

REPORT ON A COLLECTION OF MALLOPHAGA, LARGELY MEXICAN (PART I)

M. A. CARRIKER, JR.

(Continued from p. 146, Vol. 37, No. 3)

Superfamily ISCHNOCERA

FAMILY PHILOPTERIDAE

Acidoproctus hopkinsi mexicanus, n. subsp.

(Figures 8 and 9)

Types, male and female adults, from *Dendrocygna a. autumnalis* (Linn.), collected by Charles Shaw at Tamuín, San Luis Potosí, September 19, 1946.

DIAGNOSIS.—Closely related to and conspecific with *A. hopkinsi* Carriker,¹ from *Dendrocygna autumnalis discolor* of Colombia. It differs from *A. h. hopkinsi* in the following characters: the frontal emargination of the head is closed apically by the drawing together of the tips of the *frons*, so that they touch each other (see figure).

In *hopkinsi* there is a slight tendency towards this closing of the emargination, the sides of the opening not being parallel-sided as in *rostratus* and others of the genus.¹ The pre-antennary portion of the head in *mexicanus* is wider than in *hopkinsi*, and there are slight differences in the structure. The entire insect is smaller in most measurements than *hopkinsi*, the exceptions being in the length of the pterothorax, which is the same in the male and greater in the female, and in length of the antennae which are longer in both sexes.

The chaetotaxy of the sternal genital plate in the female and the structure of the sclerite itself are also different (compare figures of the two).

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	3.17	—	3.73	—
Head {				
<i>frons</i>	—	.49	—	.51
temples .....	.825	.64	.825	.651
emargination .....	.175	.13	.174	.152
Prothorax .....	.29	.347	.282	.41
Pterothorax .....	.434	.67	.423	.705
Abdomen	1.95	.684	2.49	.868
Antennae .....	.40	.068	.326	.06
Basal plate .....	.175	.13		
Paramers .....	.163	.105		
Endomera .....	.13	.06		

¹ Proc. U. S. Nat. Mus., 1949, vol. 100, pp. 377-380.

In *mexicanus* there are 13 heavy spines on each side of the genital plate instead of 9 as in *hopkinsi*, and the spines are thicker, while there is an additional row of about 10 very short and thick spines just inside the long ones, instead of the row of fine setae further inside as in *hopkinsi*. The basal plate in the male is shorter and wider and the paramers are the same in both measurements, but the endomera are shorter and wider and slightly different in shape. There are two setae at the tip of each paramer instead of one as in *hopkinsi*.

There is a slight error in the figure of the endomera as given for *hopkinsi*, the lateral emarginations being covered by a very thin, transparent membrane, as in *mexicanus*.

The species is represented by the male holotype, female allotype, and 1 male paratype; the last is now in the collection of the author.

Anatoecus bipunctatus (Giebel), 1874

Docophorus bipunctatus Giebel, Insecta Epizoa, p. 116. Host: *Mergus (m.) merganser* (Linn.).

Three males were taken from a specimen of *Mergus merganser americanus* Cassin, collected by George H. Lowery, at Lawrence, Kansas, U. S. A., November 7, 1946.

While the type of this species came from the European Merganser, the two are very closely related. I have examined specimens of *Anatoecus* from numerous species of American ducks, and specimens from different genera of ducks are often extremely similar. Apparently there has been very little differentiation in this parasite with the evolution of the numerous genera and species of ducks. Taking this fact into consideration, I feel that I am warranted in calling the present specimens of *Anatoecus* the same as those from the European Merganser, although I have not been able to compare them directly with European material.

Austrophilopterus minutus Carriker, 1950

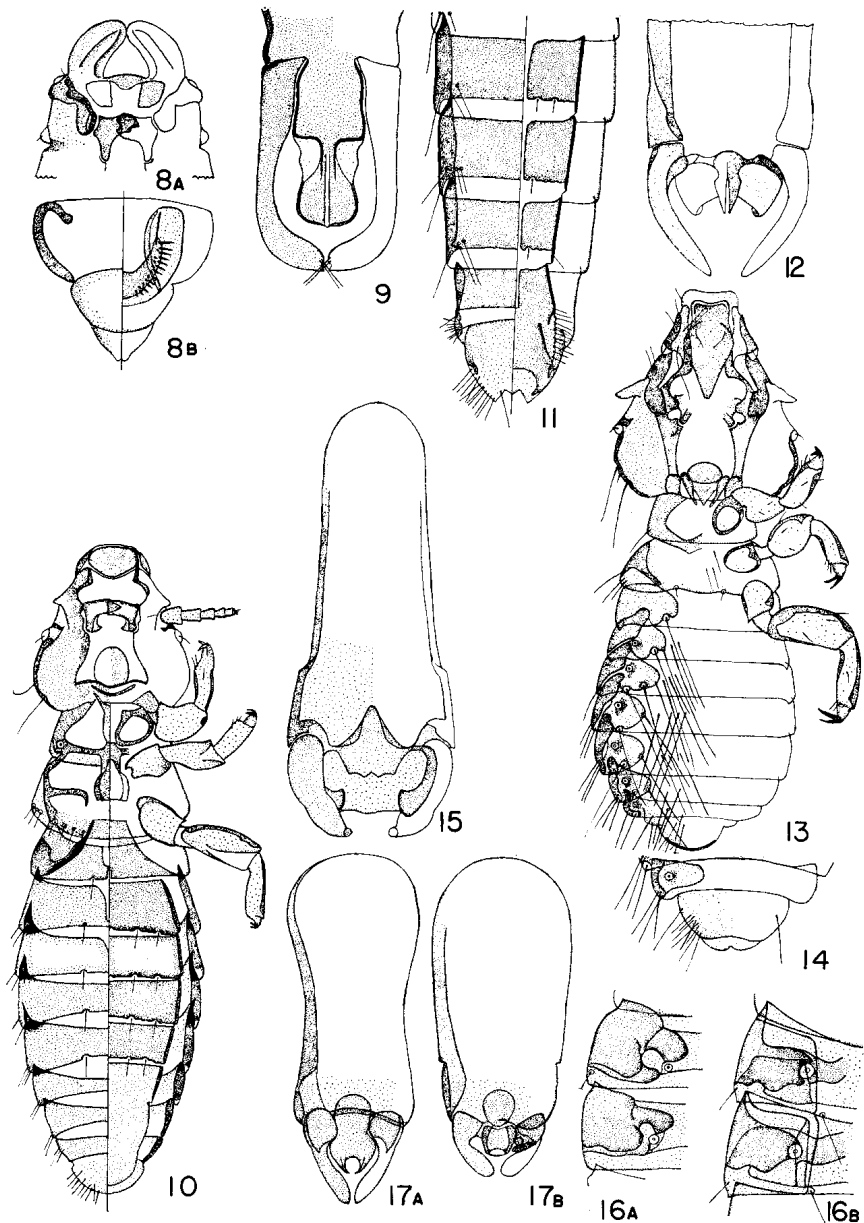
Rev. Brasil Biol., vol. 10, p. 186, figs. 44-46. Host: *Aulocorhynchus p. prasinus* (Gould).

