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STUDIES IN NEOTROPICAL MALLOPHAGA (V)
The Lipeuroid Forms of the New World "Galliformes". Part 1 [1]

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(With 65 figures)

The present paper is the first of a series which is planned to treat all of the Mallophaga from the indigenous species of the Gallinaceous birds of the New World, but will not include species from the domestic fowl (*Gallo*) or any other introduced hosts. Miss CLAY has already covered these forms in her splendid revisions: *Lipeurus* and Related Genera [2] and *Goniodes* [3], to which the present work will be more or less supplementary.

I shall make no attempt to include all of the species of Mallophaga from hosts found in the United States and Canada, since I wish to confine my work as closely as possible to the neotropical forms. It has, however, been necessary to include the Mallophaga of the North American genus *Colinus*, since it has many representatives as far south as Colombia. In addition I shall include a few other North American forms which happen to be in my own collection.

I have taken the liberty of erecting a new genus for one of the species included by Miss CLAY in her revision of *Oxylipeurus*, but in so doing I do not wish to detract from the splendid work done by her on this group. It merely happens that Miss CLAY was handicapped by not having sufficient New World material, and viewed from the standpoint of the material available to her for study, her conclusions were quite justified.

There are many large gaps in my own collection of the neotropical forms from the *Galliformes*, and when these are filled by future workers, there will undoubtably be some changes made in my arrangement of some of these groups.

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[1] Received for publication November 7, 1944.
The second part of this paper will be published in the next number of this REVISTA.

[2] P.Z.S., Ser. B, Vol. 108, Part 2, 1938, pp. 109-204.

[3] P.Z.S., Ser. B, Vol. 110, Parts 1 and 2, 1940, pp. 1-120.

I am greatly indebted to Miss CLAY and Col. MEINERTZHAGEN for the loan of New World material in this group, also to Dr. G. H. E. HOPKINS and to the authorities of the U.S. National Museum for the same reason.

The second paper of this series will treat the genera *Goniodes, Goniocotes, Virgula* and related genera, and will appear in the near future.

The nomenclature used in the Check List of the Birds of the World by J. L. PETERS has been followed in this paper, with the exception of *Crax annulata*, which was placed in synonimy by Dr. PETERS, but I have personally collected sufficient material of this bird to know that it is very distinct species, with the sexes practically alike.

All measurements are in millimeters and all drawings were made by the author.

ISCHNOCERA Kellogg

PHILOPTERIDAE Burmeister

Oxylipeurus Mjoberg

Mjoberg, 1910. Arkiv f. Zool., VI. p. 91. Genotype: *Lipeurus inaequalis* Piaget.

This genus, as erected by its author included a small number of Lipeuroid species, which were of a superficial resemblance, but were from Gallinaceous hosts pretty well scattered over the Old and New World, although it included no neotropical forms. The characterization of the genus by Miss CLAY (P. Z. S., July, 1938, p. 157) seems, at first glance, to be clear and ample, but a close scrutiny of the species placed under it by Miss CLAY shows some discrepancies which are hard to reconcile.

The more recent studies in Mallophaga tend to show that, as a general rule, closely related avian hosts harbor congeneric groups of parasites, and that rarely are such congeneric groups of Mallophaga found on two or more host families, especially where one such family inhabits the Old and the other the New World. Miss CLAY included in her grouping of "Gallinaceous" birds both those of the Old and New Worlds, and since her material from the New World was rather meagre, I believe that she has drawn some erroneous conclusions regarding the generic status of some of the parasites from the New World hosts, viz: The *Cracidae* (Curassows and Guans), the *Odontophorinae* (American Quails), and the *Meleagridae* (Turkeys).

Prior to the publication of Miss CLAY's review of this group, the following New World species had been described: *Lipeurus polytrapezius* Burmeister, 1838 (*Meleagris gallopavo domestica*); *Lipeurus concolor* Rudow, 1869 (*Crax globulosa*); *L. postemarginatus* Carriker, 1903 (*Ortalis garrula frantzii*); *L. clavatus* Mc. Gregor, 1917 (*Colinus*

virginianus texanus) ; and *L. rhynchoti* Carriker, 1936 (*Rhynchotus r. rufescens*, error *Mitu mitu*). Miss CLAY added *Oxylipeurus polytrapezius agriocharis* and *O. ocellatus* (from *Agriocharis ocellata*) ; *O. corpulentus* (*Meleagris gallopavo merriami*); and *O. penelope* (from *Penelope p. purpurascens*).

Miss CLAY admits that the genus *Oxylipeurus*, as defined by her, contains a rather heterogenous lot of species, which she has divided into "groups", not wishing to use the term "subgenus" (in which I heartily agree). Her "group" four contains only *Lipeurus clavatus* Mc.Gregor, and her "group" five only *L. postemarginatus* Carriker, while the remaineder of the species listed above were placed in her sixth, and largest, "group", together with Old World species found on Pheasants.

I have examined specimens of *Lipeurus clavatus* Mc.Gregor ("group four"), together with other closely allied species from *Colinus c. cristatus*, *C. cristatus decoratus*, *C. nigrogularis* and *Callipepla s. squamata*, and I find that they all differ so radically from Miss CLAY's characterization of *Oxylipeurus* that they must either be removed from that genus or else the characters of the genus amplified to a degree quite out of keeping with present day generic concepts.

"Group five" is represented in my collection by seven forms, all taken on various species of *Ortalis*, from Mexico to Bolivia. This group of species fits into *Oxylipeurus* fairly well, the discrepancies being : the absence of post-antennal suture ; presence of occipital bands (not complete, however), and absence of dorsal strut on abdominal pleurites. In the male there is the prolongation of the sternal plate into a "narrow, thickened, somewhat modified process", but the clumps of hairs on each side of this process are *entirely absent*.

It seems to me that too little importance has been attached by Miss CLAY to the genital armature in this genus. She says : "The genitalia are variable in form but, with certain exceptions, consist of a flatened endomeral plate, free penis, and no sac". I cannot reconcile this description of the genitalia with the actual genitalia of some of the species included by Miss CLAY under *Oxylipeurus*, or with that of many undescribed species in my own collection from neotropical hosts. In the *O. concolor* group we have a type of genital armature which fits Miss CLAY's characterization fairly well, except for the absence of a penis of any sort. This type of *Oxylipeurus* is found on the neotropical genera *Crax*, *Pauxis*, *Mitu*, *Penelope*, *Meleagris* and *Agriocharis*, with a slightly modified form of genitalia in the species from *Ortalis* (*L. postemarginatus* Carriker, and allies).

In the *L. clavatus* group we have a genital armature of an entirely different type, consisting of a very small, elongated, very thin, poorly

chitinized and non-pigmented basal plate, at the distal end of which are minute, more or less fused, paramers, with no vestige of any of the other commonly found, movable or fixed parts. I have, therefore, made *L. clavatus* Mc.Gregor the genotype of a new genus, *Epicolinus*, described in this paper. A similar, though smaller, and more rudimentary type of genital armature is found in the parasites taken on *Odontophorus* (these were unknown to Miss CLAY, but here we have the armature lying within, and extruded through, a long, tubular sheath. The structure of segments VIII and IX in the ♂ is also unique, and for this group I have erected the genus *Eiconolipeurus*, described on a subsequent page of this report.

Referring again to the *Lipeurus concolor* Rudow group, we have an exceedingly homogenous set of species, which are very close to typical *Lipeurus*. The only characters which separate them from *Lipeurus* (as characterized by Miss CLAY) are: The presence of chitinous projections on the sternal face of the front of the head (one of the characters of *Oxylipeurus*); absence of appendage on first segment of antennae in the ♂ (not always present in *Oxylipeurus*, according to Miss CLAY); structure of last abdominal segment in the ♂, and the genital armature. With the exception of the chitinous projection on the front of the head, the head in this group is astonishingly like that of *Lipeurus caponis*, the genotype of *Lipeurus*, while certainly there is no trace of a transverse clypeal suture, one of the principal characters of *Oxylipeurus*.

