distinct neck; dorsal surface of head flat ..... *Sparattinae*
- Body normally convex; pronotum not narrowed anteriorly to form a distinct neck; dorsal surface of head more or less convex ..... 2

2. Third antennal segment shorter than the fifth; elytra usually punctured and pubescent; eyes small ..... **Labiinae**  
 Third antennal segment as long as or longer than the fifth; elytra always glabrous, and almost always impunctate; eyes often large ..... **Spongiphorinae**

### Subfamily SPARATTINAE

A distinct subfamily, easily recognized by the greatly flattened body, a shape which is associated with life under the bark of trees. Elytra and wings normally developed; legs compressed laterally; eyes small. Male forceps variable in shape but branches well separated at base and with a prominent pygidium present between the bases of the branches of the forceps; forceps of female usually shorter than those of the male and the pygidium generally of a different shape.

Except for the single genus *Auchenomus* Karsch,

the subfamily is entirely New World in distribution. One genus is represented in Dominica.

### Genus *Parasparatta* Burr

*Parasparatta* Burr, 1911a, p. 61 [type-species: *Sparatta nigrina* Stål, by original designation].

Usually dark in color and small in size; distinct from all other New World genera of the subfamily by the strongly punctured and pubescent elytra—all other genera having the elytra smooth and glabrous. Only one species has been previously recorded from Dominica, *Parasparatta nigrina*; the second species now recorded is described as new.

### Key to Dominican species of *Parasparatta*

1. Mainly dark brown or blackish; abdomen sometimes reddish posteriorly; male pygidium trifold at apex; female pygidium short, without small tubercles ..... *P. nigrina* (Stål)  
 Pronotum yellow, abdomen mainly reddish brown; male pygidium not trifold at apex; female pygidium short and broad, and with small tubercles ..... *P. dominicana*, new species.

### *Parasparatta nigrina* (Stål)

FIGURES 17, 18

*Sparatta nigrina* Stål, 1855, p. 350 [Brazil].  
*Parasparatta nigrina* (Stål), Burr, 1911a, p. 61; 1911b, p. 60.  
*Parasparatta nigrina* (Stål), Brindle, 1968, p. 298 [Dominica].

Not represented in the present collection; the above record from Dominica, without exact locality, appears to be the only one published for this species from Dominica.

LENGTH.—Body 5–6.5 mm, forceps 1.25–1.75 mm. Usually almost entirely blackish; legs partially yellow and abdomen sometimes reddish posteriorly; forceps black or reddish. Each branch of male forceps rather short and stout, with three small inner teeth; pygidium long, apex trifold, actual shape and length variable; each branch of female forceps shorter than those of male, broader, and with a ventral inner flange, pygidium short, transverse, without tubercles.

WORLD DISTRIBUTION.—Neotropical Region. Recorded from Brazil, Argentine, and Dominica in Brindle (1968). The species has previously been

