

NEOTROPICAL MALLOPHAGA MISCELLANY N° 2

The genus *Ibidoecus* Cummings

by

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Genus *Ibidoecus* Cummings

Proc. Zool. Soc. London, Dec. 1916, p. 663 (Genotype: *Docophorus plataleae* Denny).

This genus seems to be confined almost exclusively to the Ibises and Spoonbills, or, in other words, to the family Threskiornithidae, the only known exception being *Aramus scolopaceus*, of the family Aramididae. The family Aramididae has been placed by Ornithologists just before the Rallidae (with the Psophidae between the two).

I could never quite reconcile the placing of *Aramus* here, although its position is undoubtedly based on certain anatomical structures. However, the bird in life resembles, and habits much like some of the Ibises, especially the genus *Phimosus*, which it superficially resembles considerably.

The fact that the strongly differentiated Mallophagan genus *Ibidoecus*, found otherwise only on Ibises, is parasitic on the Limpkin, seems to me to be very strong evidence that the latter is closely related to the former, and not to the Rallidae. Not only was *Ibidoecus* taken on three subspecies of *Aramus scolopaceus*, but the species of Mallophaga is very closely related to that found on *Phimosus berlepschi*.

Ibidoecus is readily recognized by the peculiar bipartite clypeal signature, while the genital armature of the male differs greatly from the usual *Philopterus* type. The genotype

of *Ibidoecus*, together with *I. flavus* Cummings and *I. ajajus* n.sp., all from different genera of Spoonbills (from Europe, Africa and Australia) form a closely related group that differs decidedly in several respects from the remaining known species of the genus, so much so that they might easily form a subgenus of *Ibidoecus*, although I am not strongly in favor of subgenera. The two characters which set apart these three species are the pterothorac structure and male genitalia, the latter being exceedingly complex, and entirely different from the remainder of the genus, although both *I. threskiornis* and *I. heterogenitalis*, while having the pterothorax like most of the species, have the genitalia more complicated and somewhat approaching the *plataleae-flavus-ajajus* group. On the whole it is perhaps best to make no subgeneric division until more species have been discovered.

The known species of *Ibidoecus* now number fourteen, six from Europe, Africa and Australia, and eight from the neotropical region, while many more certainly remain to be discovered.

Key to the known species of *Ibidoecus*.

- A. Clypeal signature with lined, or minutely channeled tips.
- a. The triangular, abdominal tergites widely separated from the heavy, strongly pigmented pleurites; occipital bands broken (not joined to antennal bands).
- bisignatus* (Europe)
- aa. The triangular abdominal tergites closely fused with pleurites; occipital bands continuous (joined to antennal bands).
- b. Head much wider than long; large species with unique genitalia; head in male .90 x 1.05; female, 1.01 x 1.15
- threskiornis* (Africa)
- bb. Head slightly wider than long, or longer than wide, but not more than .03 difference between length and width.

- c. Very large species (head ♀ : 1.01 x 1.03)
- longiclypeatus* (Europe).
- cc. Very small species, with head somewhat longer than wide and long, narrow clypeus (♂ : .66 x .61; ♀, .76 x .74); male genitalia of simple type with paramers serrated basally on inner edge and penis winged (see fig.)
- d. Paramers longer and more slender (.19 x .06)
- s. scolopaceus* (S.A.)
- dd. Paramers shorter and wider (.14 x .085)
- scolopaceus carau* (S.A.)
- ccc. Medium sized species, head in ♀ not less than .75 x .78 and not more than .95 x .93.
- d. Very large genitalia (paramers no less than .20 long)
- e. Paramers thick basally, with strongly *toothed* inner edges basally; portion of penis beyond lateral wings long and thickened.
- plegadii* (S.A.)
- ee. Paramers slender basally, with inner edge only slightly serrated and apical portion of penis short and slender.
- bimaculatus* (S.A.)
- dd. Small genitalia (with large basal plate); paramers not more than .14 long; apical portion of penis rather short and slender (see fig.)
- phimosus* (S.A.)
- bbb. Head considerably longer than wide and size small, probably smallest known species (♀ head: .65 x .60; abdomen .77 x .58); pterothorax angulated over abdomen and tergites almost quadrangular.
- hians* (Europe).

AA. Clypeal signature not lined or channelled apically and more or less uniformly pigmented, except for dark frontal edge (not always).

a. A line of pustulated hairs across entire posterior margin of pterothorax; male genitalia very distinctive and size large (see fig. of *ajajus*).

b. Antennae very hirsute; genitalia somewhat different.

flavus (Australia).

bb. Antennae with but two longish hairs on 2nd. segment and two small bristles at end of 1st.

c. Size smaller (δ head: .64 x .84; φ , .71 x .95)

z *plataleae* (Europe).

cc. Size larger (δ head, .79 x .89; φ , .80 x .976).

ajajus (S.A.)

aa. Line of pustulated hairs on pterothorax confined to each side, reaching to scarcely more than half way to center line; size small; male genitalia (known only from *heterogenitalis*) of a very different type from other species of genus (see fig.)

heterogenitalis and *fissi-signatus* (S.A.)

Ibidoecus bisignatus (Nitzsch)

Docophorus bisignatus Nitzsch, Zeitschr. f. ges. Naturwiss. 1866, XXVIII, p. 362; Giebel, Insecta Epizoa, 1874, p. 106; pl. IX, fig. 9 (Host: *Plegadis f. falcinellus* (Linné)); Piaget, Les Pedicul. Sup., 1885, p. 11, pl. II, fig. 1.

