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Further Notes on Dermaptera in the Hamburg Museum

by A. BRINDLE [1])

The following notes form a continuation of the previous paper (BRINDLE, 1966 a) on some of the Dermaptera in the Hamburg Museum, and include one important amendment to this paper. Professor Dr. H. WEIDNER has kindly loaned a series of specimens of the family Carcinophoridae, which have been useful in connection with a revision of this family now in preparation by the present author, and some of these specimens are discussed in the present paper. A key to the Neotropical species of the genus *Carcinophora* is also given.

The amendment referred to above concerns a species, *Vara nevermanni*, which was described as new in BRINDLE (1966 a), but further research has shown that this is identical to *Sarcinatrix anomalia* REHN, and the synonymy is discussed below.

I wish to express my sincere thanks to Professor Dr. H. WEIDNER, for the loan of the specimens concerned.

Synonymy

It was stated in the previous paper (BRINDLE 1966 a) that *Vara nevermanni* belonged to the subfamily Opisthocosmiinae (Forficulidae), but *Sarcinatrix anomalia*, with which *Vara* must be synonymized, is included in the subfamily Ancistrogastrinae (Forficulidae) in BURR (1911). This latter placing is obviously an error, and this error was rectified by HEBARD (1917), but this latter paper was, unfortunately, previously overlooked.

When REHN (1903) originally described *Sarcinatrix anomalia*, he regarded *Sarcinatrix* as a subgenus of *Opisthocosmia*. In 1907 BURR raised *Sarcinatrix* to generic rank and included a second species, *rehni*, in the genus. *S. rehni* was described as new in the same paper, and the genus was retained in the Opisthocosmiinae. In 1910 BURR transferred *rehni* to a new genus *Dinex*, so that *Sarcinatrix* became once more monotypic, and also remained in the subfamily Opisthocosmiinae, although BURR (1. c.) remarked that an examination of the type of *S. anomalia* showed that it was essentially Ancistrogastrine. This remark was probably based on the structure of the penultimate sternite, but the slender body of *S. anomalia* is totally unlike the broad depressed body of most of the Ancistrogastrinae.

In 1911, BURR included *Sarcinatrix* in the subfamily Ancistrogastrinae, although the genus does not show the characters given by BURR (1. c.) in the key to the subfamilies of the Forficulidae. HEBARD (1917) remarked on this discrepancy when he transferred *Sarcinatrix* to the subfamily Opisthocosmiinae.

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A good deal of the difficulty in the taxonomy of the Dermaptera arises from the unsatisfactory distinctions between certain subfamilies and genera as given in BURR (1911), but as yet this is the only work in which such keys are given to all the Dermaptera. HINCKS (1955, 1959) has placed the families Diplatyidae and Pygidicranidae on a very sound basis, whilst BRINDLE (1966b, 1966c, 1966d) has given a revision of the family Labiduridae. The latter author is preparing further papers on the taxonomy of the four remaining families of the Dermaptera, so that when these are completed, such synonymy as outlined in the present paper can be avoided.

The synonymy discussed therefore is as follows:

Opisthocosmia (Sarcinatrix) anomalia REHN 1903, Proc. Acad. nat. Sci. Philad. **1903:** 308.

Sarcinatrix anomalia REHN, BURR 1907, Trans ent. Soc. Lond. **1907:** 102. — BURR, 1910, Proc. U. S. natn. Mus. **38:** 461. — BURR, 1911, Genera Insectorum **122:** 87. HEBARD, 1917, Trans. Amer. ent. Soc. **43:** 332.

Vara nevermanni BRINDLE 1966, Ent. Mitt. Zool. Staatsint. Zool. Mus. Hamburg **3:** 15—16, **syn. nov.**

The male genitalia has not been figured previous to BRINDLE (1966a).