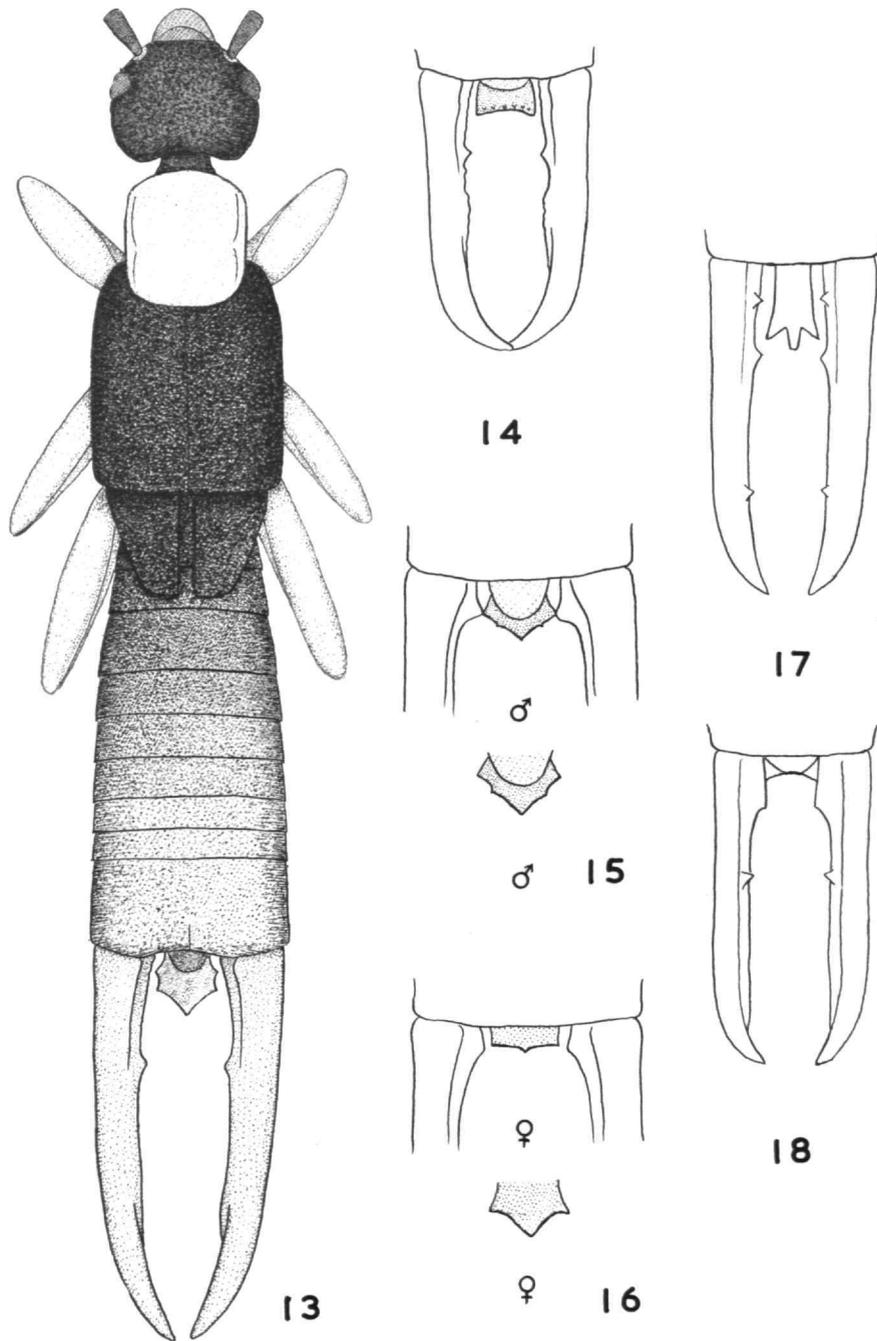
recorded from the West Indies, Paraguay, Guatemala, and Nicaragua, but these records may refer to one of the other species of *Parasparatta*.

### *Parasparatta dominicana*, new species

FIGURES 13, 14

In the key to species of *Parasparatta* in Brindle (1968, p. 296), the present species would key down to *Parasparatta quinquepunctata* Borelli, from Brazil, and it appears to be most closely related to this species. From *quinquepunctata*, the male of *dominicana* differs by having a pentagonal pygidium with small teethlike projections on the angles (Figure 13). In the male of *quinquepunctata*, the pygidium also has five teeth, but these are arranged on the triangular distal part of the pygidium, the pygidium itself is pentagonal but short (Figure 15). The female pygidium of *quinquepunctata* has three small teeth (Figure 16), while that of *dominicana* has the posterior margin smoothly concave (Figure 14).

MALE.—Length body 7.5 mm, forceps 3.5 mm.



FIGURES 13-18.—*Parasparatta*: 13,14, *dominicana* new species, male dorsal and female forceps; 15,16, *quinquepunctata* Borelli, pygidia; 17,18, *nigrina* (Stål) male and female forceps.

Head, elytra, and wings blackish; antennae dark brown; mouthparts, pronotum, and legs yellow; abdomen reddish brown, darkened basally; forceps yellowish brown.

Head broad, depressed, sutures absent, lateral margins rounded and posterior margin concave; eyes small. Antennae 12-segmented in type, first segment shorter than distance between the antennal bases; second segment quadrate; ratio of first six segments as follows: 12 : 2 : 6 : 6 : 8 : 9. Distal segments not greatly elongated, but strongly narrowed toward bases. Pronotum quadrate, very slightly narrower posteriorly, lateral margins straight, and posterior margin convex. Elytra broad, twice as long as pronotum, posterior margin truncate; wings well developed. Head, pronotum, elytra, and wings evenly and closely covered with fine hairs, pale on head and pronotum, dark on elytra and wings, the hairs stronger on the lateral margins.

Legs with femora strongly widened but laterally compressed; tibiae broadest about basal third, laterally compressed; tarsi cylindrical, basal segment as long as both distal segments in all legs; legs pubescent, femora and tibiae with longer and stiffer hairs; tarsi with numerous short ventral yellow hairs; claws relatively long.

Abdomen gradually widened distally, tergites pubescent and punctured, and with long marginal setae laterally; dorsal margins of tergites with minute tubercles; last tergite transverse, posterior margin depressed medially between the bases of the forceps; penultimate sternite with posterior margin evenly rounded.