A series of 1 male, 4 females, and 3 nymphs were taken on the type host, collected by Robert J. Newman at Xilitla, San Luis Potosí, February 7, 1947. These have been compared with the types of the species and are the same. In the collection there is also a nymph of this species labelled as from *Vireo solitarius*, collected on February 8. This is an obvious straggler from a Toucan collected the previous day. There is also another adult female labelled as coming from *Psilorhinus morio*, collected at the same place on February 14. This is also an obvious straggler from the Toucan, most likely being accidentally mixed with the material from *P. morio* during the process of mounting.

Cummingsiella inexpectata, n. sp.

(Figures 10, 11 and 12)

Types, male and female, from *Recurvirostra americana* Gmelin, collected by Charles Shaw at Ebano, San Luis Potosí, November 6, 1946.



- Fig. 8a. *Acidopractus hopkinsi mexicanus*, male, front and head
 Fig. 8b. *A. h. mexicanus*, female, tip of abdomen
 Fig. 9. *A. h. mexicanus*, male, genitalia
 Fig. 10. *Cummingsiella inexpectata*, male
 Fig. 11. *C. inexpectata*, female, abdomen, segments IV-VIII
 Fig. 12. *C. inexpectata*, male, genitalia
 Fig. 13. *Strigiphilus viridicus*, male
 Fig. 14. *S. viridicus*, female, tip of abdomen
 Fig. 15. *S. viridicus*, male, genitalia
 Fig. 16a. *Briüella laticeps laticeps* (Piaget), male, pleurites III and IV
 Fig. 16b. *B. l. prasina*, male, pleurites III and IV
 Fig. 17a. *B. l. laticeps*, male, genitalia
 Fig. 17b. *B. l. prasina*, male, genitalia

DIAGNOSIS.—This is the first species of *Cummingsiella* taken on the avian genus *Recurvirostra*, and the pair of types were among a large series of *Quadriceps testudinarius* Children, whose type host is *Recurvirostra americana*, so that there can be no question as to the authenticity of the host record.

The present species is so different from any of the other known species of the genus² that a full description of it is unnecessary. It may be recognized by the long, fairly slender, body, especially the long, slender abdomen of the female. The head is typical of the genus and resembles strongly that of *C. ovalis* (Scopoli), but the body is entirely different, the pterothorax being narrow, with straight, slightly divergent sides, and the abdomen long, very slender, and tapering to the tip on the female.

The structure of the abdominal sclerites is also unique, although of same general types as in *ovalis* and *longirostricola* in that their sternites are heavily chitinized and widely separated from the pleurites, but differ in that they are also divided medially. The chaetotaxy is very sparse with setae mostly short and weak.

The male genitalia are also quite different in the structure of the endomera (see figure). There is practically no difference in structure of head and thorax between the sexes, although the head is wider at the temples in the female, also segment I of the abdomen is the same while segments II and III are like IV and V, as shown in the figure of the female.

The head and thorax in the female are little larger than in male (see tables of measurements), but the abdomen is very much longer (1.91 x .61 against 1.19 x .545). The species is represented by the two types only.

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	2.12	—	2.95	—
Head .....	.54	.51	.586	.597
Prothorax .....	.23	.40	.263	.412
Pterothorax .....	.28	.52	.326	.564
Abdomen	1.19	.545	1.91	.61
Antennae .....	.24	.054	.23	.06
Basal plate .....	.28	.13		
Paramers .....	.102	.123		
Endomera .....	.05	.08		

Ibidocus bimaculatus (Mjöberg), 1910

Docophorus bimaculatus Mjöberg, Ark. Zool., vol. 6, no. 13, p. 125, figs. 70-72.
Host: *Guara alba* (Linn.). See Carriker, 1947, Bol. Entom. Venezol., vol. 6, p. 121.

A series of 16 specimens of both sexes was taken on the type host collected by Charles Shaw at Tamuín, San Luis Potosí, September 16, 1946.

² I have not seen a description of *C. brevisrostris* Blagoveshtchensky from *Numenius tenuirostris*.

These specimens agree exactly with specimens from the type host in the author's collection, from which the true host was determined, and the species redescribed and figured.