The genus *Carcinophora* SCUDDER

The Neotropical species of the subfamily Carcinophorinae (Carcinophoridae) fall into four genera, which are separable on the shape of the parameres of the male genitalia, and also partially on external characters. These latter characters, however, tend to vary within a genus, so that the structure of the male genitalia is the main criterion as to which genus any particular species belongs. Unfortunately a number of Neotropical species have been described from single females, whilst in other species the male genitalia is not known, so that the present placing of these species must be provisional and based on external characters. The four genera may be separated as follows:

1 Parameres of male genitalia short, about as long as broad; wings absent, elytra rudimentary or absent; smaller species . . . . . *Euborellia* BURR

— Parameres of male genitalia long, much longer than broad . . . 2

2 Parameres rounded at tip; elytra and wings absent . . . . . *Anisolabis* FIEBER

— Parameres acuminate or pointed at tip 3

3 Parameres strongly acuminate at tip; elytra and wings absent or rudimentary . . . . . *Metalabis* BURR

— Parameres pointed at tip but not strongly acuminate; at least elytra present and meeting along sutures; wings often present *Carcinophora* SCUDDER

Spandex BURR is synonymous with *Carcinophora*, whilst *Mandex* BURR is probably synonymous with *Metalabis*, but this has to be investigated. The above arrangement is a modification to that given by POPHAM and BRINDLE (1966).

The genus *Carcinophora* is therefore characterized by the shape of the parameres of the male genitalia, and by the possession of elytra, and often also wings. The external characters have been used in the past to place species described from single females, and until the male genitalia of all the species can be examined, there must be some doubt as to the generic affinities of these species. *Carcinophora minima,* for example, seems hardly likely to be a true *Carcinophora* on account of its very small size, whilst the original figure of *C. croceipes* given by Moreira resembles a female specimen of the family Labiidae.

The male genitalia have scarcely been used at all in the taxonomy of the Neotropical *Carcinophora,* and consequently the exact limits of variation in any species are not known. This difficulty is increased by the inadequate descriptions of certain species.

The original description of *C. americana* is very short, although a figure is given, and the various interpretations of this species suggest that it is extremely variable in colour, and in the degree of development of the elytra and wings. REHN and HEBARD (1917) listed the forms of this species as follows:

1 Elytra with yellowish-orange band; wings fully developed; legs and antennae rather dark . . . . . (a)
procera (BURMEISTER)
distincta (GUERIN and MENEVILLE)
— Elytra unicolorous, dark 2
2 Wings entirely concealed; legs and antennae pale . . . . . (b)
robusta (SCUDDER)
columbiana (BORMANS)
— Wings visible 3
3 Wings strongly projecting; legs and antennae rather dark . . (c)
americana (BEAUVOIS)
— Wings very slightly projecting; legs and very dark . . . . (d)
gagatina (KLUG)
buscki (REHN)

If these forms really belonged to the same species, it would indicate that *americana* is extremely variable, but REHN and HEBARD (1917) did not, apparently, examine the male genitalia of these forms. BURR (1915) has figured the male genitalia of *americana* and *robusta,* and these figures show that the genitalia of the former is different to that of the latter, so that these two represent distinct species.

In the material from the Hamburg Museum are specimens which are referable to both (a) and to (b), but the male parameres of these are not alike. A specimen from Venezuela, in the Manchester Museum, which corresponds most nearly to (d) has parameres of another shape, and the specimen is much more slender than the others. From this it is clear that at least some of the forms of *americana* as given previously, are really distinct species and not colour forms or geographical races of one species.

In the original description of *americana,* BEAUVOIS described the general body colour as castaneous, and the legs as yellowish-brown. His figure (pl. XIV, fig. 1) shows that the elytra and wings are fully developed, although the actual size of the insect is not indicated. He does not men-

tion or show that the median part of the elytra has a yellow patch, so that the type *americana* must be mainly castaneous in colour, with the legs yellowish-brown.

Some of the specimens in the Hamburg Museum material, which are very similar to (a), have the elytral patch obscure, so that the elytra are almost unicolorous, with the median part lighter. These are from Haiti, and since the original *americana* was recorded from St. Domingo (presumably Santo Domingo, the former name of the capital of the Dominican Republic) on the same island, it would appear that these darker specimens represent the true *americana* .This dark form is apparently confined to Haiti and the Dominican Republic, but specimens with the yellow elytral patch also occur in Haiti. There does not appear to be any significant difference between the male genitalia of the dark form and the lighter form, so that the names *americana, procera,* and *distincta* are considered to be synoymous, i. e. in the key of REHN and HEBARD (1917) forms (a) and (c) are the same species.