I am not prepared, nor have I any desire to attempt a revision of this decidedly complex situation. If we accept *Oxylipeurus* as it now stands, I fear that it will mean a reversal of some of our latest concepts of generic characters and generic homogenity. It seems to me that the only solution of the dilema presented by *Oxylipeurus* would be the removal of some of the "groups" placed under it by Miss CLAY, especially those from the New World, and a tightening up of the generic characterization. In the present paper I have taken the liberty of removing "group four" (*Lipeurus clavatus*), and have been strongly tempted to do the same with "group five" and join it with *concolor* and its allies, to form another genus, but have hesitated in doing so from my very limited knowledge of the Old World forms of this genus. Frankly, however, I cannot conceive how Mallophagan parasites from the *Megapodidae* can be congeneric with forms found on the neotropical family *Cracidae*, even though there may be a strong superficial resemblance between the two groups. We have the same state of affairs regarding the genera *Cuclotogaster*, *Rhynonirmus* and *Otilipeurus*, three genera remarkably similar in a superficial way, as Miss CLAY has admitted, yet they are from three avian families that no Or-

nithologist would ever think of being even remotely related to each other.

Undoubtably *Lipeurus postemarginatus* Carriker is congeneric with *L. concolor* Rudow, but I question very strongly whether either of them are congeneric with *L. inaequalis* Piaget, the genotype of *Oxylipeurus*.

Oxylipeurus concolor (Rudow)

Lipeurus concolor Rudow, 1869, Beitr. zur Kennt. der Mallophaga, oder Pelzfr., Diss., Halle, p. 33 (Host: *Crax globulosa*).
Lipeurus quadrinus Giebel (Nit. MS.), 1874, Insecta Epizoa, p. 222 (Host: *Crax globulosa*).
Lipeurus quadrinus Rudow, Taschenberg, Die Mallophaga, p. 174, pl. VI, fig. 2 (*Crax carunculata*).

I have seen no material from the type host, but since this particular type of *Oxylipeurus* is present on many species of *Crax* and *Penelope* (which also differ *inter se*), I see no reason for assuming that any other host of the *Cracidae* would be likely to harbor exactly the same species of Mallophagan parasite as *Crax globulosa*, and until comparative material from that host is available, I prefer to consider the allied parasites from all other hosts as being distinct.

Rudow's description and figure are, of course, of no value whatever. Giebel gives very little useful information in his description of *L. quadrinus*, and none at all under *L. concolor*, nor does Piaget help matters, in fact he asserts that the antennae are different in the two forms (*concolor* and *quadrinus*).

However a careful analysis of Taschenberg's description of *L. quadrinus* (= *concolor*) reveals several pertinent facts which should not be disregarded. One of the first statements he makes is that there are *seven* hairs on each side of the high-arched front. All but one of the seven forms closely related to *concolor*, which I have seen, have but *five* hairs on the front, the other has *six* (from *Crax globicera*), while the "larger, deeply pigmented, rounded ends of the clypeal bands" also agrees with specimens from *C. globicera*, as well as with two other forms from *Penelope*. The next pertinent fact is: "The temples are strongly rounded, with three hairs." The only forms I know which have strongly rounded temples are *O. rhynchoti* (Carriker) (from *Mitu mitu*) and *O. penelope* Clay (from *Penelope purpurascens*)[4], but *O. rhynchoti* has but one hair on temples, and has the end of the antennal band *angulated*, not rounded. The only specimens which have three hairs on the temples are those from *Crax globicera*, but they have the temples the most decidedly angulated of all of the seven forms seen.

[4] *O. p. polytrapezius*, *O. polytrapezius agriocharis*, *O. corpulentus*, and *O. ocellatus* have not been considered in making these comparisons, since they do not seem to be closely related to *O. concolor*.

His statement as to occipital margin re-entering, and occiput concave, applies equally well to several forms. His description of the thoracic segments and the abdomen are of no value, but the detailed description of the 8th and 9th abdominal segments proves quite illuminating when compared with the various other forms. The description of the 8th segment might apply to *O. bridgesi*, possibly to *O. quadripapula*, but certainly to none of the others. His "bilobed" 9th segment is equally ambiguous, but is followed by: "mit tiefen dreieckigen Ausschnitte", which seems to me to be applicable to no form I have seen. There is one noticeable omission in TASCHENBERG's description. He says nothing about any chitinous projections from the clypeal band, on the front of the head, nor is there any trace of them in his figure. These pointed projections are conspicuous, and would not have been overlooked, *if present*. The number of these vary between four and six in all species except *O. craxae* (from *Crax alberti*), which has but two and which are small and inconspicuous (*O. penelope* has either two or four, not plain from figure). *O. globicerus* (from *Crax globicera*) has four, while the temples are sharply angulated, and in *O. craxae* the temples are also angulated.

Summing up the matter, it would seem that *O. concolor* would have a head shaped somewhat similar to that of *O. rhynchoti*, but longer, with, the chitinous projections on the front either absent or obsolete; with large rounded ends to the antennal bands; with seven hairs on each side of front, and three on each temple, while the tip of the abdomen might conceivably be similar to that of *O. quadripapula* or *O. craxae*. According to TASCHENBERG's measurements *O. concolor*, does not agree closely with any of the known forms except *O. penelope*, with a head index of .80 (.78 in *concolor*), but if TASCHENBERG's figure and description are correct (and we have no reason to believe them otherwise) we may safely assume that *O. penelope* is *not* conspecific with *O. concolor*, while the latter is much less likely to be conspecific with any of the other known forms of *Oxylipeurus*.

Oxylipeurus rhynchoti (Carriker)
(Figs. 1-3)

Lipeurus rhynchoti Carriker. Lice of the Tinamous. 1936. p. 63, pl. I, fig. 1 (Host: *Rhynchotus r.rufescens*, errore. = *Mitu mitu*).
Oxylipeurus rhynchoti (Carriker). Clay. P.Z.S., 1938. Vol. 108, Pt. 2, p. 186.

Subsequent to the publication of this species a vial of Mallophaga was found which had been taken from a specimen of *Mitu mitu*, shot by the author on the same day as the *Rhynchotus* from which the single specimen of *Lipeurus rhynchoti* had been collected. These lice proved to be identical with the type of *L. rhynchoti*, thus establishing

beyond a doubt that the true host of that parasite is *Mitu mitu*, and not *Rhynchotus r. rufescens*, as originally published.

This species may possibly prove to be the nearest to *O. concolor* (Rud.), having the same rounded temples and circular front, while the 8th and 9th abdominal segments in the male, though not the same, are of the general type described by TASCHENBERG, but the measurements are considerably different, especially of the head, the C.I. for *rhynchoti* ♂ being .68, while that of *concolor* is .78. The species was originally described from a single male, the female being unknown, a description of which follows.

Female: Differs from the male in having slender, filiform antennae, with the first segment somewhat globular and thicker than the remaining segments; the width of the head at temples is much *greater* than at trabeculae (equal in the ♂); the abdomen is elongated oval, tapering both towards the thorax and the tip. The tergal plates of abdomen are widely separated medially, while the sternal plates are continuous; the last abdominal segment (8th and 9th fused) is small, tapering, and ends in a pair of slightly curving claspers. The chaetotaxy is very similar for head and body, except for the last abdominal segment, which has fewer hairs than in the male (see figure).

MEASUREMENTS	MALE (type)		FEMALE	
	length	width	length	width
Body	2.79		2.95	
Head, at trabeculae	.65	(.44	.63	(.43
Head, at temples		(.44		(.50
Prothorax	.26	.32	.19	.34
Pterothorax	.36	.45	.35	.52
Abdomen	1.67	.51	1.86	.59
Antennae	.48	.087	.41	.053
Parameres	.14	.13		
Endomeral plate	.10	.108		
C. I.	.68		.68 and .80	

Oxylipeurus craxae n.sp.
(Figs. 4-6)