Forceps with branches well separated at base, each branch only slightly curved, trigonal for basal two-thirds, inner margin flattened and forming a narrow ventral flange, the flange with a tooth about one-third from base, the rest of the flange with margin irregular; a small longitudinal dorsal ridge at base; distal part of each branch cylindrical. Pygidium declivent, angular ventrally, lateral margins with two small toothlike projections, distal half triangular in shape, dorsal margin of pygidium rounded.

**FEMALE.**—Length: body 7 mm, forceps 2.5 mm. Similar to male, but tergites 1–7 more reddish in color; forceps shorter, each branch well separated at base, trigonal for basal two-thirds, inner margin flattened, the margin of this flange crenulated and with one or more larger teeth. Pygidium transverse,

lateral margins slightly convex, posterior margin concave.

**MATERIAL.**—Holotype male: Dominica, En Haut Jean, 7 December 1964, P. J. Spangler (USNM 71218); allotype female, data as holotype. Paratypes: Syndicate Est, 6 March 1964, Dale F. Bray, 1 ♂; En Haut Jean, 7 December 1964, P. J. Spangler 3 ♀; Pont Casse, 12 March 1965, W. W. Wirth, 3 ♂; S. Chiltern Est., 17 August 1965, D. M. Anderson 1 ♀.

All the types are in the United States National Museum, except for one paratype male (Pont Casse) and one paratype female (En Haut Jean), in the Manchester Museum. The paratypes vary in size from 6–8 mm in body length, the forceps of the males measuring between 2.5–3.5 mm, and those of the females measuring between 1.5–2.5 mm.

#### Subfamily LABIINAE

A subfamily of mainly small species; the eyes are always small and the elytra and wings usually punctured and pubescent. The genus *Labia* Leach is related to some genera of the Spongiphorinae, while the Old World genus *Chaetospania* Karsch is more related to the genera of the Sparattinae. Two genera are recorded from the New World, of which one, *Purex* Burr is restricted to the mainland of South and Central America, but the other genus, *Labia* Leach, has a wider distribution and is recorded from the West Indies.

#### Genus *Labia* Leach

*Labia* Leach, 1815, p. 118 [type-species: *Forficula minor* Linnaeus, by monotypy].

Small to very small species; eyes small; basal antennal segments relatively short, distal segments more or less cylindrical, but sometimes moniliform; elytra and wings often normally developed, elytra always pubescent and usually punctured. Forceps of males often with slender branches, widely separated at base, but sometimes short and broad; forceps of female with branches contiguous.

The species of this genus occur in all faunal Regions, but are mainly distributed in the tropical and subtropical parts of the Old World. Two species, *Labia minor* (Linnaeus) and *Labia curvicauda*

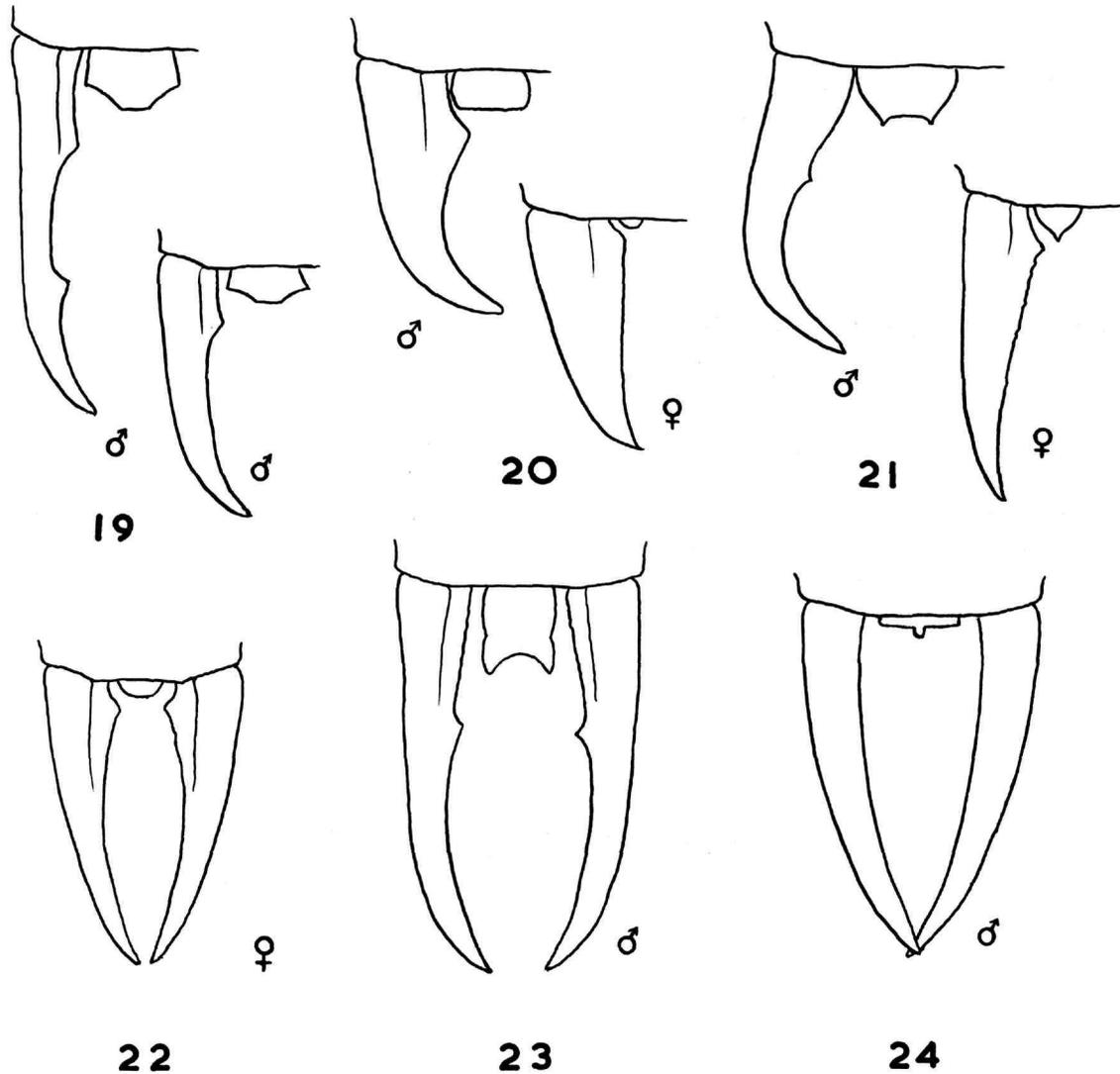
(Motschulsky) are cosmopolitan in distribution, but the former is mainly temperate or subtropical in distribution, whereas the latter is subtropical or