Ibidoecus bisignatus (N.), Cummings, P. Z. S., Dec. 1916, p. 663.

This is a well characterized species found on the European host *Plegadis f. falcinellus*. It has the tips of the clypeal signature lined; the occipital bands are broken (not connected with the antennal bands), and the abdominal structure seems

to be unique in this genus, the triangular tergites being widely separated from the heavy, deeply pigmented and deeply re-entering pleurites. I have seen no specimens from any American host with this type of abdominal structure.

Ibidoecus longiclypeatus (Piaget)

Docophorus longiclypeatus Piaget, Les Pedicul. Sup., 1885, p. 12; pl. II, fig. 2. (Host: *Sittace macao*.—Probably a straggler.—Piaget).

Ibidoecus longiclypeatus (Piag.), Cummings, P. Z. S., Dec. 1916, p. 663.

Harrison has made this species a synonym of *bisignatus* (N.), but I cannot agree with him. The two species, according to both descriptions and figures by Piaget, are entirely different. Piaget says: It belongs to the same type as *bisignatus* Nit. but in comparing it with the figure by Nitzsch and the descriptions by Giebel, it differs in some details, for example: the measurements, the deeply emarginate clypeus, the long trabeculae, the absence of pustules along posterior margin of metathorax (a very important character) which presents nothing more than a clear border; also the chaetotaxy of the abdomen and the head differ.

A glance at Piaget's figure of the two species shows them to be quite different. Unfortunately we do not know the true host, and I have seen no specimens from neotropical (or other) hosts which agree with it. Apparently both *bisignatus* and *longiclypeatus* have the tips of the clypeal signature lined.

Ibidoecus hians (Giebel)

Docophorus hians Giebel, Insecta Epizoa, 1874, p. 107 (Host: *Guara rubra* (Linné)); Piaget, Les Pedicul., 1880, p. 91, pl. VII, fig. 7.

Ibidoecus hians (Giebel), Cummings, P. Z. S., Dec. 1916, p. 663.

This is a very small species, perhaps the smallest known of this genus. According to Piaget it has a relatively long head, with clypeus long and sides divergent, while the clypeal sig-

nature is also of the long type, with lined tips, like in *bimaculatus* and other neotropical species. The pterothorax is *angulated posteriorly* (seems to be unique in this respect), and has six long hairs on each side (also characteristic), while the shape of the tergites is rather striking for this group, viz: "*les taches mal limitées sont obtuses, presque quadrangulaires*".

TABLE OF MEASUREMENTS

Segment	<i>I. bisignatus</i> female		<i>I. longiclypeatus</i> female		<i>I. hians</i> female	
	length	width	length	width	length	width
Body	2.60 to 2.70	—	3.25	—	—	—
Head . . . . .	.80	.82	1.01	1.03	.65	.60
Prothorax	—	—	—	—	—	—
Pterothorax . . . . .	.45	.65	.56	.80	.40	.50
Abdomen	1.44	1.10	1.80	1.35	.77	.58
Antenna . . . . .	.26	—	.33	—	—	—

Ibidocercus threskiornis Bedford

16th. Ann. Rept. Direct. Vetern. Res. Union S. Africa, Oct. 1929, p. 526, figs. 30-31.

(Host: *Threskiornis aethiopica* Lath., Zululand, Africa).

This one of the largest species of the genus, with head much wider than long (♀ head, 1.01 x 1.15), and, according to Bedford, "can be distinguished *inter alia* by the genital plates and male genitalia". The genitalia, which is figured, is certainly very different from anything that I have seen, not resembling at all the *flavus-plataleae-ajajus* group, or any of the neotropical species. The genital plates and chaetotaxy of segment IX in the ♀ are also unique (fig. 31 of Bedford).

Measurements	♂	♀
Head . . . . .	.90	1.05
Prothorax . . . . .	.31	.66
Pterothorax . . . . .	.33	.98
Abdomen	1.43	1.35
Total length	2.97	3.72

Ibidocercus plataleae (Denny)

Docophorus plataleae Denny, Anopl. Brit., 1840, p. 100; pl. IV, fig. 9 (Host; *Platalea l. leucorodia* Linné)

Docophorus sphenophorus Nitzsch, Zeitschr. f. ges. Naturwiss. 1866, p. 310 (Same host).

Ibidocercus plataleae (Denny), Cummings, P. Z. S., Dec. 1916, p. 663.

Very little can be gleaned from either Denny's, Nitzsch's or Giebel's descriptions and figures of this insect, but Piaget has given us a better description and excellent figure. He shows clearly that the clypeal signature is *not lined*, that the pterothorax has a row of pustulated hairs across the entire posterior margin, the pointed tergites and the peculiar round segment IX in the male and a hint as to the type of the male genitalia. All of the above characters are, I think, found in *I. flavus* Cummings, and certainly are present in *I. ajajus* n.sp., (described below), and setting apart these three species sharply from all the rest of the genus. Cummings has also given useful notes, but figures only the mandibles, to which most of his remarks refer.

Ibidocercus flavus Cummings

Ibidocercus flavus Cummings, P.Z.S., Dec. 1916, p. 665, figs. 16 to 21 (Host: *Platibus flavipes* (Gould, Australia)).