***Ibidoecus bisignatus* (Nitzsch), 1866**

Docophorus bisignatus Nitzsch, in Giebel, Z. ges. NatWiss., vol. 28, p. 362.
Host: *Plegadis f. falcinellus* (Linn.).

A single immature specimen of what I take to be this species was secured from *Plegadis falcinellus chihi* (Vieill.). It is not sufficiently developed to permit certain identification.

***Ibidoecus ibero-americanus* Eichler, 1943**

Mem. Estud. Zoo. Mus. Univ. Coimbra, no. 140, p. 5. Host: *Ajaia ajaja* (Linn.).

A series of 23 specimens of both sexes of this species was taken from the type host collected by Charles Shaw at Pujal, San Luis Potosí, October 30, 1946.

These specimens are identical with a series in the author's collection taken from the same host in Colombia. I described this in 1947 under the name of *I. ajajus*, not having seen Eichler's paper published in 1943. The species is an outstanding one and is easily recognized.

***Strigiphilus viridicus*, n. sp.**

(Figures 13, 14 and 15)

Types, male and female adults, from *Ciccaba virgata centralis* Griscom, collected by Robert J. Newman at Xilitla, San Luis Potosí, February 8, 1947.

In 1874 Giebel described *Docophorus virgo* (Insecta Epizoa, p. 79) from *Ciccaba virgata superciliaris* (Pelzeln) (Brazil).

Giebel's description of *virgo* certainly does not fit the specimens taken on *Ciccaba virgata* in Mexico and Colombia; hence, the systematic position of *virgo* is problematical. There are many points of difference, but the most striking are the shape of the temples, the trabeculae, the legs, the lack of "lateral bands" on the abdomen, and the proportions of the head. A comparison of Giebel's description of *virgo* with the species described below fully illustrates these differences. Piaget's description of *S. virgo* (Giebel) (Pediculines) is merely a condensation of Giebel, and he assuredly never saw the species or else he would have published a figure of it. Giebel's statement "Die schläfenecke hinter des Fühlerbucht tritt stark und stumpf hervor" or "lineis temporalibus rectis" cannot apply to the present species. Neither are the legs slender, the trabeculae "conical," nor the abdominal segments "immaculate."

The material from Mexican and Colombian specimens of *Ciccaba virgata* is typical of *Strigiphilus*, resembling strongly *S. syrni* (Packard) from *Strix nebulosa*, but with a longer head, and it seems to be an undescribed form, a description of which follows.

DIAGNOSIS.—Nearest to *S. syrni* (Packard) in structure and markings of head and prothorax, but the pterothorax differs considerably, as well

as the abdominal pleurites. The body length and length and width of head are close to *syrnii* in both sexes, but the pro- and pterothorax are shorter and the abdomen much narrower in both sexes. The posterior margin of the pterothorax in *syrnii* is strongly and evenly convex and bears three fairly strong setae on each side of median line, while in *viridicus* there is but *one*.

The pleurites are wider transversely and tergites shorter, but their general structure is the same, while the abdominal chaetotaxy is also similar.

The paramers in *syrnii* are much narrower and taper apically, but the length is the same; the endomera is distinct, but its details cannot be distinguished in the single male I have of *syrnii*. The type series consists of the male holotype, female allotype, and 16 paratypes of both sexes.

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	1.78	—	2.00	—
Head .....	.675	.597	.695	.62
Prothorax .....	.15	.36	.174	.36
Pterothorax .....	.163	.52	.174	.54
Abdomen .....	.90	.66	1.11	.76
Antennae .....	.22	.054	.24	.054
Basal plate .....	.26	.13		
Paramers .....	.077	.12		
Endomera .....	.08	.10		

Philoaterus ocellatus (Scopoli), 1763

Pediculus ocellatus Scopoli, Ent. carniolica, p. 382. Host: *Corvus corone (sardonius)* Kleinschmidt.

Two males, a female and 2 nymphs from *Corvus corone brachyrhynchus*, collected by Rollin Baker at Attair, Texas, U. S. A., December 11, 1938.

Hopkins and Clay contend that the species of *Philoaterus* found on the American Crow is the same as that from the European form, *sardonius*, and that *Docophorus corvi* Osborn is a synonym of *ocellatus* (Scopoli). Not having been able to compare material from the two hosts, I am not in a position to refute their statement and for the time being follow their decision.

Philoaterus underwoodi (Carriker), 1903

Docophorus underwoodi Carriker, Univ. Nebraska Studies, vol. 3, p. 130, pl. 1, fig. 3. Host: *Psilorhinus mexicanus cyanogenys* Sharpe.

A series of 48 males and females of what is apparently this species was taken on *Psilorhinus morio* (Wagler) collected by Marcella Newman at Xilitla, San Luis Potosí, January 27, 1947.

A very careful comparison was made between these specimens and the types of *P. underwoodi*, and while there are certain very small differences,

they do not seem of nomenclatural value. The genitalia, the sternal plates in both sexes, head structure, and chaetotaxy are all exactly the same. The two hosts are closely related, and all of the species of *Philopterus* parasitic on the Corvidae are very similar in many ways, so that it is not so unusual to find the same species of *Philopterus* on two hosts of the same genus, as in the case of the preceding species, *P. ocellatus*.

***Eustrigiphilus ceblybrachys* (Denny), 1842**

Docophorus ceblybrachys Denny, Mon. Anopl. Brit., pp. 45 and 92, pl. I, fig. 3. Host: *Nyctea scandiaca* (Linn.); *Eustrigiphilus ceblybrachys*, Ewing, 1926.