tropical. *L. minor* occurs in the Nearctic Region but not in the Neotropical Region.

Two species occur in Dominica.

**Key to Dominican species of *Labia***

- 1. Elytra and wings dark brown to blackish, not metallic, punctured and pubescent; abdomen reddish. Forceps of both sexes short, very broad at base . . . . . *L. curvicauda* (Motschulsky)
- Elytra and wings blackish, with a metallic sheen, impunctate and almost glabrous; abdomen dark brown or dark reddish. Forceps of both sexes more slender . . . *L. dorsalis* Burmeister)



FIGURES 19-24.—Forceps: 19, *Marava unidentata* (Beauvois); 20, *Labia curvicauda* (Motschulsky); 21, *Labia dorsalis* (Burmeister); 22, *Marava unidentata* (Beauvois); 23, *Marava dominicae* (Rehn and Hebard); 24, *Spongovostox ghilianii* (Dohrn).

***Labia curvicauda* (Motschulsky)**

## FIGURE 20

*Forficesila curvicauda* Motschulsky, 1863, p. 2 [Ceylon].  
*Labia curvicauda* (Motschulsky), Burr, 1911b, p. 56. —Rehn  
 and Hebard, 1917, p. 640.

Recorded from Cuba, Haiti, Dominican Republic, Jamaica, Puerto Rico, Trinidad, and St. Vincent in the West Indies, but not previously recorded from Dominica.

LENGTH.—Body 4–5 mm, forceps 0.5–0.75 mm. A small depressed species, head, pronotum, elytra, and wings blackish, rather shining; legs yellowish, femora darkened basally; abdomen and forceps reddish; sometimes the pronotum is yellow. Head cordiform, posterior margin concave, antennal segments moniliform; pronotum small, much narrower, than head, quadrate; elytra and wings almost always fully developed, with pale pubescence; legs short; abdominal tergites punctured and pubescent. Each branch of male forceps short, trigonal and broad at base, the broad part forming a large tooth; distal part of branch cylindrical and curved; pygidium large and transverse; forceps of female with branches contiguous, except at extreme base, branches very broad at base, evenly narrowed distally; pygidium small and rounded.

MATERIAL.—Dominica, S. Chiltern, 25 March 1964, Dale F. Bray, 1 ♀; Belle Fille River, 3 miles southwest of Castle Bruce, 400 ft, 1 January 1965, R. T. Bell, 1 ♀; Clarke Hall, 1–10 and 11–20 November 1965, W. W. Wirth, 2 ♂, 1 ♀.

WORLD DISTRIBUTION.—Occurs in all faunal Regions, and is almost circumtropical in distribution. It is an adventive in many countries but is restricted to tropical or subtropical climates, in which conditions it can become established. It extends from Brazil as far north as Florida on the mainland of America.