This species, together with *I. plataleae* (Denny), is particularly interesting in that they are both of the same type as the neotropical species *ajajus* (described below from *Ajaia ajaja* (Roseate Spoonbill)). Cummings' excellent description and figures, together with his references to and comparison with *plataleae* show conclusively that these three species, all from Spoonbills (*Platalea l. leucorodia*, *Platibus flavipes* and *Ajaia ajaja*) form a compact, closely related group, with several important characters quite different from the other species of the genus, the most important one being the male

genital armature. The bipartite clypeal signature lacks the fine paralell lines (in reality minute channels) on the apical portion, as in *ajajus*, but the antennae are very more hirsute, while the male genital plate is also very similiar to that sclerite in *ajajus*.

Ibidoecus ajajus new species.

figs. 1 to 3

Types, male and female adults, from *Ajaia ajaju* (Linné), collected by the author at Yumbo, Dept. Cauca, Colombia, Aug. 12, 1918 (in coll. of author).

Diagnosis.—I have not been able to compare these specimens directly with material of *I. plataleae* (Denny), but Piaget has given such a good figure and description of that species that a critical comparison may be made. The two are apparently very closely related, and may prove to be conspecific, but for the present I prefer to keep them specifically distinct, in as much as their hosts are generically distinct, at least until material of *plataleae* can be carefully studied.

The species may be recognized by its large size, the short, broad head (much wider than long); short, wide clypeal signature; type of mandibles; occipital bands; the peculiar spiracle in postero-lateral angle of prothorax; the almost continuous row of pustulated hairs across posterior margin of pterothorax (see. fig.) The peculiar sternite in segment I of abdomen is much smaller and shorter than in the other neotropical species. Segment VIII (in ♂) seems to be reduced to two small chitinized plates, one on each side of the large, almost circular, segment IX. The sternal sclerites on II to VI are characteristic, as well as the large genital plate. The chaetotaxy of the abdomen is also considerably different from the male of *scolopaceous* n.sp. and allied forms (see figs.)

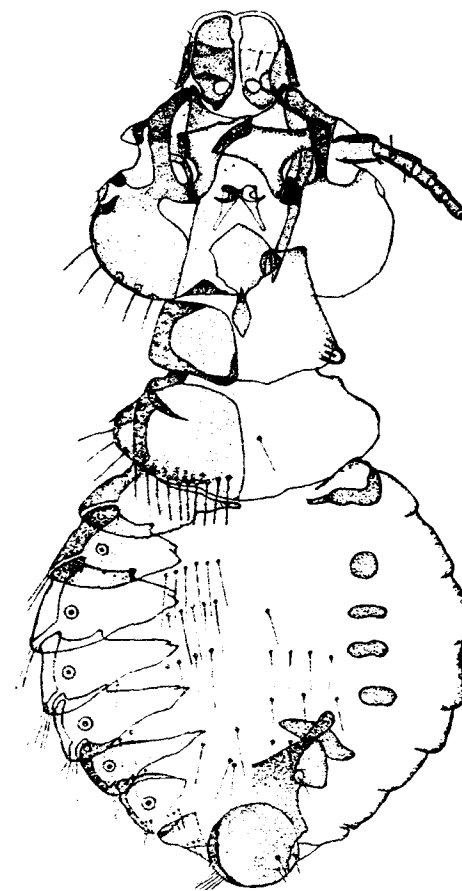


Fig. 1

The male genital armature is unusual, and so complicated that an analysis of its component parts is difficult. In his description of the genitalia of *flavus* Cummings gives interesting details, but I am not convinced that his interpretation of the structure of the paramers and endomeres is entirely correct, but if so, then those of *ajajus* seem to be somewhat different. However, the genitalia of *ajajus* is certainly close to that of *flavus* and *plataleae*, and very different from any other neotropical species I have seen. It seems that this peculiar type of genitalia may be restricted to the species of *Ibidoecus* parasitic on the Spoonbills.

In the female there are but eight *apparent* abdominal segments, IX being reduced to an almost indistinguishable, bilobed protuberance on the broad, short eighth, which has a continuous tergite. The small sternal sclerites present on segments II to VI are almost the same as in the male, except more circular and uniform in size and shape from II to V. The genital plate is large and characteristic. (see fig.)

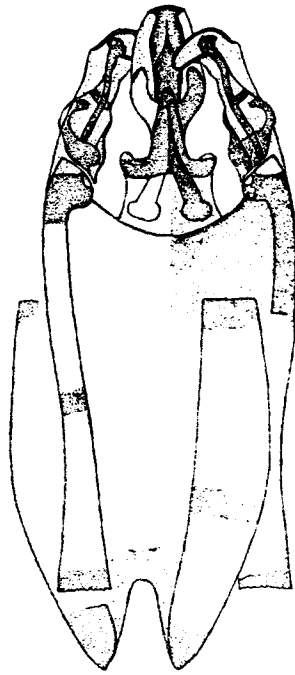


Fig. 2

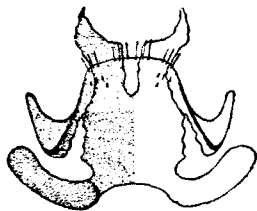


Fig. 3

TABLE OF MEASUREMENTS

Segment	I. platalea (from Piaget)				I. flavus (From Cummings)				I. ajajus			
	male		female		male		female		male		female	
	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.
Body	2.30	—	3.10	—	2.84	—	3.96	—	2.30	—	2.94	—
Head {	frons	—	—	—	—	—	—	—	—	.28	—	.282
	temples	—	.84	—	.95	—	—	—	.807	.89	.825	.976
	occiput . . . . .	.64	—	.71	—	—	—	—	.795	—	.803	—
Prothorax . . . . .	.48	—	.60	—	.60	.65	.80	.74	.37	.586	.40	.608
Pterothorax	—	.75	—	.85	—	.90	—	1.05	.412	.78	.412	.857
Abdomen	1.10	1.15	1.80	1.45	1.28	1.30	2.20	1.85	1.27	1.29	1.62	1.43
Antennae	—	—	.38	—	.49	—	.51	—	.434	—	.39	—
Basal Plate	—	—	—	—	—	—	—	—	.55	.185	—	—
Paramers	—	—	—	—	—	—	—	—	.098	.152	—	—
Penis	—	—	—	—	—	—	—	—	.137	.068	—	—