It is notable that the specimens of *americana* from the Hamburg Museum are from various countries, ranging from Columbia and Ecuador in the south to Costa Rica and Cuba in the north. No variation occurs in the colour of the legs, and in most the yellow elytral patch is prominent. Only in some of the specimens from Haiti is the patch obscured.

As regards form (b), *robusta* is dark brown with yellowish legs; the elytra are short, about as long as the pronotum, and the wings are absent or entirely concealed. The specimens from the Hamburg Museum referred to (b) agree very well with the description of *robusta,* and the parameres of the males agree in shape with those of a microscopical mount, labelled *robusta,* in the British Museum (Natural History), presumably mounted by BURR. The specimens from the Hamburg Museum referred to (b) are therefore considered to be *robusta,* although all are from Costa Rica, and this represents a large northward extension of the known range of this species.

The colour of *gagatina* was originally described as fusco-nigra, the legs as piceous, and the wings as scarcely projecting beyond the elytra (alis elytra vix superantibus). It was described from Porto Rico. REHN and HEBARD (1917) mention some specimens from Porto Rico which were shining black, and these specimens seem to be referable to *gagatina,* although the colour of the legs is not given. The specimen from Venezuela in the Manchester Museum also seems to be referable to *gagatina,* although the wings are not visible. This specimen is a much more slender species than *americana* or *robusta,* and the male genitalia suggest that it is quite distinct. The legs are yellowish but the femora are strongly banded with black, and the tibiae are rather darkened.

It would appear therefore that *gagatina* is certainly distinct from *americana* and *robusta,* so that the synonymy of the three species recognised here is as follows

1. *americana* = *procera* = *distincta.*
2. *robusta* = *columbiana.*
3. *gagatina* = *buscki.*

This is adopted in the folowing key to species.

Carcinophora Scudder

Carcinophora Scudder 1876, Proc. Boston Soc. nat. Hist. **18:** 291 (type species by original designation, *Forficula americana* Palisot de Beauvois 1817).
Psalis Serville 1831, Ann. Sci. nat. **22:** 34 (pre-occupied by *Psalis* Huebner 1823, Lepidoptera).
Spandex Burr 1915, J. R. micr. Soc. **1915:** 537.

Key to species

1 Elytra of normal length, longer than the pronotum; wings present and usually visible, at least slightly 2
— Elytra short, about as long as pronotum or shorter; wings absent or entirely concealed 10

2 Elytra not entirely unicolorous, median part of each elytron at least lighter in colour 3
— Elytra unicolorous, dark brown or blackish 6

3 Each elytron black, with a median and a lateral yellowish stripe; Ecuador (male type only) . . . . . *haenschi* (Burr)
— Each elytron black or dark brown with a rounded or transverse yellowish mark, the mark sometimes obscure 4

4 Each elytron with a central large yellowish patch, the patch sometimes obscure, but median part of each elytron always lighter in colour; South and Central America . . . . . *americana* (Palisot de Beauvois)
— Each elytron with a small yellow spot towards anterior margin 5

5 Elytral spot more than its own width away from anterior margin; wings with basal part yellow, apices dark; head usually reddish; legs entirely yellow; antennal segments variegated in colour; South and Central America . . . *percheron* (Guerin and Percheron)
— Elytral spot usually nearer to the anterior margin; wings diagonally yellow, the exterior angle dark; head dark brown; legs yellow with femora banded with black; antennal segments uniformly brown; Ecuador . . . . . *rosenbergi* (Burr)

6 Very small species, total length 4.7 mm; Brazil . . . . . *minima* (Moreira)
— Larger species, at least 10 mm in length 7

7 Wings obscurely yellow, either at base or medially 8
— Wings entirely dark 9

8 Wings obscurely yellow at base; Paraguay, Peru (two females only) . . . . . *scudderi* (Bormans)
— Wings obscurely yellow medially; Trinidad (female type only) *nigra* (Caudell)

9 Smaller, body length 12 mm; wings strongly projecting, legs yellowish-brown, rather infuscated; Brazil . . . . . *brasiliensis* (Moreira)
— Larger, body length 18 mm or above; wings concealed or only slightly projecting; legs blackish at least partially; Porto Rico *gagatina* (Klug) *(buscki* Rehn)