***Labia dorsalis* (Burmeister)**

## FIGURE 21

*Forficula dorsalis* Burmeister 1838, p. 754 [Colombia].  
*Labia chalybea* Dohrn, 1864, p. 429 [Venezuela].  
*Labia glabricula* Kirby, 1891, p. 520 [Brazil].

*Labia trinitatis* Bruner, 1906, p. 136 [Trinidad].  
*Labia annulata* (Fabricius), Burr, 1911b, p. 56 [partim].  
*Labia dorsalis* (Burmeister), Rehn and Hebard, 1917, p. 641.

The present species occurs mostly on the mainland of South and Central America, but is known from the Dominican Republic, Cuba, Trinidad, and Montserrat, in the West Indies. It is recorded from Dominica in Burr (1910, p. 456) as *Labia trinitatis* Bruner.

LENGTH.—Body 5 mm, forceps 0.5–0.75 mm. A small, rather broad and depressed species; head, pronotum black, shining; elytra and wings black, with a distinct metallic sheen; antennae brown or darker, segments moniliform; legs yellow, femora with at least basal half blackish, tibiae dark medially; abdomen and forceps reddish or darker. Branches of male forceps well separated at base, each branch slender, trigonal only at extreme base, cylindrical distally, very gently curved, and with a small inner tooth; pygidium large, narrowed distally, posterior margin concave and with a postero-lateral tooth at each side; forceps of female trigonal at extreme base, cylindrical distally, almost straight, broadened at base to form an obtuse tooth; pygidium narrow, with a pointed apex.

MATERIAL.—Dominica, S. Chiltern, 25 March 1964, Dale F. Bray, 1 ♂, 1 ♀; Fortune, 1 August 1964, T. J. Spilman, 1 ♂.

WORLD DISTRIBUTION.—Neotropical Region. Recorded from Brazil, Peru, Colombia, Venezuela, Surinam, Panama, Honduras, Costa Rica, and Mexico, as well as the records previously listed for the West Indies.

**Subfamily SPONGIPHORINAE**

The species of this subfamily are generally larger in size than those of the Labiinae; the elytra and wings are almost always impunctate and glabrous. Some of the Neotropical species are large, some males of certain species reaching a total length of nearly 40 mm, but half of this length is due to the length of the forceps. The eyes are often large or very large in size.

Six genera are Neotropical, but representatives of only two genera are recorded from Dominica.

## Key to Dominican genera of the SPONGIPHORINAE

1. Distal antennal segments more or less cylindrical; elytra often with yellow spots or patches ..... *Spongovostox* Burr  
 Distal antennal segments strongly moniliform; elytra unicolorous ..... *Marava* Burr

Genus *Spongovostox* Burr

*Spongovostox* Burr, 1911a, p. 59 [type-species: *Forficula quadrimaculatus* Stal, by original designation].

*Microvostox* Hebard, 1917a, p. 310 [type-species: *Spongovostox alter* Burr by original designation] [partim].

Small species, blackish or dark brown, often with yellow stripes on the elytra and wings; antennal segments rather long, cylindrical; elytra and wings normally developed. Forceps of male with branches well separated at base, pygidium often prominent; forceps of female with branches contiguous or almost so.

The species of this genus occur in the Ethiopian, Oriental, Australasian, Neotropical, and Nearctic Region, no species being cosmopolitan; all are endemic to one Region or other. One species is recorded from Dominica.

*Spongovostox ghilianii* (Dohrn)

FIGURE 24

*Labia ghilianii* Dohrn, 1864, p. 424 [Brazil, French Guiana, Venezuela].

*Labia ghilianii* Dohrn, Burr, 1911b, p. 56.

*Microvostox ghilianii* (Dohrn), Hebard, 1920, p. 348.

*Spongovostox ghilianii* (Dohrn), Brindle, in press (b).

This species has not been previously recorded from any island in the West Indies.

LENGTH.—Body 4.75–5.25 mm, forceps 1–1.25 mm. Head and pronotum black; antennae yellowish brown; elytra dark brown with a humeral yellow patch, not sharply defined; wings yellow at base; legs yellow, extreme base of femora darker; abdomen dark brown, blackish laterally and toward base; forceps dark brown or yellowish brown. Eyes very large. Each branch of male forceps slender, smooth, only slightly curved, widely separated at base; pygidium short, transverse, and with a dorso-medial peglike projection; forceps of female with branches slender, smooth, and more or less contiguous; pygidium small.

MATERIAL.—Dominica, 7 February 1964, Dale F.