Ibidoecus bimaculatus (Mjöberg)

Figs. 4 to 7

Docophorus bimaculatus Mjöberg, Ark. für Zool., Band 6, N° 13, p. 125, figs. 70 to 72 (Host: "Ibis from South America".—equals *Guara alba* (Linné), *vide* Carriker.

Ibidoecus bimaculatus (Mjöberg), Cummings, P.Z.S., Dec. 1916, p. 663.

Of the various neotropical species of *Ibidoecus* which I have examined, there is but one which could correspond to Mjöberg's *bimaculatus*. Two ♂♂ and two ♀♀ from *Guara alba* agree very closely in measurements and proportions of head and body, and the male also has the sternal sclerites exactly as shown in Mjöberg's fig. 71, which seems to be a very stable character, differing in the different species. My specimens from *Guara alba* also show rounded sternal spots in the female, under the tergites, in II to VII, in addition to the transverse blotches shown by Mjöberg in VI and VII for *bimaculatus*, which may easily have been overlooked in uncleaned specimens. It is not possible to come to any definite conclusion solely from Mjöberg's description and figure (of head), both of which might apply equally well to any one of

several species, but his measurements are *very close* to my specimens from *Guara alba*, while there is nothing in his description which *disagrees* with my specimens, so that it seems best to assign *Guara alba* as the true host of *bimaculatus* (Mjöberg), and redescribe and figure the species on that basis, which I have done.

Diagnosis.—This is one of the commoner type of species which have the apical portion of the bilobed clypeal signature finely lined or “channelled”, of which there are now known at least four neotropical forms, viz: *phimosus* n.sp.; *plegadii* n.sp.; *scolopaceus* n.sp.; and the present one. Of the four species, *plegadii* is much the largest and *scolopaceus* much the smallest, with *bimaculatus* and *phimosus* close together and of medium size, with *phimosus* the smaller of the two, but genital armature of the same type. *I. bimaculatus* is easily distinguished from *phimosus* (its closest relative) by the very much larger genitalia (see fig.) and by the very different pattern of the antennal bands, *phimosus* having these bands very heavy and with a pitchy blotch at base of trabeculae, at posterior mandibular condoyle, and narrow band along the occipital margin (broken medially). There are six pustulated hairs on each side of the posterior margin of the pterothorax, extending from lateral angle to half way to median line. In the male the No. I tergite is long, tapering, extending nearly to median line, and with tip curved forward *under* the pterothorax. Segments VIII and IX are similiar in structure to those of *scolopaceus* (see fig.) Small, rounded, sternal sclerites are present under tergites II to VI, while on No. I there is the usual deeply-pigmented, elongated sternite, extending from inner margin of pleurite to a quadrangular plate in middle of segment; a short, slender, transverse sternite lies across median portion of posterior border of pterothorax. (The genital plate is figured by Mjöberg). The sternal abdominal chaetotaxy seems to be similiar to that described and figured by Kellogg for *fissi-signatus*, while the dorsal is very close to that of *scolopaceus*.

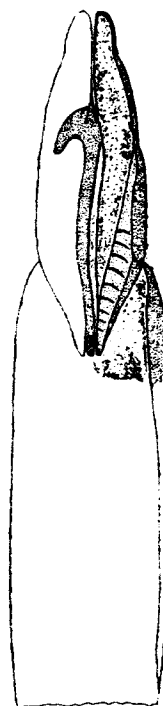


Fig. 5

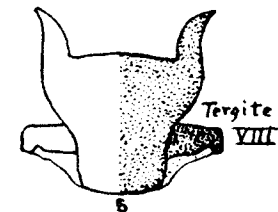


Fig. 3

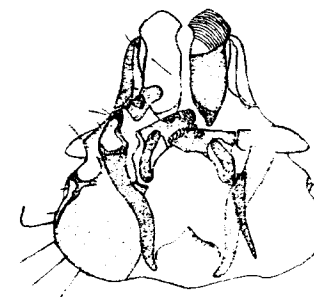


Fig. 4

The male genitalia are similiar in type to those of *scolopaceus*, *phimosus* and *plegadii*, but differ in size and shape of component parts (see figs.) The whole genital armature (exclusive of basal plate) is larger than in *phimosus* and *scolopaceus*, as long but narrower than in *plegadii*, with narrower and shorter basal plate.

In the female the structure of abdominal segment I is same as in male, while there are the same rounded sternal sclerites (but smaller) on segments II to V and VII, but there is a larger sternite (shape of a shoe-sole) lying diagonally across V and VI; between the posterior portion of these two sternites lies a narrow transverse sclerite along anterior edge of VI, while a much wider, transverse band lies along median portion of anterior margin of VII, its ends overlying the two oval sclerites.

Segment IX is obsolete, VIII being short, wide and rounded posteriorly.