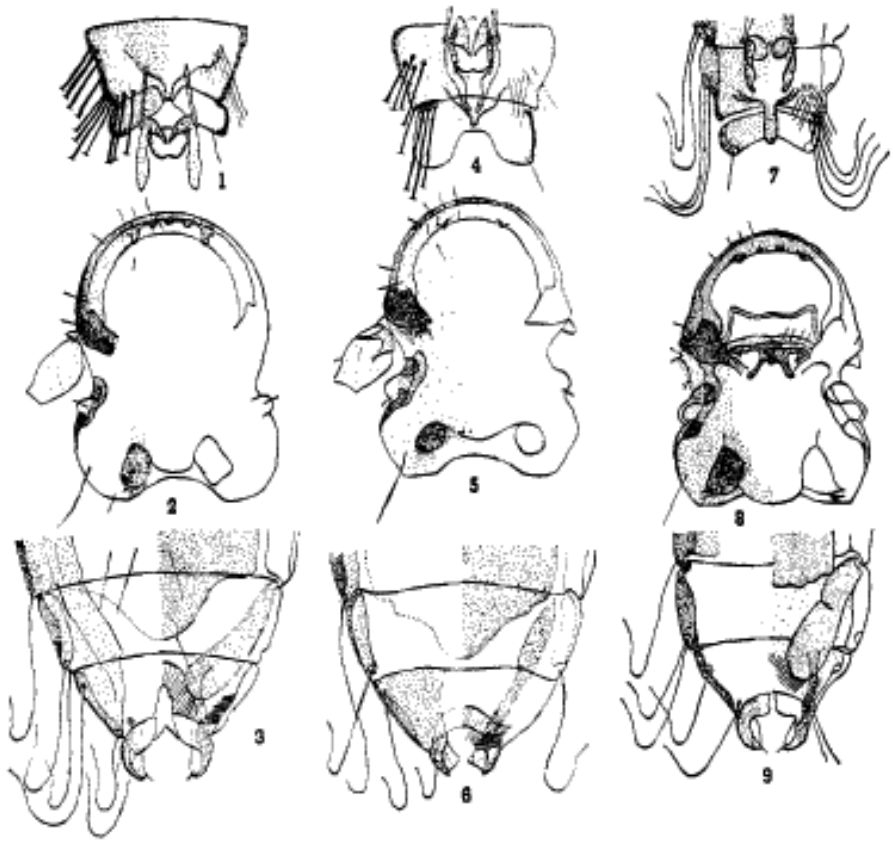
Types ♂ and ♀ adults, from *Crax alberti*, collected by the author at La Tigrera (near Santa Marta), Colombia, May 11, 1913 (types in coll. of author).

This species has the temples shaped very similar to those of *bridgesi*, with flattened, converging sides and deeply concave occipital margin, but has the *frons* circular like *rhynchoti* and *globicerus*, and differs from all other species of this group[3] in having but *two*,[4] rather small, chitinous nodules on the

[3] See footnote 4 under *Oxylipeurus concolor*.

[4] In addition to the type material from La Tigrera, other specimens were taken from birds shot in the Sierra Perijá, making a total of 11 males and 12 females. A study of this series re-

front of the head. The enlarged ends of the antennal bands are sharply truncate, with sharp angles at front and back, differing from all others of the group in this respect (see figure).



Oxylipeurus rhynchoti (Carriker) — Fig. 1: Tip of male abdomen; fig. 2: head of male; fig. 3: tip of female abdomen. *Oxylipeurus crassi crassi* n. sp. — Fig. 4: Tip of male abdomen; fig. 5: head of male; fig. 6: tip of female abdomen. *Oxylipeurus crassi annulatus* n. ssp. — Fig. 7: Tip of male abdomen; fig. 8: head of male; fig. 9: tip of female abdomen.

Abdominal segment IX is similar to that of *quadripapula*, but VIII lacks the marked emargination on the sides, while the chaetotaxy is quite different, as well as the shape of the paramers, which differ from all species seen by the author, being bent *inward*, thickened medially, and with slender tips (see figure).

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veals the fact that the number of chitinous projections on the clypeal band varies considerably in this species, not only in the female but in the male as well.

In the following tabulation the first numeral is for the number of nodules on the left side of frons, the second for those on the right side. Males: 2 — 2; 2 — 1; 2 — 1; 3 — 2; 3 — 2; 1 — 2; 1 — 1; 1 — 0; 1 — 0; 4 small ones in middle; a corrugated line only. For the females we have: 3 — 2, well developed; 2 — 2, well developed; 2 — 2, all small; 2 — 3, all small; 2 — 1, all small but one on left; 1 — 2 and 1 — 1, well developed; five specimens with no nodules whatever, like *sinemammula*.

It is possible that when larger series of specimens from the different hosts are available for study it will be found that the number of chitinous nodules on the clypeal band is not constant, and cannot always be used as a specific character, especially in the females.

The female is unique in that it is shorter than the male, with the head of the same length but considerably wider, and with less discrepancy in the C. I. between the sexes than in any other species of this group (♂ .70; ♀ .74). The prothorax is exactly the same size in the two sexes, but the pterothorax is shorter and wider in the ♀. The shape and chaetotaxy of abdominal segments VIII and IX is also distinctive, in addition to the fringe of hairs on the posterior edge of the genital plate, there is a short longitudinal fringe of setae just forward of the base of the claspers, which point inward, across the clasper, and into the opening between them. This longitudinal fringe of setae seems to be confined almost entirely to the species of this genus found on the avian genera *Crax, Mitu, Pauxis* and *Meleagris*.

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.84		2.78	
Head, at trabeculae	—	.43	—	.466
Head, at temples	.65	.433	.65	.48
Prothorax	.24	.37	.24	.37
Pterothorax	.39	.466	.35	.49
Abdomen	1.65	.54	1.65	.67
Antennae	.50	.11	.40	0.53
Paramers	.193	.128		
Endomeral plate	.108	.097		
C. I.	.66 and .70		.71 and .74	

Oxylipeurus craxae annulatus n. ssp.
(Figs. 7-9)

Types — Male and female adults, from *Crax annulata*, collected by the author at El Bosque, Montes de Oca, Magdalena, Colombia, June 13, 1941 (types in U.S.Nat.Museum).

This race also has four raised papillae on the clypeal band in the male, while the number of papillae varies greatly in the female, as in the other species of this group, this variation consisting not only in the number of papillae, but in their size and spacing. In one of the 6 ♀ ♀ taken there are no papillae present, merely a sligth thickening and corrugation of the posterior edge of the clypeal band.

The head is slightly wider at the temples than at the base of the antennae, and is shaped very much as in *craxae*, but temples are more rounded, the base of the antennal bands elongated (not truncated), while the occipital blotches are larger and differently shaped.

The shape of the last two abdominal segments in the male is also similar to those of *craxae*, as well as the paramers, but the ventral appendage on segment VIII is strongly developed, more strongly than in any other species listed in the present paper, with the single exception of *O. sinemammula*, which is

practically the same. Segment IX is shorter, less deeply emarginate, and of different shape, while the chaetotaxy of both segments differs considerably.

In the ♀ the last three segments of the abdomen are quite different from those of *craxae*. The genital plate is of an entirely different shape; the pleural plates are wider and more strongly chitinized; segment VIII has the sides concave instead of convex; segment IX, while of the same type, is slightly different, also the chaetotaxy of both VIII and IX.

It is worthy of special note that the three species of *Oxylipeurus* which I have taken from different species of the genus *Crax* all have the ♂ sex *larger* than the ♀, a most unusual situation, while in the parasites from the genus *Penelope* the ♀ is invariably the larger of the two.

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.54		2.40	
Head..at trabeculae	—	.415	—	.41
Head..at temples	.596	.44	.56	.43
Prothorax	.217	.30	.20	.325
Pterothorax	.30	.39	.30	.456
Abdomen	1.47	.42	1.62	.456
Antennae	.45	.087	.35	.046
Parameres	.12	.046		
Endomeral plate	.043	.087		
C. I.	.70 and .74		.73 and .768	

Oxylipeurus globicerus n. sp.
(Figs. 10-12)

Types — Male and female adults, from *Crax r. rubra*, collected by the author on Cerro Tuxtla, Vera Cruz, Mexico, May 4, 1940 (types in the U.S. Nat. Museum).

This is probably one of the most distinctive of the known species of the *O. concolor* group. In general size it approximates *rhynchoti*, being one of the larger forms. The front is circular, but with a conspicuous bulge at the trabeculae, while the ends of the antennal band are greatly swollen, deeply pigmented, and oval in shape; there are four chitinous nodules on the *frons*, two on each side, with the pairs rather widely separated, and with the inner one much smaller than the outer. The posterior portion of the temples is somewhat produced and markedly *angulated*, with the occipital margin deeply concave, and is the only known species of this group with the temples of that type.

The shape and chaetotaxy of segments VIII and IX in both sexes are also unique, although in the ♂ these segments somewhat approach those of *O. quinimammula*, but the chaetotaxy is entirely different.

The female, like that of *craxae*, is also smaller than the ♂, but more decidedly so than in that species. The head is much shorter and slightly wider than that of the ♂, with C.I. of .73 against .66 in the ♂; the prothorax is

the same length, buth narrower, while the pterothorax is markedly shorter and narrower; the abdomen is shorter, but wider (may not be exact in this measurement). Like *craxae* the female hars a fringe of longish setae set longitudinally just forward of the base of the claspers, these hairs extending diagonally backward across the clasper and well into the opening beteween them. The arrangement of the tergal and sternal plates on the last three abdominal segments in this species and in *craxae* is also decidedly different from those species occurring on *Penelope* (see figures).