Bray, 1 ♀; Clarke Hall, 23 March 1964, Dale F. Bray 1 ♀; 30 April 1964, O. S. Flint Jr., 2 ♂; 8 May 1964, O. S. Flint Jr., 1 ♀; Pont Casse, 8–13 October 1966, A. B. Gurney, 1 ♀.

This species has been rarely recorded since its first description, and there is some doubt as to whether all the original material examined by Dohrn (1864) is conspecific. The present specimens have been compared with a male type from Venezuela, in the Vienna Museum; the other specimens examined by Dohrn are presumably in the Zoological Institute, Warsaw, with the rest of his collection.

As now defined, this species is recorded from the three countries originally quoted—Brazil, French Guiana, and Venezuela, in addition to the present record for Dominica.

Genus *Marava* Burr

*Marava* Burr, 1911a, p. 60 [type-species: *Labia grandis* Dufour, by original designation].

*Prolabia* Burr, 1911a, p. 60 [type-species: *Forficula arachidis* Yersin, by original designation].

*Larex* Burr, 1911a, p. 60 [type-species: *Spongophora rogersi* Bormans, by original designation].

*Laprobia* Hincks, 1960, p. 29 [type-species: *Forficula unidentata* Beauvois, by original designation].

The above synonymy is given in Brindle (in press (b)); the genus is now interpreted rather widely, but there is a good deal of variation in structural features between various species, and a good deal of variation is intraspecific. In some species elytra and wings may be fully developed, or the elytra may be reduced and the wings concealed or absent; these differences may be associated with a difference in the size of the eyes, the form with fully developed elytra and wings having the larger eyes. All species however have the antennal segments strongly narrowed toward the bases, some of the basal antennal segments being almost conical in shape.

A revision of the Labiidae of the Old World is in preparation by the present author, and the exact limits of the distribution of *Marava*, as now defined,

is not clear. At present the genus is known to have species in all faunal Regions, and one species, *M. arachidis* (Yersin), is cosmopolitan in distribution.

Two species are recorded from Dominica, one species of which is restricted to the West Indies, and the other species is restricted to Dominica.

#### Key to Dominican species of *Marava*

1. Pronotum as broad as long; male pygidium with the posterior margin produced medially into a more or less triangular shape, but with the apex truncate . . . *M. unidentata* (Beauvois)
- Pronotum transverse; male pygidium with posterior margin deeply concave . . . . . *M. dominicae* (Rehn and Hebard)

#### *Marava unidentata* (Beauvois)

FIGURES 19, 22

*Forficula unidentata* Beauvois, 1805, p. 165 [San Domingo].  
*Labia brunnea* Scudder, 1876b, p. 258 [Cuba].  
*Prolabia unidentata* (Beauvois), Burr, 1911b, p. 12. —Rehn and Hebard, 1917, p. 647.  
*Laprobia unidentata* (Beauvois), Hincks, 1960, p. 156.  
*Marava unidentata* Beauvois, Brindle, in press (b).

Previously recorded from the Bahamas, Cuba, Haiti, Dominican Republic, and Jamaica. Not represented in the present collection, but a female from Dominica, without exact locality, is in the Manchester Museum.

**LENGTH.**—Body 5–7 mm, forceps 1.75–2.25 mm. This species has two forms, one in which the elytra are short and the wings absent or concealed, and a second form in which the elytra and wings are fully developed. Shining, reddish or yellowish brown, sometimes darker on head and pronotum; antennae brown, basal segments yellow; legs yellow; elytra reddish brown, dark brown when fully developed; wings, when present, dark brown with a basal yellow spot. Abdomen reddish brown, often dark brown or blackish laterally and at the base. Eyes small (wingless form) or large (winged form). Branches of male forceps trigonal at base, cylindrical distally, only slightly curved, inner margin of each branch with one basal and one distal tooth, but either of these teeth may be absent; there is, however, always one or two teeth on each branch. Pygidium variable in size, but similar in shape, always with posterior margin produced; female forceps with branches slender, almost straight, broader at base where there is a small obtuse tooth; pygidium small and rounded.

**WORLD DISTRIBUTION.**—West Indies, distribution as given above.

#### *Marava dominicae* (Rehn and Hebard)

FIGURE 23

*Prolabia dominicae* Rehn and Hebard, 1917, p. 643 (Dominica).  
*Marava dominicae* (Rehn and Hebard), Brindle, in press (b).

The original material from Dominica and described by Rehn and Hebard (1917) seems to be the only published record of this species. It seems to be certain, however, that the record of *Marava mexicana* (Bormans) from Dominica in Burr (1910, p. 456) refers to *Marava dominicae*. The pygidium of the male in both species is large, and has a deep excision on the posterior margin, but the excision of *mexicana* is triangular, while that of *dominicae* is semi-circular. *M. mexicana* is also smaller in size, with a body length of 4–4.5 mm, and the forceps measure 1.5–1.75 mm; the femora are entirely dark brown, and this species is confined to Mexico.