Ibidoecus phimosus new species.

Figs. 8 to 10

Types, male and female adults, from *Phimosus infuscatus berlepschi*, Hellmayr, collected by the author at La Gloria, Dept. Magdalena, Colombia, May, 27, 1943 (in U. S. Nat. Mus.).

Diagnosis.—This species is strikingly similar to *bimaculatus* (Mjöb), especially in the shape and size of the head, but in *bimaculatus* the head is longer than wide (.80 x .78) and in *phimosus* wider than long (.716 x .75). In *phimosus* the antennal bands, too, are very different (see figs.) with pitchy blotches at base of trabeculae and at posterior mandibular condyle, as well as a band along the occiput, while in *bimaculatus* all of the antennal band is faintly pigmented except the inner border and posterior end, where it is fused with the occipital band. The structure and chaetotaxy of the pterothorax is the same as in *bimaculatus* and *scolopaceus*, except that there is a long prong extending inward from the median portion of the lateral band (as in *heterogenitalis* n.sp.).

The male genital armature is nearest to that of *scolopaceus*, but is much smaller (except basal plate longer) and differs in structure of basal portion of basal plate, as well as the penis and paramers (see fig.).

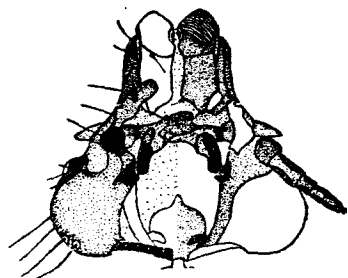


Fig. 8

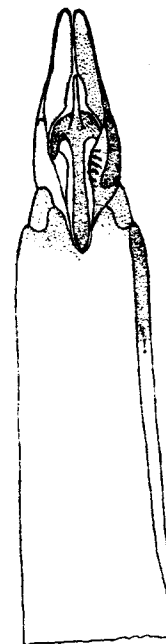


Fig. 9

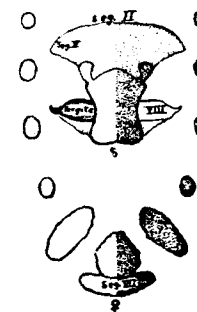


Fig. 10

In the female the sternal plates are the same as in *bimaculatus*, except that in segment VI the median, narrow, transverse sclerite is replaced by a rather large oval plate, with greater extension longitudinally. The abdominal chaetotaxy is not always clearly discernable, but in this species the female shows very clearly that it is as follows: 1 small hair at angle of II; 4 hairs (dorsal and ventral) at angles III to VII (one considerably longer and coarser than others); 4 pustulated hairs along the outer half of the posterior portion of tergites IV to VII (just forward of the edge of the posterior tergite which overlaps them); a row of strong, longish hairs across segments I to VI just back of posterior edge of inner third of tergites and thence arching forward slightly across segment to median line. There are also rows of sternal hairs (much shorter and more bristle-like) more or less opposite the above described dorsal hairs, across II to VI,

and in addition, from 2 to 4 hairs of similliar type under median portion of tergites II to V. In the male the abdominal chaetotaxy seems to be about the same but with somewhat fewer hairs.

Ibidoecus plegadii new species.

Figs. 11 to 13

Types, male and female adults, from *Plegadis ridgwayi* (Allen), collected by the author on Lake Junin, Peru, April 14, 1930 (in coll. of author).

Diagnosis.—This species may be distinguished from all of the other neotropical species (except *ajujus*) by its very large size, there being no other which closely approaches it in this respect. The genitalia are also distinctive, due to their very large size, although of the same type as in *bimaculatus*, *phimosus* and *scolopaceus*, but from which they differ in having the inner basal margin of the paramers *sharply toothed*, while in the others this margin is simply *scored*.

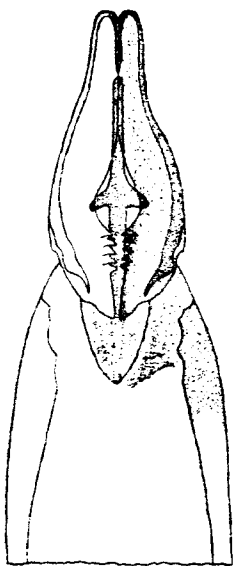


Fig. 12

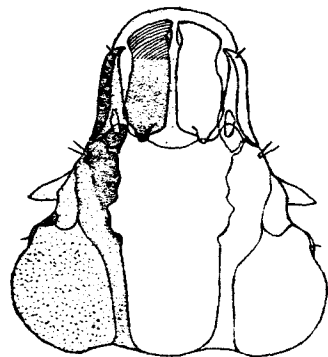


Fig. 11

Like *bimaculatus* it has the head about as long as broad, but very much larger (.95 x .93 against .80 x .78); the clypeal signature is also much longer than wide, like in *scolopaceus* (.347 x .29), while in *heterogenitalis* it is the reverse (.16 x .174).