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.79		2.65	
Head, { at frons	—	.444	—	.45
Head, { at temples	.67	.434	.61	.45
Prothorax	.22	.357	.22	.33
Pterothorax	.34	.51	.28	.46
Abdomen	1.68	.53	1.62	.60
Antennae	.49	.109	.27	.05
Paramers	.16	.118		
Endomeral plate	.097	.097		
C. I.	.66 and .63		.73	

Oxylipeurus pauxus n.sp.
(Figs. 13-15)

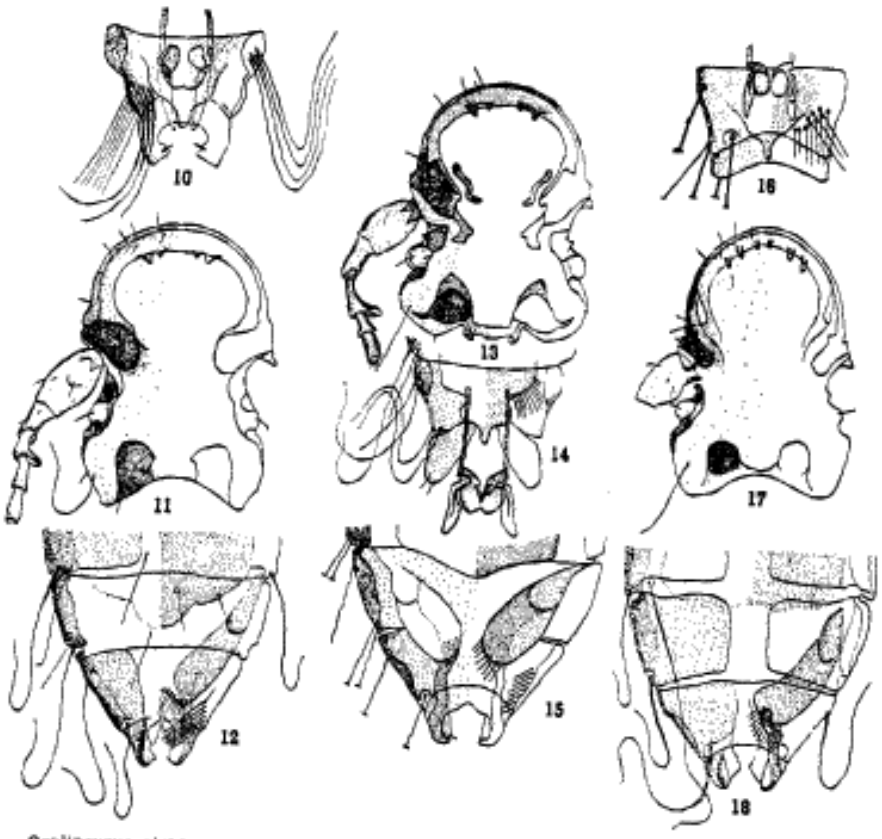
Types — Male and female adults, from *Pauxis pauxi illiardi*, collected by the author at Tierra Nueva, Sierra Perijá, Colombia, July 2, 1941 (Types in U.S.Nat.Museum).

Like *O. globicerus* and *O. quadripapula*, the ♂ of this species also has *four* raised papillae on the posterior margin of the clypeal band (the females vary in this character, some having more, others less). The present species has a somewhat superficial resemblance to *globicerus*, but the head (except for the papillae) is closer to that of *rhynchoti*, as well as the ♂ genitalia. Abdominal segment IX in the ♂ is also of the type of *rhynchoti*, but is of slightly different shape, also the protuberances on segment VIII, but the entire chaetotaxy of these segments is entirely different (see figures). The last three segments of the abdomen in the female are also very similar to those of *rhynchoti*, the genital plates being of the same pattern, but differing somewath in detail, as well as the fringe of setae along their posterior ends. The large sternal plate which extends from segment VI backwards under VII, is shorter posteriorly in *pauxus*.

In the three ♀ ♀ taken the papillae on the clypeal band are smaller and much less sharply defined than in the males. One ♀ has but 1 papilla on each side, with the median margin somewhat corrugated, while in another the outer papillae on each side are well developed, with four small ones, of uneven size, between, and irregularly spaced.

There is also a tendency towards unequal development of these papillae in the ♂ ♂, but all of the 5 specimens taken have but *four*, and *all* well developed.

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.71		2.86	
Head at trabeculae	.63	.43	.63	.44
Head at temples		.44		.47
Prothorax	.24	.345	.195	.35
Pterothorax	.35	.49	.32	.52
Abdomen	1.58	.54	1.76	.70
Antennae	.45	.09	.37	.05
Paramers	.14	.032		
Endomeral plate	.065	.097		
C. I.	.68 and .70		.70 and .746	



Oxylipeurus globicerus n. sp. — Fig. 10 : Tip of male abdomen : fig. 11 : head of male : fig. 12 : tip of female abdomen. *Oxylipeurus pauxus* n. sp. — Fig. 13 : Head of male : fig. 14 : tip of male abdomen : fig. 15 : tip of female abdomen. *Oxylipeurus bridgesi* n. sp. — Fig. 16 : Tip of male abdomen : fig. 17 : head of male : fig. 18 : tip of female abdomen.

Oxylipeurus bridgesi n. sp.
(Figs. 16-18)

Types — Male and female adults, from *Penelope obscura bridgesi*, collected by the author at Samaipata, Bolivia, October 26, 1937 (types in coll. of the author).

The males of this species differ from all others of this group in the chaetotaxy of abdominal segment VIII, and in the shape and chaetotaxy of IX, as well as the number of chitinous nodules on the clypeal band, being the only species thus far seen by the author which has *six* of these nodules

It differs also in the size and porportions of the various body segments, but has the C.I. in both sexes almost equal to that of *ryhnchoti* and *globicerus*, from which species it differs markedly in many important characters. The shape of segment IX seems to be unique (see figure), as well as the structure of the antennal bands.

The female may be distinguished by the six nodules of chitin on the *frons*, and the same structure of the antennal bands as in the ♂, as well as by the wide tergal plates on abdominal segments VII and VIII. The claspers are short and wide, while the fringe of hairs on the rear margin of the genital plate is broken medially, there being a line on each side instead of one continuous fringe. The shape of the genital plates is also distinctive (see figure).

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.66		2.75	
Head... at trabeculae	.62	.41	.58	.41
Head... at temples		.41		.41
Prothorax	.17	.33	.18	.33
Pterothorax	.32	.45	.28	.53
Abdomen	1.62	.48	1.73	.56
Antennae	.45	.087	.35	.053
Paramers	.135	.115		
Endomeral plate	.085	.096		
C. I.	.66		.70 and .72	

Oxylipeurus quadripapula n.sp.
(Figs. 22 and 23)

Type — Male adult, from *Penelope argyrotis*, collected by the author at La Cumbre de Valencia, Venezuela, October 19, 1910 (type in coll. of the author).

The species is known from a single ♂, the type. It is, perhaps, most closely related to *quinimammula*, having the same compressed front and general shape of the head, althoug lacking the sharp angle on temple behind the eye, and with the occipital margin almost transverse. There are but *four* chitinous nodules on *frons*, but unlike *globicerus* (which also has four) they are all large, of uniform size, and evenly spaced. Abdominal segments VIII and IX in the ♂

are much wider and of an entirely different shape and chaetotaxy, resembling very much those of *craxae* in their shape, excepting that VIII is deeply emarginate on the sides.

The genital armature is also close to that of *quinimammula*, except that the paramers are shorter, and thicker in their subapical portion. The ♀ (unknown) will probably be distinguished by head characters.

MEASUREMENTS	MALE	
	length	width
Body	2.45	
Head... at trabeculae	.61	.39
Head... at temples		.42
Prothorax	.19	.320
Pterothorax	.37	.42
Abdomen	1.41	.54
Antennae	.56	.097
Paramers	.14	.12
Endomeral plate	.087	.105
C. I.	.64 and .70	

Oxylipeurus quinimammula n.sp.
(*Figs.* 19-21)

Types — Male and female adults, from *Penelope montagnii sclateri*, collected by the author at Samaipata, Bolivia, Oct. 10, 1937 (types in coll. of the author).