10 Elytra with a median yellow spot; Brazil, Venezuela (female type) *festiva* (Burr)
— Elytra not spotted 11

11 Small species, body length 7.4 mm; Martinique (female type only) *waddyi* (BURR)
— Larger species, body length over 10 mm 12
12 Posterior margin of elytra straight, elytra about equal in length to pronotum; larger species, body length 18 mm or more; South and Central America . . . . . *robusta* (SCUDDER)
— Posterior margin of elytra obliquely truncate, elytra shorter than pronotum, smaller species, body length 12—18 mm; Paraguay, Peru *burri* (BORELLI) (*compacta* HEBARD)

Psalis croceipes MOREIRA, from Brazil, described from a single female, appears to belong to the family Labiidae according to the original figure, but this is to be further investigated.

The following specimens are in the material from the Hamburg Museum:

Carcinophora percheron (GUERIN and PERCHERON)

Forficula percheron GUERIN and PERCHERON 1838, Gen. Ins. **6**: 4.
F. elegans KLUG in BURMEISTER 1839, Handb. Ent. **2**:
Psalis pulchra REHN 1903, Proc. Acad. nat. Sci. Philad. **1903**: 303.
Labia pictipennis BRUNER 1906, J. N. Y. ent. Soc. **14**: 138.

Head reddish, legs yellow; otherwise shining black or dark brown with one transverse yellow spot on each elytron and wings partially yellow, antennae yellow and black. — Length: body 13—18 mm, forceps 2—3 mm. — Distribution: Trinidad, Costa Rica, Panama, Guayana, French Guiana, Brazil.

One specimen, without locality (DE SAUSSURE) determined by BORELLI as *percheron*.

Carcinophora rosenbergi (BURR)

Psalis rosenbergi BURR 1899, Ann. Mag. nat. Hist. (7) **4**: 253.

Shining blackish brown or dark brown; legs yellow, femora banded with black; antennae dark brown; elytra with an anterior yellow spot; wings partially yellow. — Length: body 10—15 mm, forceps 1.5—2.5 mm Distribution: Ecuador.

A fine series in the Hamburg Museum, all from Ecuador (Pucay or Bucay) OHAUS leg.

Carcinophora americana (PALISOT DE BEAUVOIS)

Forficula americana PALISOT DE BEAUVOIS 1817, Ins. Rec. Afr. Amer. (Orth.): 165.
F. distincta GUERIN and MENEVILLE in RAMON 1856, Hist. Ins. Cuba **7**: 136.
F. procera BURMEISTER 1839, Handb. Ent. **2**: 753.

Reddish-brown to blackish-brown; legs yellow; antennae brown, basal segments yellow; each elytron with a large median yellow patch usually well marked, sometimes obscured. — Length: body 20—38 mm, forceps 4—6 mm. — Distribution: Costa Rica, Panama, Nicaragua, West Indians, Ecuador, Columbia, Peru.

Numerous specimens in the Hamburg Museum from Columbia, Ecuador, Guatemala, Costa Rica, and one interesting record „Hamburg, lebend mit Holz aus Cuba". Some of the specimens from Ecuador are very small, and the general colouration of these is reddish-brown.

Bormans 1893 *(Biologia Centrali Americana-Orthoptera)* lists both *americana* and *gagatina,* but his figure, given as *gagatina* (Pl. 1, fig. 5) shows that the specimen is fully winged and has a median yellow patch on the elytra. The legs are also light in colour. This figure should be re-named as *americana.*

Carcinophora robusta (Scudder)

Chelidura robusta Scudder, 1869 Proc. Boston Soc. nat. Hist. **12:** 344.
Psalis columbiana Bormans 1883, Ann. Soc. ent. Belge. **27:** 61.
Psalis fusca Borelli 1904, Boll. Mus. Zool. Anat. comp. Torino **1904:** 1. **syn. nov.**

Dark brown, elytra short, wings absent or entirely concealed; legs yellow; abdomen strongly broadened posteriorly, but ultimate tergite narrower. — Length: body 18—25 mm, forceps 4—6 mm. — Distribution: Ecuador, Columbia, Costa Rica.

The specimens from the Hamburg Museum form the above record from Costa Rica. In view of the difference in areas, it is hoped to compare these with the type of *robusta.*

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