TABLE OF MEASUREMENTS

Segment	I. bimaculatus				I. phimosus				I. plegadii			
	male		female		male		female		male		female	
	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.
Body	2.15	—	2.80	—	1.92	—	2.36	—	—	—	—	—
Head	frons	—	.303	—	.303	—	.282	—	.282	—	—	—
	temples	.78	.792	.90	.93	.705	.75	.738	.803	—	—	—
	occiput	.80	—	.92	—	.735	—	.77	—	—	—	—
Prothorax	.282	.488	.337	.50	.303	.445	.293	.458	—	—	—	—
Pterothorax	.282	.64	.37	.727	.30	.553	.282	.608	—	—	—	—
Abdomen	.976	.965	1.52	1.26	.89	.933	1.28	1.01	—	—	—	—
Antennae	.326	—	.326	—	.326	—	.314	—	—	—	—	—
Basal Plate	.39	.108	—	—	.347	.11	—	—	—	—	—	—
Paramers	.217	.087	—	—	.138	.061	—	—	—	—	—	—
Penis	.173	.05	—	—	.123	.035	—	—	—	—	—	—

Ibidoecus fissi-signatus (Kellog & Paine)

Docophorus fissi-signatus Kellog & Paine, Ent. News, Vol. XXII, Jan. 1911, p. 19, fig 1 (♀) (Host: "Desert Curlew", Lagunillas, Bolivia (Equals: *Theristicus branickii* Berl. Stolz. fide G. H. E. Hopkins)

I have two males of an *Ibidoecus* taken on *Theristicus caudatus*, near Reyes, Rio Beni, Bolivia which are, apparently, very close to *fissi-signatus*. The species was described from the female, with male unknown, so that it is not possible to make an adequate comparison between the description and figure of *fissi-signatus* and the two Rio Beni males. However, I find, in my study of this genus, that there is very little difference in the sexes in body structure except in abdominal segments VIII and IX, the genital plates and sternal sclerites. The shape of the clypeal signature is an excellent specific character, and the shape of the anterior ends of these sclerites in *fissi-signatus* (and my two males) is unique among the neotropical species of the genus. These two males from *T. caudatus* have the signature shaped much as in *fissi-signatus*,

as far as can be told by the somewhat vague outline given in the figure of the female of that species. The male genitalia would decide the question immediately, but unfortunately the male of *fissi-signatus* is unknown.

Undoubtedly the two males from *T. caudatus* are closely related to *fissi-signatus*, with the same class of clypeal signature, same thoracic structure and chaetotaxy, and probably the same type of male genitalia, and possibly they will prove to be conspecific when males are available from *T. branickii* for study, but I prefer to keep the two specifically distinct for the time being. This resolve is strengthened by finding two very distinct subspecies of *Ibidoecus* on two subspecies of *Aramus scolopaceus*, one from Bolivia, the other from Colombia.

For the present I can add nothing to Kellogg and Paine's description and figure of *I. fissi-signatus*.

Ibidoecus heterogenitalis new species.

Figs. 14 to 16

Type, male adult, from *Theristicus caudatus* (Boddaert), collected by the author at Chatarona (near Reyes), Beni, Bolivia, Sept. 22, 1934 (in coll. of author).

Diagnosis.—Apparently closely related to *fissi-signatus* (Kell & Paine), having the same type of clypeal signature and shape of head and thorax. The signatures are short and wide, with apical ends very flatly convex, longer on the inner side, and sloping sharply backward to outer side (see fig.), with a darker, narrow frontal margin; deeply pigmented, pointed basal ends, and the whole sclerite almost uniformly pigmented, and without trace of lines on apical portion. The signatures are attached not only at their pointed bases, but also on the outer edge, where the sternal portion of the clypeal band extends under them, and with this extension anchored to the head proper by a narrow, dark colored strip of chitin (see fig.).



Fig. 14

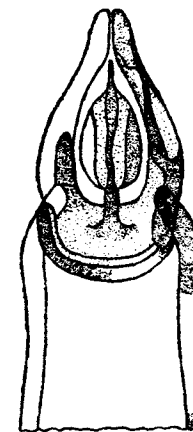


Fig. 15

The antennal bands extend forward to clypeal suture, then bend inward and end at basal tip of clypeal signatures; the occipital bands are continuous and are fused to the ends of the antennal bands. An extension from the posterior mandibular condyle forms another prominent band extending diagonally backward and outward, under the occipital band (which is dorsal), ending in a slender point at side of antero-lateral angle of prothorax. The pharyngeal sclerite is of a distinct type, differing decidedly from that of the *ajajus flavus-plataleae* group.

The prothorax is small, quadrangular, with slightly divergent sides, and with a wide, deeply pigmented marginal band extending around on the posterior margin almost to the median line. No hair or spine at angle. Pterothorax also small, but little longer than the prothorax, with divergent, sinuate sides and rather strongly convex posterior margin; three short hairs at each side (at the wide, flattened angle) and 5 pustulated hairs on each side of posterior margin, but not reaching much more than half way to middle line.

Abdomen small, almost round, with well developed pleurites and tergites; pleurites narrow, very deeply pigmented and with heads projecting far under succeeding segment. The tergites are fused to pleurites, occupying the entire width of segment at junction with pleurite (but do not overlap each other), then taper to a round point inwardly;

they are uniformly pigmented, but much less deeply than the pleurites. Spiracles set in large hyaline pustules in tergites II to VII. Segment VIII small, divided by IX, which extends some distance inside of VIII.

The chaetotaxy is somewhat complicated, and as follows: One short hair at angle of II; 3 long hairs at angle of III, and 4 at IV to VII. Row of 5 strong hairs in clear space between tergites II and III, and III and IV; 4 between IV and V; 3 between V and VI; 2 between VI and VII. The hairs are unusually long, both at angles and between tergites. A cluster of slender hairs at each side of IX. On sternal surface there are two short, but coarse hairs under median, posterior portion of tergite II; 4 under III and IV; 2 under V and VI, and 1 between VI and VII (these hairs are all pustulated). Two sternal hairs, short and fine, between 2nd. pair of coxae; 6 between 3rd. coxae, also 2 longer hairs on each side of median line on segments, II to VI.