This is one of the smallest of the known species found on the *Cracidae* (excluding the genus *Ortalis*). It has *five* chitinous nodules along the front of the head, the outer pair being much larger than the three middle ones. The front is not circular, but slightly compressed laterally. There is a decided angle at the anterior edge of the temples, just back of the eye, while the temples are flattened and converging, with the occipital margin *flatly concave*. The only other species with a similar or less amount of occipital concavity is *quadripapula*, which has the occipital margin almost transverse.

Abdominal segments VIII and IX are unusually narrow, the whole abdomen (in the ♂) tapering rather abruptly from segment V (an unusual feature in this group). Segment IX resembles that of *globicerus*, but lacks the truncated types. The chaetotaxy of the two last segments is also unique. Another unusual feature is the same cephalic index in both sexes (.73), which, excepting that of *O. penelope* Clay, (.80) is the highest for the ♂ of any known species of this group.

In the ♀ the last abdominal segments resemble somewhat those of *bridgesi*, except that the tergal plates are much narrower; the posterior margin of the tergal plates is differently shaped and extends much further backward into segment VII, while the lateral plates are also of distinct shape.

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.25		2.55	
Head { at trabeculae	.56	{ .39	.63	{ .44
Head { at temples		{ .41		{ .46
Prothorax	.17	.28	.18	.336
Pterothorax	.30	.41	.34	.48
Abdomen	1.32	.41	1.58	.63
Antennae	.356	.085	.33	.05
Parumers	.13	.108		
Endomeral plate	.087	.087		
C. I.	.70 and .73		.70 and .73	

Oxylipeurus sinemammula n.sp.
(Figs. 24-27)

Types — Male and female adults, from *Penelope purpurascens brunnescens*, collected by the author at Carraipia, La Guajira, Colombia, June 7, 1941 (Types in U.S.Nat.Museum).

This species differs from all others of the present group of the genus *Oxylipeurus* in the complete absence of raised papillae along the inner border of the clypeal band, at least in the ♀ sex. The species is represented by 1 ♂ and 5 ♀ ♀, and in *none* of the ♀ ♀ is there the slightest trace of raised papillae, but in the single ♂ (the type) there is a faint trace of a slight thickening at two points on each side of the center, in the *median portion* of the clypeal band, not along the inner margin, or in other words, along the clypeal suture, where the papillae are usually located (these slightly thickened spots not shown in figure). The ♂ is fully adult, as are 4 out of the 5 ♀ ♀ taken.

The species is one of the smallest known forms parasitic on the *Cracidae* (except the (*postemarginatus*) group found on the genus *Ortalis*, which I am not at all sure are congeneric with the *concolor* section of *Oxylipeurus*, and which is the sole representative of "group" V in Miss CLAY's revision of the genus).

The claspers in the ♂ seem to be unique in shape (see fig.), while the appendage on segment VIII is equalled in size only by that of *O. craxae annulatus*, the host of which, curiously enough, is found in the same territory as the host of *sinemammula*. There are also other striking similarities between the present species and *craxae annulatus*. The peculiar structure around the eye seems to be found *only* in these two species, while the structure of the ♀ claspers, genital plate and the chaetotaxy of the last two abdominal segments are also very similar, but in the males the chaetotaxy of segments VIII and IX and the shape of IX are entirely different. The ♂ type, and only ♂ specimen taken, is not in perfect condition, and there may possibly be some slight errors in the figure of the head, but the tip of the abdomen is, I think, quite correctly shown.

MEASUREMENTS	MALE		FEMALE	
	length	width	length	width
Body	2.10		2.33	
Head... at trabeculae	.32	.347	.37	.423
Head... at temples		.436		.445
Prothorax	.15	.285	.16	.33
Pterothorax	.30	.41	.326	.466
Abdomen	1.26	.436	1.39	.57
Antennae	.336	.075	.326	.054
Parameres	.117	.09		
Endomeral plate	.041	.082		
C. I.	.66 and .87		.74 and .80	

Oxylipeurus polytrapezius polytrapezius (Burmeister)

Lipeurus polytrapezius Burmeister, Handb. der Entomol., Berlin, 1838, Bd. II, p. 434 (Host: *Meleagris gallopavo domestica*).
Oxylipeurus polytrapezius polytrapezius (Burmeister), Clay, P.Z.S., July 26, 1938, p. 181, Pl. XII, fig. 4; text-figs. 37a & c, 38b. (Host: *Meleagris gallopavo domestica* and *M. g. merriami*).

Although the host of this and the following species does not belong to the family *Cracidae*, it is very closey related to it, while the parasites fall into the *O. concolor* group of the genus *Oxylipeurus*, so that it seems best to include them here.

Miss CLAY has fully treated this and the following three forms, and since no specimens of any of them have been seen by the author, there is little that can be added to the data already published.

In the general shape of the body (in the ♂) both this species and *O. corpulentus* seem to resemble *O. penelope*. Both species seem to possess five chitinous nodules on the front, while in the female both have the last abdominal segments more on the order of *crax*ae and *globicerus*, inasmuch as both possess the longitudinal row of fine hairs at the base of the claspers. The genital plate is, however, somewhat different. The genital armature in the male is of the same type as all of the *concolor* group.

Oxylipeurus polytrapezius agriocharis Clay

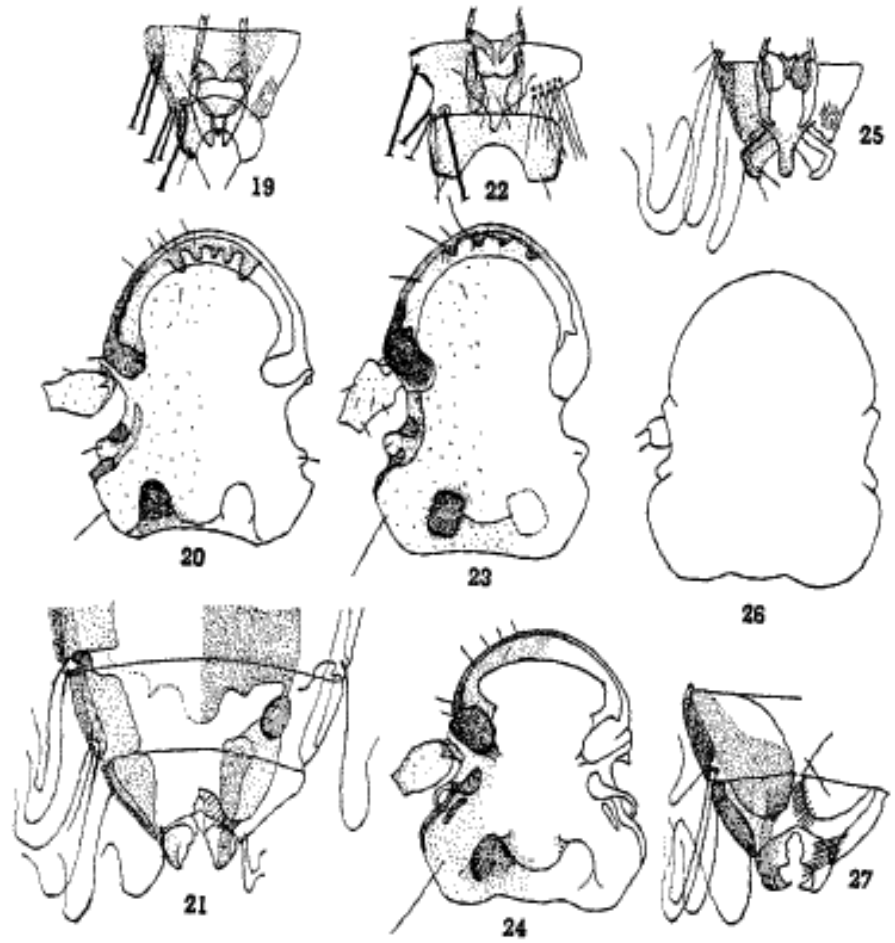
P.Z.S., July 26, 1938, p. 183, Pl. XII, fig. 3 (Host: *Agriocharis ocellata*).

It seems unusual to find two parasites so closely related, taken from hosts belonging to different genera, but since ample material was examined by the author, their status seems to be well established. Further comment is impossible until specimens have been examined.

Oxylipeurus corpulentus Clay

P.Z.S., July, 26, 1938, p. 183, Pl. XII, fig. 1 ; text-figs. 37b, 38 and 39a. (Host : *Meleagris gallopavo merriami*, Texas).