Three females of this characteristic species were taken on the type host collected by C. Honey. Compared with material in my own collection from the type host, they prove to be the same. I am not prepared to follow Hopkins and Clay in making *Eustrigiphilus* Ewing a synonym of *Strigiphilus* Mjöberg. If *Eustrigiphilus* cannot be recognized, neither can *Cummingsiella* be separated from *Quadriceps*, as well as other cases which could be cited.

***Chelopistes meleagridis* (Linn.), 1758**

Pediculus meleagridis Linn., Syst. Nat., ed. 10, p. 613. Host: *Meleagris gallopavo domestica*.

A series of 12 specimens of both sexes taken on *Meleagris gallopavo intermedia*, collected by Rollin Baker in Kenedy Co., Texas, December, 1941. When this material was compared with Miss Clay's description and figures of the species and with my own material from the domestic turkey, no differences were to be noted. It is a well-marked species, quite different from all the other species of the genus I have seen and, in my opinion, not congeneric with the species described by me from the Cracidae and *Odontophorus*.

***Physconelloides zenaidurae* (McGregor), 1917**

Goniodes zenaidurae McGregor, Ent. News, vol. 28, p. 433, pl. 28, figs. 1, 4. Host: *Zenaidura macroura marginella* (Woodhouse).

Five females of this species were taken on *Zenaidura macroura carolinensis*, collected by D. S. Farner at Lawrence, Kansas, U. S. A. These specimens agree with McGregor's description and figures and also with a female in my own collection from the same host taken in Ohio. The genus *Physconelloides* is a very homogenous one, with species differing but slightly from each other, so that very careful comparison must be made with the known forms before describing new ones.

***Quadriceps hemichrous* (Nitzsch), 1866**

Nirmus hemichrous Nitzsch, in Giebel, Z. ges. NatWiss., vol. 28, p. 372. Host: *Himantopus h. himantopus* (Linn.).

Four males and 3 females were taken on *Himantopus mexicanus* (P. L. S. Müller), collected by Robert J. Newman at Tamuín, San Luis Potosí, November 17, 1946. I have previously compared material of this species taken on *H. h. mexicanus* with specimens of authentic *hemichrous* from Europe and find them to be identical.

Quadriceps hospes (Nitzsch), 1866

Nirmus hospes Nitzsch, in Giebel, Z. ges. NatWiss., vol. 28, p. 371. Host: *Squatarola squatarola* (Linn.).

Two males and 3 females were taken on the type host collected by Charles Shaw at Ebano, San Luis Potosí, November 1, 1946. I have not been able to compare these specimens with authentic material of the species, but from the available data there seems to be no question as to the correctness of the identification.

Quadriceps testudinarius (Children), 1836

Nirmus testudinarius Children, Back's Arctic Land Exped., p. 538. Host: *Recurvirostra americana* Gmelin.

Twenty-four males and females of the species were taken from the type host collected by Charles Shaw at Ebano, San Luis Potosí, November 6, 1946. Children's brief Latin description of this species leaves much to the imagination. However, what he does say agrees with the material examined. I had previously taken specimens on the type host, which were compared with the Mexican material and found to be the same.

Oxylipeurus corpulentus Clay, 1938

Proc. Zool. Soc. London, (B), vol. 108, p. 183, figs. and pl. 12, fig. 1. Host: *Meleagris gallopavo merriami* Nelson.

Seven females were taken on *Meleagris gallopavo intermedia* Sennett, collected by Rollin Baker in Kenedy Co., Texas in December, 1941. This material agrees perfectly with Miss Clay's description and figures of the species. Unfortunately there were no males.

Oxylipeurus chiniri vetulae Carriker, 1944

Rev. Bras. Biol., (4) 4, December, p. 579, figs. 50-53. Host: *Ortalis v. vetula* (Wagler).

A large series of *Oxylipeurus* was taken on *Ortalis vetula mcalli* (Baird) at Xilitla, San Luis Potosí. When the material was compared with the type series of *O. c. vetulae* Carriker, some very slight differences were noted, but they are not, in my opinion, worthy of nomenclatural recognition.

The two hosts *O. v. vetula* and *O. vetula mcalli* are very closely related, so that it would hardly seem probable to find a difference in their Mallophagan parasites.

Cuculicola atopa (Kellogg), 1899

Nirmus atopus Kellogg, 1899, Occ. Pap. California Acad. Sci., vol. 6, p. 18, pl. 2, fig. 4. Host: *Piaya cayana thermophila* P. L. Sclater.

Fifty specimens of both sexes were taken apparently on a single example of the type host collected by Robert J. Newman at Xilitla, San Luis Potosí, February 11, 1947.

I have examined specimens of this parasite from numerous races of *Piaya cayana*, collected from Mexico to Peru, and there seems to be practically no difference between them. This species of parasite is apparently a remarkably stable form.

Brüelia laticeps prasinus, n. subsp.

(Figures 16a, 16b, 17a and 17b)

Types, male and female adult, from *Aulocorhynchus p. prasinus* (Gould), collected by Robert J. Newman at Xilitla, San Luis Potosí, February 7, 1947.

DIAGNOSIS.—Close to the nominate race from *A. atrogularis* (Peru), with which it has been compared. In general appearance the two are very similar and may be recognized at a glance by the unusual head structure and abdominal pleurites, the former of the type of *B. marginella* (from the motmots), and the latter characteristic of this species.

Examples of *B. laticeps* have been taken on numerous species of toucans. All are, apparently, conspecific, but they are divisible into an undetermined number of subspecies. Piaget's figure of *laticeps* is correct and needs little elaboration. The present race differs from the nominate form as follows (measurements of males only are compared, no female of the nominate race having been taken): head wider at temples (.43 x .51 against .445 x .49); pterothorax wider, length the same (.467 against .434); abdomen longer and much wider (.976 x .75 against .915 x .67); basal plate wider and of distinct shape; paramers shorter and endomera quite different (see figures).