The male genitalia are somewhat complicated, and entirely different from all the other species treated in this paper (as far as known). It was not possible to clearly differentiate all the parts, but the figure is approximately correct, and gives a better idea of the structure than would a long description.

Briefly, *heterogenitalis* differs from *fissi-signatus* (as far as can be told from the opposite sexes) in having narrower pro and pterothorax, and in the chaetotaxy of the abdomen, the latter being very different, according to both description and figure of *fissi-signatus*; the occipital margin is more sinuate.

In segment I of abdomen there are strongly chitinized and deeply pigmented sternites which almost meet medially (see fig). At first glance these sclerites seem to be tergites, but careful focussing shows them to be ventral. Apparently this character is present in most, or all species of the genus, and is probably of generic significance.

Ibidoeus scolopaceus scolopaceus new subspecies.

Figs. 17 to 19

Type, male and female adults from *Aramus s. scolopaceus* (Gemlin), collected by the author at La Esperanza (near Codazzi) Dept. Magdalena, Colombia, Aug. 3, 1942 (in U.S. Nat. Mus.)

Diagnosis.—This is the smallest of the known neotropical forms, with a long narrow clypeus, the signature being actually slightly longer than in *phimosus*, and almost as long as in *bimaculatus*. Excepting for the pitchy spots on antennal bands and the pitchy occipital bar, the head structure and pigmentation is very similar to that of *phimosus*, although a careful comparison of the figures of each will show many small differences, especially in the shape of the clypeal signature, its method of attachment to head proper, and in the size and shape of the mandibles.

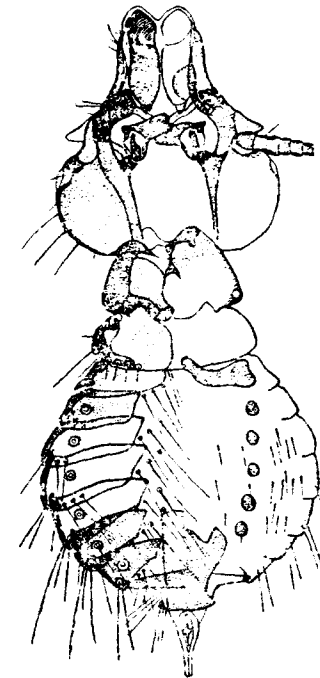


Fig. 17

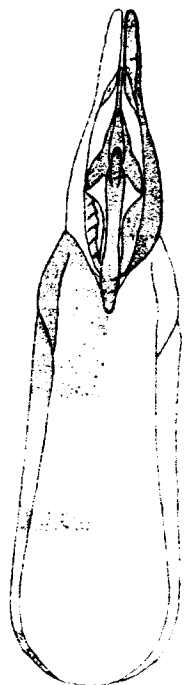


Fig. 18

The prothorax has rounded, divergent sides, while in *phimosus* they are almost straight (but divergent). Pterothorax and abdominal structure very similar to that of *phimosus*, with the abdomen in male almost circular (.78 x .74) and very small. All of the males have the abdominal segments drawn tightly together, with the tergites strongly overlapping, but this seems to be the normal condition.

The female has the abdomen oval (1.24 x 1.02); the sternal sclerites are as shown in the figure of the male. In the female the lateral sclerites (under the tergites) seem to be the same as in the male, but the transverse, median sternites are wide and deeply pigmented, the first extending from tip to tip of tergite VI, and the second extending under the ends of tergites VII. The chaetotaxy seems to be the same as shown in figure of male.

The male genital armature is large for size of insect, much larger than that of *phimosus*, with shorter, wider basal

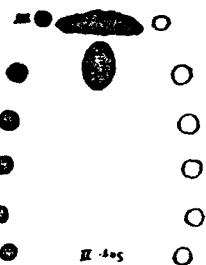


Fig. 19

plate, and long, narrow working parts, with very long penis, while the structure of the basal plate is also unique for the genus.

Ibidocercus scolopaceus carau new subspecies.

Fig. 20 and 21

Types, male and female adults, from *Aramus scolopaceus carau* Vieillot, collected by the author at Chatarona (near Reyes), Rio Beni, Bolivia, Sept. 22, 1934 (in coll. author).

Diagnosis.—Very similar to *scolopaceus*, from which it differs principally as follows: Head smaller in all proportions, but clypeal signature proportionately longer; the antennal bands are differently shaped, while the attachment of the clypeal signature to the head is slightly different; the prothorax has straighter, more divergent sides, with bands along posterior margin less sinuate; the pterothorax; and

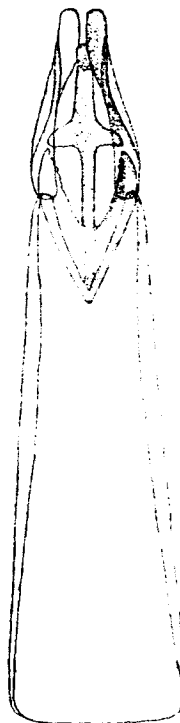


Fig. 21



Fig. 20

abdomen seem to be practically the same, the latter being quite round in male (.75 x .74). There is apparently considerable difference in the genital armature of the males, although I am not positive that the figure is correct in all details, since the male type (and only ♂), while having the genitalia extruded nearly to the basal plate, has that organ somewhat twisted. I think that the thick, lateral wings of the penis should be more recurved, as in *scolopaceus*, with the apical portion also similarly shaped. However, the size and shape of cognition of the form, together with the other differences given above.