It seems strange that this species has never been taken by american workers in Mallophaga. It is a large, distinctive form, with short, wide head (C.I = .72 and .79 in ♂ ; .78 and .79 in ♀), long ptero-



Oxylipeurus quininammula n. sp. — Fig. 19 : Tip of male abdomen ; fig. 20 : head of male ; fig. 21 : tip of female abdomen. *Oxylipeurus quadripapula* n. sp. — Fig. 22 : Tip of male abdomen ; fig. 23 : head of male. *Oxylipeurus sinemammula* n. sp. — Fig. 24 : Head of male ; fig. 25 : tip of male abdomen ; fig. 26 : head of female ; fig. 27 : tip of female abdomen.

thorax and short, wide abdomen, with the 9th segment long and apically shaped much like that of *O. bridgesi* (See further remarks under *O. p. polytrapezius*).

Oxylipeurus ocellatus Clay

P.Z.S., July 26, 1938, p. 185, Pl. XII, fig. 2 (Host: *Agriocharis ocellata*).

This species, taken on the same host as *O. polytrapezius agriocharis*, is, to all appearances, a miniature of *O. corpulentus*, taken on *Meleagris*, so that we have four closely related forms found on these two hosts, one of each type on each host, a matter of considerable significance when considering the relationships of the two hosts.

The published microphotographs of this species and of *O. p. agriocharis* do not show with any degree of clarity the number or arrangement of the chitinous nodules along the front of the head, nor of others characters used by me in the classification of this group.

Oxylipeurus penelope Clay

P.Z.S., Ser. B, July 26, 1938, p. 185, pl. XIII, fig. 2 (*Penelope p.purpurascens*).

This species was also described from a single male, taken from a dried skin, and the only illustration given is a microphotograph which does not show clearly the structure of the tip of the abdomen or the genitalia, although the author says that it is similar to that of *ocellatus* and *polytrapezius*, the latter being figured.

The shape of the head, however, seems to be distinctive, with front slightly depressed (not circular) and temples rounded, while the whole head is very short, the C.I. being .80, the highest for any male of the *concolor* group. The abdomen is short and seems to be unusually thickened (perhaps it is not fully extended), neither constricted in the anterior portion or tapering towards the tip.

Although several specimens of the host of this species were taken in Mexico by the author, none yielded this parasite. It has been the experience of the author that parasites of this group are rarely, if ever, abundant on any of the larger *Cracidae*.

Oxylipeurus postemarginatus (Carriker) (Figs. 28-32)

Lipeurus postemarginatus Carriker, Univ. Neb. Studies, Vol. III, No. 2, 1903, p. 25, Pl. III, fig. 4 (♀) Host: *Ortalis cinereiceps*, equals: *O.garrula frantzii*.
Oxylipeurus postemarginatus (Carr.), Clay, P.Z.S., July, 1938, p. 168.

This species was placed by Clay under *Oxylipeurus*, as the sole representative of her "group five", with the statement that: "and show the chitin projections of the preantennal area and the elongated posterior sternal process of the ♂ typical of this genus."

A re-examination of the types, and only specimens, of this species reveals a most unusual deformity in the ♂, the 2nd and 3rd abdominal segments being completely fused into one long segment, containing

two spiracles on each side, but on the left side the lateral angle between the two is present, but on the right there is no trace left of it. The tip of the abdomen was somewhat distorted in mounting, and the structure and chaetotaxy of the last two segments is not clear, while it is not possible to determine the exact structure of the genital armature. The ♀ is, however, in excellent condition and all structural details may be clearly seen.

This species forms one of a closely related, compact group found on many, if not all species of the avian genus *Ortalis* (Fam. *Cracidae*). They exhibit most of the generic characters ascribed by CLAY to the genus *Oxylipeurus*, with the following exceptions: The curved post-antennal suture is absent, as well as the clumps of hairs on each side of the tubular process arising from the last sternite in the male sex; occipital bands are present, though not reaching to the occiput, a character absent in other groups of the genus. The species fits fairly well into the genus *Oxylipeurus*, better, in fact, than the *O. concolor* group, which has been previously dicussed in this paper, and *poste-marginatus* and its allies may be characterized briefly as follows:

Head longer than wide, with the antennae set at about the middle; temples rounded and occipital margin concave. Clypeal area separated by a transverse suture, along the anterior margin of which is a raised, corrugated, chitinous line; clypeal bands well developed and deeply pigmented, and broken at the tranverse suture; temporal bands also well marked and crenulated on inner margin. Eye prominent, without fleck, but with a bristle. Antennae strongly dimorphic, the ♂ with the 1st segment much enlarged and with a flap on under side; 3rd segment with distal end much prolonged beyond point of articulation with the 4th.

Prothorax shield-shaped. Pterothorax quadrilateral, wider than long, with prominent acetabular bars which extend backward beyond the posterior margin of the segment (similar to *Pseudolipeurus*); four long, strong hairs on lateral portion of each side of posterior margin, which is flatly angulated medially; mesothoracic area short, with suture visible at sides of segment.

Abdomen in ♂ almost parallel-sided, rather long, with pleurites narrow and deeply pigmented, and with deeply re-entering heads (except on segment I). Tergal plates rather broadly broken medially (except on segment VIII); sternal plates entire. The last sternal plate in the ♂ covers segment VIII and a part of IX, and its posterior portion is elongated in the form of a tubular process which extends beyond the tip of the abdomen, but apparently has no opening at the tip (see fig.). Segment IX is small, rounded posteriorly, and with a rounded or oval flap extending backwards on each side from the *dorsal* surface.

The genitalia consist of a rather large basal plate, expanded anteriorly, but only pigmented narrowly along the sides; the well-developed paramers range from almost straight to strongly bent inward, with bluntly rounded tips and almost no pigmentation. There is a single, well-developed endomeral plate which normally fills about three fourths of the space between the paramers, although in some specimens it is seen as drawn backward, and with the penis (?) pulled

further back inside it, which gives it a bilobed appearance (this is, I think, not normal).

The female resembles the male in most respects, but has narrow, filiform antennae; a longer, wider abdomen, tapering towards tip, and ending in a pair of claspers. Along the outer margin of the claspers, and just at their base, on the ventral surface, is a row of short spines, pointing inwardly, which vary in number and size in the different species or subspecies. These spines are also present in the genus *Eiconolipeurus*, but entirely absent in *Epicolinus* (new genera found on *Odontophorinae*).

Unfortunately the material available for the study of this group is not as ample as could be desired, nevertheless specimens from eight species and subspecies of *Ortalis* have ben studied, ranging from Mexico to Bolivia.

Oxylipeurus costaricensis n.sp.
(Figs. 33-37)

Types — Male and female adults, from *Ortalis garrula costaricensis*, collected by the author on the Rio Sicsola, Costa Rica, February, 1904; in coll. of the author.

This species is quite different from its geographically nearest relative, *postemarginatus*, although the hosts of the two parasites are conspecific.

In the ♂ of *costaricensis* the head is slender and parallel-sided, very similar in shape to that of *chiñiri* and *garrulae* (described on subsequent pages), except that it is longer than that of the former. In the ♀ the head is entirely different in shape from the ♂, as well as from the ♀ of *chiñiri*. The temples are much wider than the frons, while the clypeal margin is much more pointed and the occiput wider. The apical segments of the abdomen in both sexes are strikingly different from those of *postemarginatus* in all respects, as well as the ♂ genital armature (The figure showing the tip of the ♂ abdomen is drawn to a smaller scale, — one third smaller, — than that of *postemarginatus*).