**LENGTH.**—Body 5–6 mm, forceps 1.8–2.5 mm. Dark reddish brown, shining; antennae dark brown, basal segments yellow; legs yellow, femora with brown rings, sometimes faint; forceps and pygidium yellowish brown. Elytra short and wings absent or concealed, or elytra and wings normally developed; eyes always large. Branches of male forceps widely separated at base, each branch trigonal basally, cylindrical distally, inner margin dentated, and with a larger tooth; pygidium large, posterior margin deeply concave; forceps of female similar to those of *unidentata*, but more slender.

**Material.**—Dominica, S. Chiltern, 6 February 1964, Dale F. Bray, 1 ♂; Syndicate Est, 6 March 1964, Dale F. Bray, 1 ♂, 1 ♀; 6 miles west of Pont Casse, 7 July 1964, T. J. Spilman, 1 ♀; Pont Casse, 2 miles northwest, 16 May 1965, D. R. Davis, 1 ♀; S. Chiltern, 17 August 1965, D. M. Anderson, 1 ♂, 1 ♀; Portsmouth, 19–21 October 1966, A. B. Gurney,

1 ♂; S. Chiltern, 2 November 1966, A. B. Gurney, 1 ♂, 1 ♀.

WORLD DISTRIBUTION.—Dominica.

### Family FORFICULIDAE

This large family consists of species of medium to large size; the species being distinctive by the structure of the second tarsal segment, and by the possession of a single penis and single distal lobe in the male genitalia. The second tarsal segment is flattened dorso-ventrally, and is more or less cordiform when seen from a dorsal viewpoint, the third, distal, segment arising from the dorsal surface of the second. The male genitalia is relatively simple in structure, the only visible structure in the distal lobe being the virga, which is often short, and which is often dilated basally, forming a vesicle. No sclerites or very prominent denticulated areas are associated with the distal lobe; denticulations do occur, but these are mainly inconspicuous. The parameres are usually only weakly sclerotized.

Five subfamilies may be recognized at present, although there is some uncertainty about the value of all these subfamilies. The subfamilies Anechurinae and Opisthocosmiinae are entirely Old World in distribution, only representatives of the Forficulinae, Neolobophorinae, and Ancistrogastriinae occur in the New World. Bey-Bienko (1936) regards the Anechurinae as forming part of the Forficulinae, and Burr (1911b) does include some New World genera in the Opisthocosmiinae, but these genera are now included in the other subfamilies. Only the subfamily Forficulinae is represented in Dominica.

### Subfamily FORFICULINAE

This rather large subfamily is mainly Old World in distribution, and only three genera are represented in the New World. Of these the genus *Forficula* Linnaeus, is only represented by a single adventive species, *F. auricularia* (Linnaeus). The other two genera are endemic to the New World: *Doru* Burr, and *Skalistes* Burr, of which the latter is restricted to the mainland of America. Recent studies have shown that species placed in another genus in Burr (1911b), *Anechura vara* Scudder and *A. biolleyi* Borelli, really belong to the genus *Skalistes*. The

single Australian species of *Doru* is thought to have been a possible introduction from America (Brindle, in press (c)).

One genus is represented in Dominica.

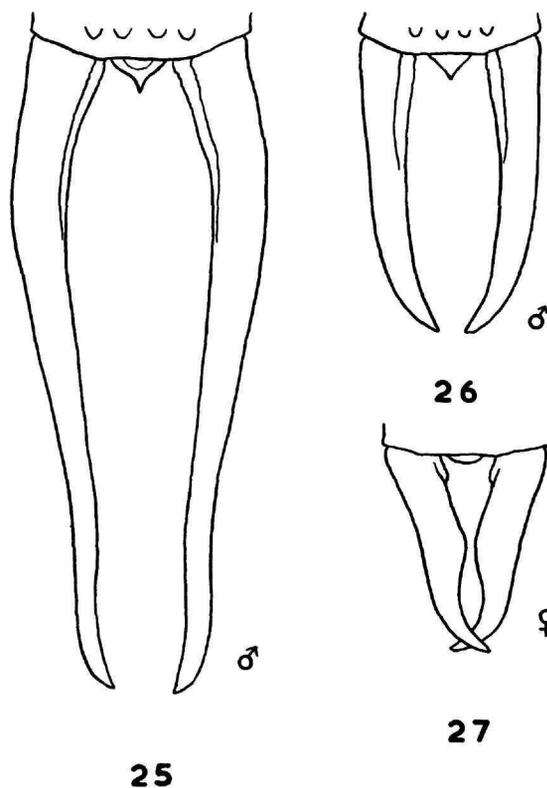
### Genus *Doru* Burr

*Doru* Burr, 1907, p. 123 [type-species: *Forficula linearis* Eschscholtz by original designation].