TABLE OF MEASUREMENTS

Segment	I. fissi-		I. hetero-		I. s. scolopaceus				I. scolopaceus				
	signatus		genitalis		male		female		male		female		
	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.	l.	w.	
Body	2.40	—	1.56	—	1.56	—	2.21	—	1.58	—	2.04	—	
Head	frons		—	.195	—	.195	—	.239	—	.195	—	.25	
	temples		.68	.58	.608	.655	.615	.77	.74	.64	.58	.738	.70
	occiput		.56	—	.586	.66	—	.76	—	—	—	—	—
Prothorax	.40	—	.206	.326	.228	.39	.28	.456	.15	.37	.19	.43	
Pterothorax	—	—	.24	.445	.19	.456	.26	.542	.17	.43	.22	.56	
Abdomen	—	1.06	.738	.694	.70	.75	1.14	.976	.74	.74	1.08	.89	
Antennae	—	—	.27	—	.24	—	.26	—	.26	—	.27	—	
Basal Plate	—	—	.50	.15	.303	.12	—	—	.28	.108	—	—	
Paramers	—	—	.14	.13	.19	.067	—	—	.14	.085	—	—	
Penis	—	—	.112	.043	.162	.036	—	—	.128	.05	—	—	

Note: I have a single female from *Aramus scolopaceus dolusus* Peters, collected at Tres Zapotes, Vera Cruz, México, which for lack of male genitalia I have tentatively called *I. s. scolopaceus*. When male is available it may prove to be sub-specifically distinct.

Cummingsiella testudinaria (Denny) and *C. longirostricola* Wilson.

Figs. 22 to 25.

Docophorus testudinarius Denny, Anopl. Brit., 1840, p. 96, pl. I, fig 6 (*Numenius arquatus*) *Phlopterus* (*Cummingsiella*) *longirostricola* Wilson, Canadian Entomologist., Dec. 1937, p. 264; figs. 1 and 2 (*Numenius americanus*).

In 1941 I collected specimens of *Cummingsiella* from *Numenius americanus* at Tlacotalpam, Vera Cruz, Mexico, and the following year had a description of it in MS., together with drawings of the new form and of *C. testudinaria* (Denny). Fortunately, before publishing them Wilson's description of *longirostricola* came to my attention.

However, since Wilson does not figure either head or genitalia of *testudinaria*, and gives rather poor figures of the new form, I have thought it advisable to publish my own drawings, in order to give a clearer picture of the differences between the two species.

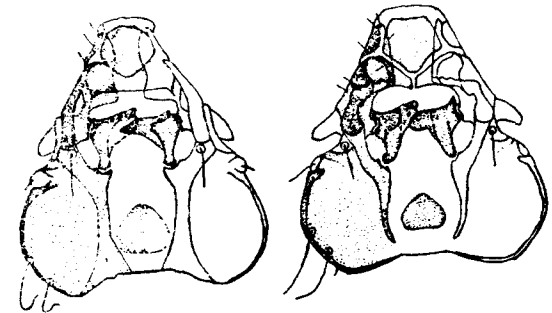


Fig. 23

Fig. 22

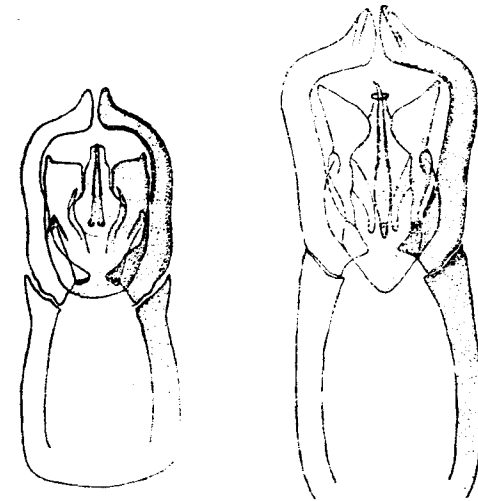


Fig. 24

Fig. 25

As may be seen from the drawings, the clypeal area of *longirostricola* is much narrower, with the signature differently shaped, while the antennal bands also differ decidedly in shape and structure; the occipital bands are entire, widening strongly on the occipital margin; the trabeculae are also differently shaped. The most striking difference, however, is in the male genitalia, not only in size, but in structure of the component parts, all of which differ in either size or shape, or both (see figs.).

Multicola macrocephala (Kellogg)

Lipeurus macrocephalus Kellogg, New Mall. II, p. 504, Proc. Cal. Acad. Sci. 2nd. Ser., vol. VI, Nov. 7, 1896 (Host: *Chordeiles virginianus henryi*; equals *C. minor henryi* Cassin)

I recently examined a female cotype of this species in the U. S. National Museum collection, and found it to be a typical *Multicola*, and the first recording of that genus in the New World. This species was overlooked by Miss Clay when she described the genus, and also by myself when I published descriptions of new species of that genus from Colombia and Bolivia (Revista Venezolana de Entomologia, Dec. 31, 1945, p. 173 to 181: Neotropical Miscel. N^o 1).

When describing the species Kellogg recognized its affinity with *Lipeurus hypoleucus* Nitzsch (genotype of *Multicola*) and compares the two forms. Oddly enough he had no males of the species either, but I was able to secure males of all the new South American forms.