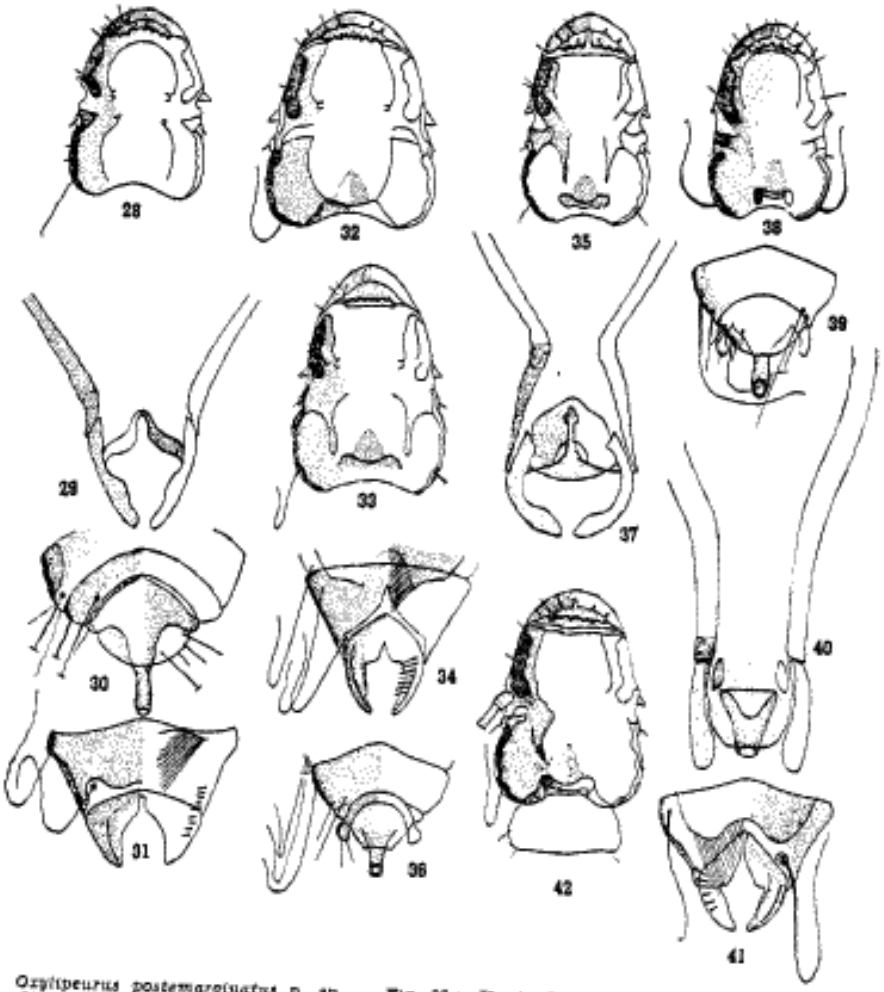
O. costaricensis is much closer to *O. garrulae* than to *postemarginatus* or *chiñiri*, and these two species have been compared under the description of *garrulae*. The various figures given for this species will show more clearly its characteristics than would a voluminous description. The type series consists of 3 ♂ ♂ and 3 ♀ ♀.

MEASUREMENTS (MINIMUM AND MAXIMUM, TAKEN FROM ALL SPECIMENS)	MALE		FEMALE	
	length	width	length	width
Body	1.52 — 1.63		2.00 — 2.02	
Head... frons	.48 — .485	.28 — .28	.54 — .54	.31 — .32
Head... temples		.30 — .305		.37 — .38
Prothorax	.16 — .16	.227 — .24	.16 — .16	.27 — .30
Pterothorax	.175 — .195	.29 — .30	.217 — .217	.35 — .38
Abdomen	.78 — .93	.305 — .325	1.25 — 1.27	.40 — .50
Antennae	.10 — .13	.065	.227 — .24	.033 — .043

Oxylipeurus chiñiri chiñiri n.sp.
(Figs. 38-42)

Types — Male and female adults, from *Ortalis guttata adspersa*, collected by the author at Chiñiri, Rio Kaka, Bolivia, Aug. 26, 1934; in coll. of author.

This species belongs to the section of the group having slender, almost parallel-sided heads (especially in the ♂), and shows less sexual dimorphism in shape of head than any other species here treated, the only appreciable difference being the larger body and slightly wider temples in the female. This character is in marked contrast to *costaricensis* and *tenuicapitis*, in which species the head in the female is of quite different shape than in the male. All of the



Oxylipeurus postemarginatus n. sp. — Fig. 28: Head of male; fig. 29: male genitalia; fig. 30: tip of male abdomen; fig. 31: tip of female abdomen; fig. 32: head of female. *Oxylipeurus costaricensis* n. sp. — Fig. 33: Head of female; fig. 34: tip of female abdomen; fig. 35: head of male; fig. 36: tip of male abdomen; fig. 37: male genitalia. *Oxylipeurus chiñiri chiñiri* n. sp. — Fig. 38: Head of male; fig. 39: tip of male abdomen; fig. 40: male genitalia; fig. 41: tip of female abdomen; fig. 42: head of female.

bands of the head are well developed; the clypeal band, between the clypeal suture and trabeculae, is unusually wide, deeply pigmented, and strongly crenulated along the inner margin; the temporal bands are narrow, also deeply pigmented and crenulated on both outer and inner margins; the occiput is narrow, deeply concave and rounded in the ♂, but nearly straight in the ♀; the occipital bands are typical of the group (see fig. of ♀). The clypeal suture, while present, is not always clearly visible, it being exaggerated in the figure of the ♀. The antennal bands are not the same in the two sexes; in the ♂ they are located *entirely in front of the eye*, are wider and more deeply pigmented, while in the ♀ they extend inward from the eye itself, are narrow and faintly colored.

Segment VIII in the ♂ is sharply angulated medially on the anterior margin, while IX is circular in front and has the lateral lobes on posterior margin long and slender.

The genital armature differs decidedly from that of *postemarginatus* and *costaricensis*, although I am not positive that the genitalia of *postemarginatus* have been correctly drawn, the ♂ type being in poor condition. The basal plate has the distal end truncate (the chitinized lateral margins), and the nearly straight paramers are attached to these truncate ends, not running back inside the pointed tips of the basal plate as in other species. A large, unpigmented endomeral plate fills the space between the paramers, underlaying them slightly at their bases; there is a small, elongated oval, deeply pigmented sclerite on each side of the endomeral plate, probably remnants of lateral, dorsal endomeres. A large body lies on the dorsal face of the endomeral plate, its wide anterior end apparently attached to that plate along its middle line, while the tapering, tubular, distal end projects beyond the posterior margin of the endomera. This body is in all probability the penis (see fig.).

In the female, segment VIII has the anterior margin angulated as in the male, but the median point is rounded; the claspers (segment IX) have the anterior end sharply angulated medially, the claspers themselves are of normal size, with outer margins strongly convex and inner sides nearly straight, back to the median notch; their outer edge is thickened and inner face somewhat flattened; six short spines are set along the outer, thickened edge, four on the clasper itself and two on the edge of segment VIII. The fringe of setae along the posterior margin of the genital plate is typical of the group, but lies unusually far back towards the posterior margin of segment VIII.

The type series contains 8 ♂♂ and 7 ♀♀. A ♂ and 4 ♀♀ were taken on the same host at La Oroya, Rio Inambari, South Peru.

MEASUREMENTS OF 4 ♂♂ AND 4 ♀♀	MALE		FEMALE	
	length	width	length	width
Body	1.58 — 1.62		1.97 — 2.01	
Head... frons	.444 — .465	.27 — .28	.30 — .31	.31 — .325
Head... temples		.28 — .29		.345 — .357
Prothorax	.15 — .174	.227 — .24	.174 — .185	.26 — .28
Pterothorax	.195 — .205	.28 — .30	.22 — .24	.33 — .365
Abdomen	.87 — .91	.30 — .31	1.24 — 1.26	.47 — .49
Antennae	.118 — .14	.065 — .07	.217 — .25	.03 — .04

Oxylipeurus chiñiri variegatus n. ssp.
(Figs. 43-49)

Types — Male and female adults, from *Ortalis g. guttata*, collected by the author at Puerto Yessup, Rio Pichis, Peru, Feb. 16, 1930; in col. of the author.

The head is of the same general shape as in *chiñiri*, but a trifle wider at the frons; the clypeal bands are somewhat narrower, and temporal bands wider, while the corrugated chitinous ridge across the clypeus is less prominent. The last two abdominal segments in the male are considerably wider, with segment VIII having the sides differently shaped, and with the anterior margin much less angulated, and the posterior margin more flatly rounded. Segment IX is also very different.

The male genitalia differ somewhat as to detail (see fig.). Abdominal segments VIII and IX in the female differ decidedly from those of *chiñiri*. Segment VIII has anterior margin much less angulated, and with sides less concave; the fringe of setae on posterior edge of genital plate lies near the *anterior* edge of segment VIII instead of posterior, as in *chiñiri*.

The claspers (segment IX) differ but slightly in shape and size, but the bristles along their outer edge are shorter and finer, and number nine instead of six, the additional number being set in tip of segment VIII, and not on clasper itself (see fig.); the anterior margin of segment IX is decidedly pointed medially, instead of rounded.