There is considerable difference in the structure of the pleural incassations (see figures) and in the apical portion of the basal plate. The subspecies is represented by the male holotype, female allotype, and 9 female paratypes.

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	1.59	—	1.91	—
Head .....	.43	.51	.456	.564
Prothorax .....	.13	.314	.174	.31
Pterothorax .....	.195	.434	.195	.50
Abdomen .....	.915	.67	1.14	.846
Antennae .....	.195	.035	.217	.043
Basal plate .....	.225	.10		
Paramers .....	.068	.078		
Endomera .....	.053	.048		

Brüelia picturata (Osborn), 1896

Nirmus picturatus Osborn, 1896, Bull. U. S. Bureau Ent. (n. s.), no. 5, p. 226. Host: *Sturnella m. magna* (Linn.).

Eight females (2 juv.) and 1 male were taken on the type host collected at Garnett, Anderson Co., Kansas, U. S. A., by H. W. Setzer, March 22, 1947. This is a very strikingly marked species, with pitchy black markings on a clear ground. It is a common type of the genus found on the Icteridae.

Brüelia marginella (Nitzsch), 1866

(Figures 18 and 19)

Nirmus marginellus Nitzsch, Zeit. ges. NatWiss., p. 368. Host: *Momotus momota* (Linn.), Piaget, Pediculines Suppl., p. 21, pl. III, fig. 1; Giebel, Insecta Epizoa, p. 147, pl. VI, fig. 5.

I have examined a large series of this species taken from seven subspecies of *Momotus momota*, ranging from Peru to northern Mexico, and a single female from *Barythengus semirufus* from Colombia. I have a pair of the parasites taken on *Momotus m. momota*, from the upper Río Caura in Venezuela, which we must consider as the type host for the species. The whole series is clearly conspecific but may be separated into various subspecies, the specimen from *Barythengus* being the farthest removed from the typical form.

A study of the literature covering the species is somewhat confusing. Giebel's description and figure undoubtedly represent this species, but it is difficult to reconcile Piaget's figure with Giebel's, or with the actual specimens of the parasite. In Piaget's figure the head is not only of a different shape but is very much larger than it should be in proportion to the size of the insect. The pterothorax is not pointed medially on the posterior margin, as shown by Piaget, but is flatly convex. There are so many details in both his description and figure that do not agree with the actual specimens of *marginellus* that I am inclined to believe that his single female came from some other host, not *Momotus*.

I herewith present a figure of the female taken on the type host; also shown is the male genitalia. The resemblance of my drawings to Giebel's figure is at once apparent.

A single male from *M. m. chlorolaemus* (Peru) is very close to the Venezuelan pair from *M. m. momota* and cannot be separated, as well as six specimens from *M. m. spatha* (Goajira Peninsula, Colombia), and 8 from *M. m. subrufescens* (N. E. Colombia).

The large series from northern Mexico, from *M. m. caeruleiceps*, however, differs sufficiently from the Venezuelan pair to merit subspecific rank, and is described below. The 2 males and 5 females from *M. m. lessoni* (Costa Rica) are too close to the Mexican series to be separated from it, while nine specimens from *M. m. reconditus* (Panamá-Colombia frontier) are more or less intermediate but have certain distinctive characters and possibly may be separable. Moreover, the single female from *Barythengus* seems to be different in the shape of its head and the pattern of the incassations on the pleurites.

Brüelia marginella xilitla, n. subsp.

(Figures 20a and 20b)

Types, male and female adults, from *Momotus momota caeruleiceps* (Gould), collected by Robert J. Newman at Xilitla, San Luis Potosí, February 12, 1947.

DIAGNOSIS.—Very close to the nominate form, differing only in certain measurements, chaetotaxy, and the shape of incassations on the pleurites and on the head. The single male which I have of the nominate race is

not in condition for comparison with the Mexican material as to size. It is either an unusually small specimen or shrunken in clearing (probably both). As regards the female, the differences between it and the new form are the following: the head measures exactly the same; the prothorax and pterothorax are longer and narrower; the abdomen longer and wider. The clypeal bands differ in shape (see figure), as well as the markings on the pleurites. There are about nine long, strong hairs on each side of the posterior margin of the pterothorax (in addition to one at angle), while in *marginella* there are but five on the margin and two in the angle, all shorter. The setae of the abdomen are all longer in the new form, especially the three in the median, lateral portion of the pleurites and the single long, pustulated hair on posterior margin of tergites II to VI. The male genitalia seem to be about the same. There is considerable variation in the shape of the apical portion of the paramers in the Mexican series, some being like *marginella* and others different, so that they cannot be used for comparison.

The race is not a strongly marked one, but the differences listed are constant. The type series consists of the male holotype, female allotype, 7 male and 7 female paratypes.

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	1.92	—	2.45	—
Head .....	.586	.597	.586	.62
Prothorax .....	.185	.34	.205	.345
Pterothorax .....	.22	.54	.25	.564
Abdomen	1.08	.716	1.41	.78
Antennae .....	.26	.048	.27	.058
Basal plate .....	.21	.08		
Paramers .....	.06	.066		
Endomera .....	.051	.046		

***Brüelia subtilis* (Nitzsch), 1874**

Nirmus subtilis Nitzsch, in Giebel, *Insecta Epizoa*, p. 137. Host: *Passer m. montanus* and *P. d. domesticus* (Linn.).

Seventeen specimens of both sexes, of what seems to be this species, were taken on *Passer domesticus*, collected by L. Lipovsky at Lawrence, Kansas, May 21, 1947.