*Phaulex* Burr, 1911b, p. 78 [type-species: *Forficula albipes* Fabricius by original designation].

Very similar to *Forficula* in general features; slender or more robust insects, with long antennae and legs; abdomen more or less depressed; forceps of male slender, branches well separated at base and never greatly broadened; pygidium spinelike or spatulate; forceps of female with branches slender but contiguous, pygidium small and inconspicuous.

With the single exception of *Doru spiculiferum* (Kirby), known only from the originally described



FIGURES 25-27.—*Doru albipes* (Fabricius), forceps.

male specimen from New South Wales, and which is thought to have been an introduction, all the species of the genus are Neotropical or Nearctic. Of the thirteen species known, one is recorded from Dominica.

### *Doru albipes* (Fabricius)

FIGURES 25, 26, 27

- Forficula albipes* Fabricius, 1787, p. 224 [West Indies].  
*Forficula bimaculata* Beauvois, 1805, p. 165 [San Domingo].  
*Phaulex albipes* (Fabricius), Burr, 1911b, p. 78.  
*Doru bimaculata* (Beauvois), Burr, 1911b, p. 79.  
*Doru albipes* (Fabricius), Rehn and Hebard, 1917, p. 649.—  
 Menozzi, 1931, p. 324.  
*Doru bimaculatum* (Beauvois), Menozzi, 1931, p. 325.

Recorded from both the Greater and Lesser Antilles—Cuba, Dominican Republic, Haiti, Puerto Rico, Tortola, Dominica, and St. Vincent.

LENGTH.—Body 8–15 mm, forceps 2.5–10 mm (males), 2–3 mm (females). Head black; antennae brown, basal segments yellow; pronotum yellow with

black longitudinal stripes of varying width; elytra dark brown or blackish, with a large yellow anterior spot; wings yellow; legs yellow; abdomen blackish; forceps dark red. Last tergite of male with four tubercles arranged transversely near the posterior margin. Male forceps evenly curved or sinuate, without any inner teeth on the branches; the branches variable in length; pygidium triangular, or with the apex produced into a short spine; forceps of female short, branches more or less straight, inner margin broader medially; pygidium small, rounded.

MATERIAL.—Dominica, Clarke Hall, 8 May 1964, O. S. Flint, Jr., 1 ♀; 26–30 November 1964, P. J. Spangler, 1 ♀; 1–7 December 1964, P. J. Spangler, 2 ♂, 2 ♀; 5 February 1965, J. F. G. Clarke and Thelma M. Clarke, 1 ♂, 2 ♀; Hodges R. Mouth, Swamp Forest, 27 February 1965, W. W. Wirth, 1 ♂; Clarke Hall Est. 16 July 1965, D. M. Anderson, 1 ♂; 6 September 1965, D. M. Anderson 2 ♂; 19 April 1966, R. Gagne, 1 ♂; Pont Casse, 23–27 October 1966, A. B. Gurney, 2 ♀.

WORLD DISTRIBUTION.—West Indies.

### List of Dermaptera recorded from Dominica

<i>Dermaptera</i>	Endemic to Dominica	Endemic to West Indies	South and Central America	Cosmopolitan	In present collection	Previously recorded
<b>CARCINOPHORIDAE</b>						
1. <i>Anisolabis maritima</i> (Bonelli) .....				X		X
2. <i>Euborellia stáli</i> (Dohrn) .....				X	X	
3. <i>Euborellia carai-bea</i> Hebard .....		X				X
4. <i>Carcinophora percheron</i> Guerin-Meneville and Percheron) .....			X		X	
<b>LABIDURIDAE</b>						
5. <i>Labidura xanthopus</i> (Stål) .....			X		X	
<b>LABIIDAE</b>						
6. <i>Parasparatta nigrina</i> (Stål) .....			X			X
7. <i>Parasparatta dominicana</i> , new species .....	X				X	
8. <i>Labia curvicauda</i> (Motschulsky) .....				X	X	
9. <i>Labia dorsalis</i> (Burmeister) .....			X		X	X
10. <i>Spongovostox ghilianii</i> (Dohrn) .....			X		X	
11. <i>Marava unidentata</i> (Beauvois) .....		X				
12. <i>Marava dominicae</i> (Rehn and Hebard) .....	X				X	X
<b>FORFICULIDAE</b>						
13. <i>Doru albipes</i> (Fabricius) .....		X			X	X
Total .....	2	3	5	3	9	6

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