Apparently this species is very close to *B. cyclothorax* (Burm.). Just what the differences are I am not quite certain, and both have been recorded from *Passer montanus*, but only *subtilis* from *P. domesticus*. A comparison of the present specimens (which are in poor condition) with Denny's and Giebel's description and figure of *cyclothorax* shows that they apparently are not that species but another closely related one, which can only be *B. subtilis* (Nit.). The species is characterized by the long, tapering pre-

antennary area of the head, by the apparent absence of deeply chitinized pleurites, and by the rather deeply colored sternites that do not extend to the pleurites. These specimens are not in condition to be properly described, being either immature or left too long in the clearing solution.

***Pseudolipeurus longipes similis* Carriker, 1944**

Proc. U. S. Nat. Mus., vol. 95, p. 91, fig. 2b. Host: *Crypturellus b. boucardi* (P. L. Sclater).

A single pair of this species was taken on *Crypturellus cinnamomeus mexicanus* (Salvadori), collected by George H. Lowery at Naranjo, San Luis Potosí, February 15, 1948.

I have made a very complete comparison between this pair of parasites and the types of *P. longipes similis*, and whatever minute differences there may be are entirely too small to merit consideration. There is a very slight difference in the shape of the clypeal signature, but not sufficient to be of systematic value. The characters most commonly used for separating the species and subspecies of this genus are: the shape of the head, the antennae, the clypeal signature, the male genitalia, and the apical abdominal segments in both sexes. In all of these characters the parasites in question agree perfectly with specimens from *C. b. boucardi*. A re-examination of the single male taken by me on *Crypturellus cinnamomeus sallaei*, at Tres Zapotes, Veracruz, México, and referred by me to this species in my 1944 report (p. 91), and comparison with the pair mentioned above, confirms my previous statement as to its nomenclatural status. It agrees perfectly with the male from San Luis Potosí.

***Pseudophilopterus hirsutus similis* Carriker, 1944**

Proc. U. S. Nat. Mus., vol. 95, p. 103, figs. 4e and f. Host: *Crypturellus cinnamomeus sallaei* (Bonaparte).

One male and 3 females were taken on *Crypturellus cinnamomeus mexicanus* (Salvadori), the same individual host as given under the preceding species, as well as from another example of this host collected at Rio Axtla by Robert J. Newman, April 21, 1947.

There are no discernible differences between these specimens and the types of *P. h. similis* from *C. c. sallaei*.

FAMILY HEPTAPSOGASTRIDAE

***Strongylocotes interruptus*³ *fimbriatus* Clay, 1937**

Strongylocotes complanatus fimbriatus Clay, Proc. Zool. Soc. London, p. 156, pl. 4, fig. 3. Host: *Crypturellus c. cinnamomeus* (Lesson).

Two nymphs of what are doubtless this species, were taken on the same host as the two preceding species, collected by George H. Lowery at Naranjo, San Luis Potosí. They are too young for comparison, but considering the relationships between the other Mallophagan species of this group of hosts, I do not hesitate in calling them *fimbriatus*.

³ The systematic arrangement used in this paper follows a revision of the genus in another paper now in press.

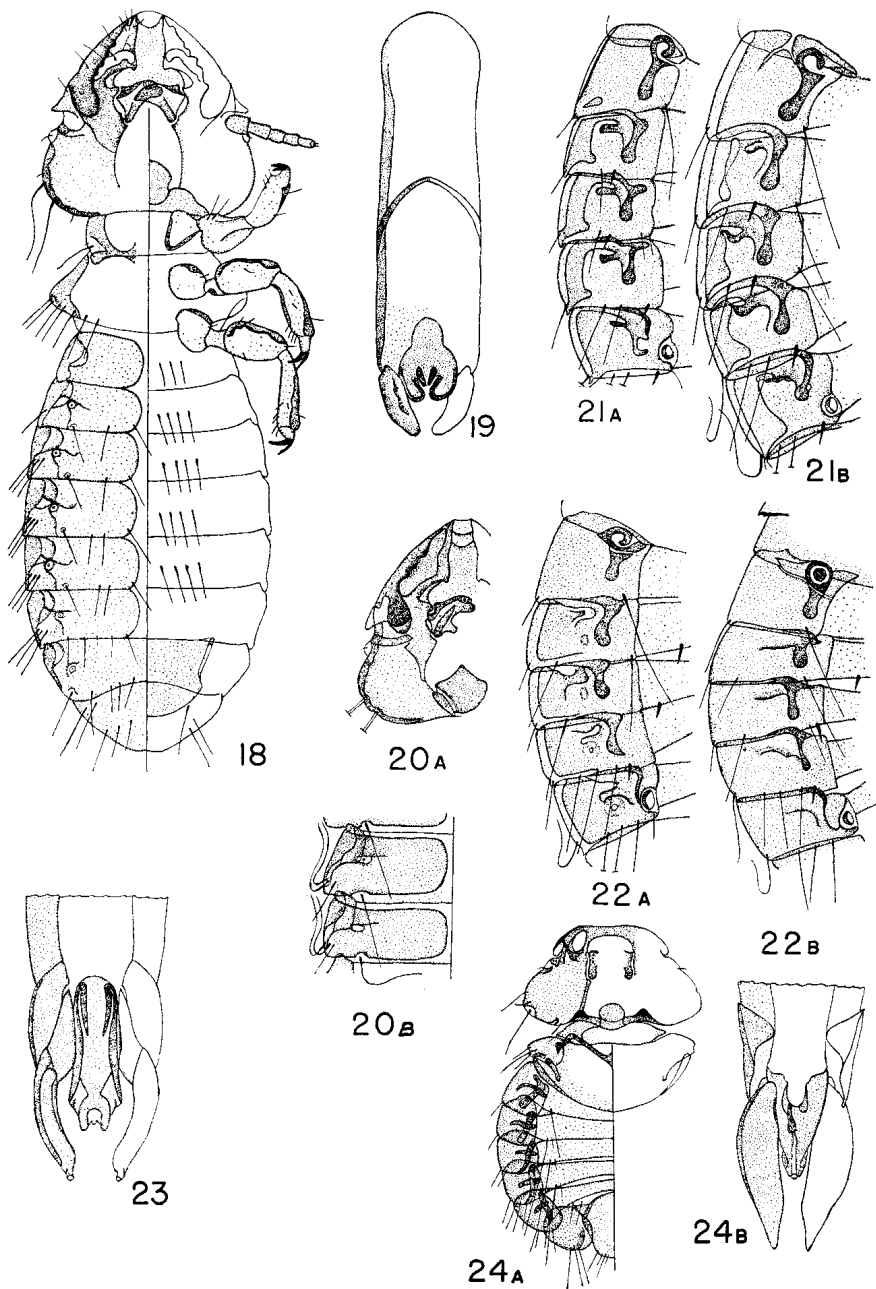


Fig. 18. *Brüella marginella marginella* (Nit.), female
 Fig. 19. *B. m. marginella* (Nit.), male, genitalia
 Fig. 20a. *B. marginella xilitla*, female, head
 Fig. 20b. *B. m. xilitla*, female, pleurites and tergites IV and V
 Fig. 21a. *Heptapsogaster mandibularis idoneus*, male, pleurites I to V
 Fig. 21b. *Heptapsogaster mandibularis cinnamomeus*, male, pleurites I to V
 Fig. 22a. *Heptapsogaster inexpectata potosii*, male, pleurites I to V
 Fig. 22b. *H. i. magdalenae* Carr., male, pleurites I to V
 Fig. 23. *H. i. potosii*, male genitalia
 Fig. 24a. *Discocarpus multiplex secundus* Clay, male
 Fig. 24b. *D. m. secundus*, male, genitalia

Rhopaloceras h. heterogenitalis Carriker, 1944

Proc. U. S. Nat. Mus., vol. 95, p. 136, figs. 10a, b, and e. Host: *Crypturellus b. boucardi* (P. L. Sclater).

A single female was taken on the same host as the preceding species, collected by Robert J. Newman at Río Axtla, April 21, 1947.

This female is exactly like the female allotype of *heterogenitalis* in the shape of the head and the apical abdominal segment, the latter being characteristic of the species. It has the same spicule-covered sac surrounding the apical portion of the genitalia, the two setae set in a clear area on each side of the median portion (dorsal), and the same identical structure of the anterior portion of the sternal plate. However, without the male sex the identification cannot be positive. The only difference discernible is in the structure and chaetotaxy of the meso-sternal plate, but this difference is not great and may very well fall within the range of individual variation.

Heptapsogaster temporalis acutiventris Clay, 1937

Proc. Zool. Soc. London, (B), p. 135, fig. 4a, pl. I, figs. 1, 2. Host: *Crypturellus cinnamomeus mexicanus* (Salvadori).

A single male taken on the type host (same individual as for preceding species).

Heptapsogaster mandibularis cinnamomeus, n. subsp.

(Figures 21a and 21b)

Type, adult male, from *Crypturellus cinnamomeus mexicanus* (Salvadori), collected by Robert J. Newman at Río Axtla, San Luis Potosí, México, April 21, 1947.

DIAGNOSIS.—This race is very close to *H. m. idoneus*, from *Crypturellus idoneus* of Colombia. The whole body is wider in all segments, but the length of head and thoracic segments is the same, while the abdomen is longer and wider (.76 x .716 against .68 x .64). The male genitalia are

MEASUREMENTS OF THE TYPE:

	Length	Width
Body	1.41	—
Head {		
<i>frons</i>	—	.35
temples .....	.424	.61
occiput .....	.38	—
Prothorax .....	.152	.326
Mesothorax .....	.163	.597
Metathorax .....	.13	.586
Abdomen .....	.76	.716
Paramers .....	.133	.092
Endomera .....	.123	.054

practically the same, the only difference being in the paramers, which are slightly shorter and narrower, but this difference is small (.133 x .092 against .143 x .114). However, the pleural incassations are quite different, so that this character together with wider body and longer abdomen seem to be sufficient for subspecific recognition.

The race is represented by a single male, the holotype.

***Heptapsogaster inexpectata* ⁴ *potosii*, n. subsp.**

(Figures 22a, 22b, and 23)

Types, male and female adults, from *Crypturellus cinnamomeus mexicanus* (Salvadori), collected by Robert J. Newman at Río Axtla, San Luis Potosí, México, April 21, 1947.

DIAGNOSIS.—Very similar to *H. i. magdalenae* Carriker, from *Crypturellus idoneus* (Colombia), differing only in small subspecific characters. The measurements for the male are practically the same, with the exception of a slightly longer abdomen (.61 x .63 against .56 x .63); longer and wider paramers and wider endomera (paramers, .13 x .09 against .09 x .07; endomera, .11 x .043 against .11 x .033). The genital sternite and segment VII in the female are exactly the same shape as in *magdalenae*, but the pleural incassations differ considerably in both sexes (see figure). The scent gland in the male is the same, as well as shape of pleurite V to which it is attached.

MEASUREMENTS OF THE TYPES:

	Male		Female	
	Length	Width	Length	Width
Body	1.19	—	1.39	—
Head { <i>frons</i>	—	.29	—	.345
<i>temples</i> .....	.38	.477	.395	.52
<i>occiput</i> .....	.337	—	.35	—
Prothorax .....	.13	.293	.13	.303
Mesothorax .....	.132	.51	.15	.52
Metathorax .....	.13	.50	.14	.49
Abdomen .....	.61	.63	.803	.66
Antennae .....	.22	.054	.185	.035
Paramers .....	.13	.09		
Endomera .....	.11	.043		

Species represented by the male holotype, female allotype, and 2 male and 2 female paratypes.

⁴I do not consider that *Heinrothiella inexpectata* Eichler, 1942, is congeneric with *Heptapsogaster*; therefore, there is no necessity for replacing *Heptapsogaster inexpectatus* Carriker, 1944, with *H. insperatus* Hopkins, 1950.

Megapoestus multiplex secundus Clay, 1937

Proc. Zool. Soc. London, p. 150, figs. 9b and 10b. Host: *Crypturellus cinnamomeus mexicanus* (Salvadori).

Five males and 5 females were taken from the same individual host mentioned under the previous species, as well as from the bird collected at Naranjo. These specimens are from the type host and agree perfectly with Clay's description and figures. (See remarks by the author on this species in Stud. in Neotr. Mall. III, p. 189.)

Discocorpus cephalosus mexicanus, n. subsp.

(Figure 24)

Type, male adult, from *Crypturellus cinnamomeus mexicanus* (Salvadori), collected by George H. Lowery at Naranjo, San Luis Potosí, February 15, 1948.

DIAGNOSIS.—This race is nearest to *D. c. intermedius*, from *Crypturellus idoneus* (Colombia), with which it agrees in the size and shape of the head, shape of the thorax, type of incassations on the pleurites, and in general shape of paramers, but differs in the details of some of these characters, especially in the male genitalia.

The only differences in measurements⁵ worthy of note are: metathorax, .15 x .454 against .17 x .44; paramers, .123 x .08 against .087 x .07; and endomera, .08 x .043 against .06 x .03. Pleurites I to V are thickly covered (especially on outer half) with tiny, round depressions, or pits, about .006 in diameter. These pits are present on all known species of the genus, but the fact has not heretofore been noted. There is considerable variation in the amount of these pits present. In *furculus* they are found not only on the pleurites but also on the tergites and portions of the head, while in the present race they are restricted to pleurites I to V.

By a comparison of the figures of the genitalia of the three other subspecies in this genus (Stud. in Neotr. Mall. III, 1944, p. 193) the differences will at once be apparent. It will also be noted that the pleural incassations are quite different from those of *D. c. cephalosus* (Stud. in Neotr. Mall. I, 1936, pl. 25, fig. 1), as well as from *microgenitalis* (cf., pl. 24, fig. 2). The race is represented by the male holotype only.

Heterogoniodes arcaeeps Clay, 1937

Proc. Zool. Soc. London, p. 152, fig. II. Host: *Crypturellus cinnamomeus mexicanus* (Salvadori).

Four females of this interesting species were taken on the type host collected by Robert J. Newman at Río Axtla, April 21, 1947. No males were secured. There can be no doubt of the identity of the species, since the specimens came from the type host. Only three species of this interesting genus are known, all from the genus *Crypturellus*.

⁵ Complete measurements are not given since they are so close to those of *intermedius*, while the worthwhile differences are noted above.

Pectenosoma verrucosa cinnamomea Carriker, 1944

Proc. U. S. Nat. Mus., vol. 95, p. 202-205. Host: *Crypturellus cinnamomeus sallaei* (Bonaparte).

A single female of what seems to be this race of *P. verrucosa* was taken on *Crypturellus cinnamomeus mexicanus*, collected by George H. Lowery at Naranjo, San Luis Potosí, February 15, 1948.

A careful comparison of this single female with the female allotype of *cinnamomea* shows no differences except some very small ones easily falling under individual variation.

Austrokellogia coniceps cinnamomea, n. subsp.

Type, male adult, from *Crypturellus cinnamomeus mexicanus* (Salvadori), collected by George H. Lowery at Naranjo, San Luis Potosí, México, February 15, 1948.

DIAGNOSIS.—This race of *A. coniceps* is very close to *boucardi* Carriker, from *Crypturellus boucardi*. The genitalia are indistinguishable, not only in structure but also in measurements (paramers, .14 x .068 against .15 x .072; endomera, .087 x .045 against .087 x .04).

The body measurements, however, show considerable differences as follows: length much less (1.46 against 1.65); head, temples, .48 x .595 against .52 x .65; *frons* same; length at occiput less. The prothorax and mesothorax are very close to *boucardi* in length and width, but the metathorax is shorter and narrower (.14 x .39 against .195 x .41); the abdomen is much smaller (.846 x .825 against .976 x .89).

The shape of the apical abdomen segment also differs, as well as the tubercles on each side of it. It is unfortunate that no females were secured to compare with three females taken by me on *Crypturellus cinnamomea sallaei*, south of Veracruz, and noted by me (Stud. in Neotr. Mall. III, 1944, p. 227). It is possible that they are the same thing, but without having the other sex in both cases I cannot decide with certainty.

The difference in body measurements between this form and *boucardi*, outside of those noted above, are so small that a complete table does not seem necessary.

From the above list of species it will be noted that we have here ten genera and twelve species of Mallophaga from a single host, *Crypturellus cinnamomeus mexicanus*, four of which have not been previously described. It must be admitted, however, that all of these species were not taken on the same individual host, but on *two birds*.

Five species were taken on the Naranjo bird, five different species on the Río Axtla host, and two species only on both birds. The above data illustrate very clearly the necessity for very careful collecting on *all* specimens of tinamous taken, even from the same locality, since it is very rare that any two specimens will yield the same species of Mallophaga.