The type series consists of 2 ♂ ♂ and 3 ♀ ♀.

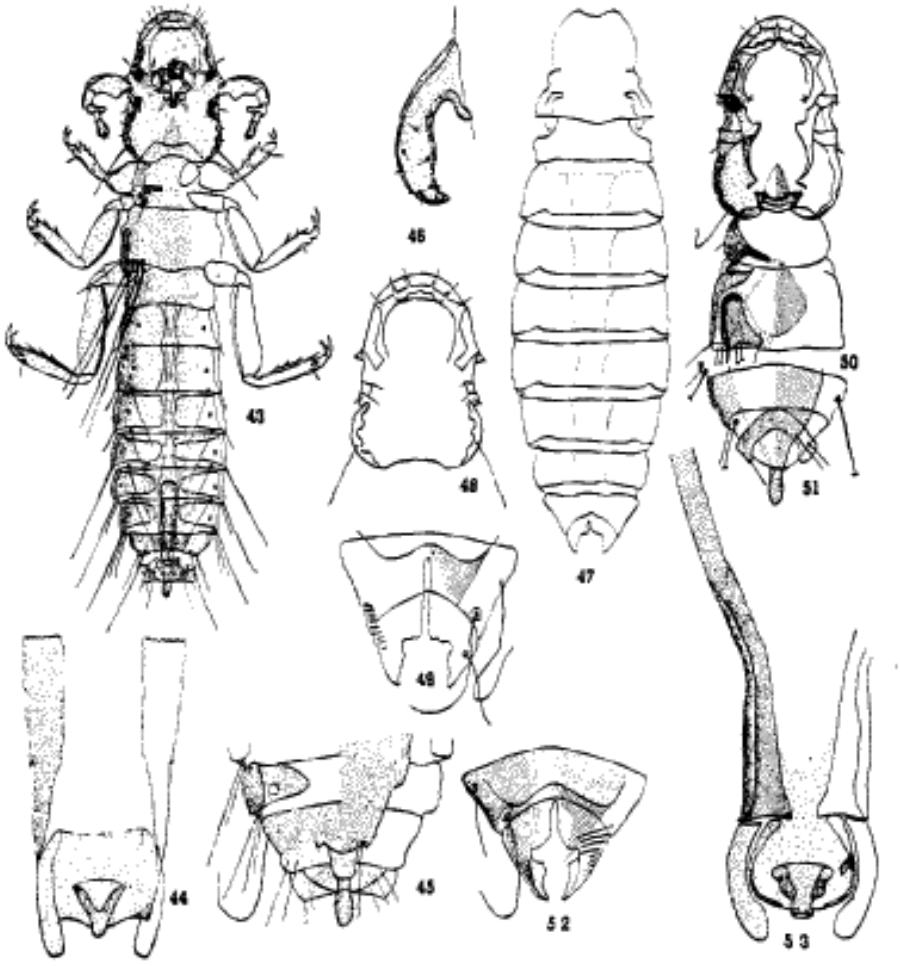
MEASUREMENTS (OF TYPE SERIES)	MALE		FEMALE	
	length	width	length	width
Body	1.78 — 1.80		2.17 — 2.26	
Head: frons	.48 — .48	.29 — .30	.52 — .53	.34 — .345
Head: temples		.32 — .326		.39 — .39
Prothorax	.195 — .195	.26 — .26	.195 — .205	.29 — .31
Pterothorax	.195 — .195	.336 — .336	.195 — .217	.39 — .41
Abdomen	1.02 — 1.04	.38 — .39	1.39 — 1.45	.52 — .58
Antennae	.14 — .15	.075 — .077	.25 — .26	.032 — .04

Oxylipeurus chiñiri vetulae n.ssp.
(Figs. 50-53)

Types — Male and female adults from *Ortalis v. vetula*, collected by the author at Tres Zapotes, Vera Cruz, Mexico, March 16, 1940; in coll. U.S.Nat.Mus.

This race of *chiñiri* is closer to the nominate form than to the subspecies *variegatus*. The head in the ♂ is the same width at both trabeculae and temples, but is some longer. Abdominal segment VIII in the male has the same sharply angulated anterior margin (*chiñiri* and its races are the only known forms possessing this character), but segment IX differs in having the anterior margin also sharply angulated, instead of circular, while the segment is longer

than wide, but in *chiñiri* it is the reverse, being wider than long. The chaetotaxy of segment VIII in the male also differs. In *chiñiri* there is a longish hair near margin in the anterior portion of the segment, and another at the posterior angle, while in *vetulde* there is a third, longer hair, on the posterior margin of the segment, a short way in from the side ; the lateral flaps on segment IX are some wider and less curved.



Ozylipeurus chiñiri variepatus n. ssp. — Fig. 43 : Male, entire body ; fig. 44 : tip of male abdomen ; fig. 45 : male genitalia ; fig. 46 : male genital appendage ; fig. 47 : body of female ; fig. 48 : head of female ; fig. 49 : tip of female abdomen. *Ozylipeurus chiñiri vetulde* n. ssp. — Fig. 50 : Head and thorax of male ; fig. 51 : tip of male abdomen ; fig. 52 : tip of female abdomen ; fig. 53 : male genitalia.

The ♂ genitalia are of similar type, but have the lateral chitinized bars of the basal plate much thickened and widened apically, instead of being widened in anterior portion ; the paramers are also nearly uniform in width from base to tip, instead of being narrowed basally, and are considerably more curved ;

the large ventral endomeral plate is much wider and of different shape, while the dorsal endomeres are three times as long and of distinct shape; the penis is also of different shape.

In the female segment VIII is wider and has the anterior angle less rounded; segment IX is rounded anteriorly instead of being angulated, and has the claspers with outer margin almost straight, instead of sharply curved; there are but four bristles along outer edge of claspers and segment VIII, instead of six, as in *chiltiri*.

MEASUREMENTS OF 4 ♂♂ AND 4 ♀♀	MALE		FEMALE	
	length	width	length	width
Body	1.56 — 1.73		1.88 — 2.15	
Head, frons	.46 — .50	.285 — .30	.49 — .53	.30 — .34
Head, temples		.29 — .31		.32 — .38
Prothorax	.16 — .174	.235 — .265	.17 — .18	.24 — .30
Pterothorax	.217 — .227	.30 — .33	.22 — .26	.347 — .41
Abdomen	.91 — .99	.29 — .36	1.17 — 1.34	.43 — .57
Antennae	.13 — .14	.075 — .085	.227 — .25	.032 — .043

Oxylipeurus tenuicapitis n.sp.
(Figs. 54-58)

Types — Male and female adults, from *Ortalis ruficrissa*, collected by the author at Casacará, Dept. Magdalena, Colombia, May 15, 1942; in coll. U.S. Nat. Mus.

This is also one of the larger species, both sexes being but slightly smaller than *garrulae*. It belongs to the group with long, slender, nearly parallel-sided head in the ♂ and slightly conical head in the ♀, and is much closer to *costaricensis* than to any other species treated in this paper.

It differs from *costaricensis* as follows: The frons is more pointed, the head being narrower at the clypeal suture; the trabeculae are extremely minute, being scarcely visible, in marked contrast to *garrulae*; the occipital bands are curved inwards at their tips, instead of straight, while the ocular band is much narrower, and entirely in *front* of the eye, and is separated by the eye from the temporal band (not joined to it as in *costaricensis*); the anterior end of prothorax is differently shaped, while the gular plate is long, narrow and emarginate on the sides (not oval as in *costaricensis*).

Segment VIII of the ♂ is narrower, with sides nearly straight (not convex), and with both anterior and posterior margins very flatly angulated; segment IX also differs decidedly in shape and chaetotaxy (see fig.). The ♂ genitalia also differ markedly.

In the female the head is *less* pointed than in *costaricensis*; the rugose line of chitin across the clypeus, clypeal bands and antennal bands are all differently shaped, as well as the occipital bands; the occiput is much narrower and the gular plate is of a different shape (see. fig.). The claspers are wider

at the base, thicker, and with the setae along the outer edge much longer. Type series: 6 ♂ ♂ and 8 ♀ ♀.

MEASCREMENTS (OF THE TYPES	MALE		FEMALE	
	length	width	length	width
Body	1.62	—	2.25	—
Head: frons	.467	.26	.525	.30
Head: temples		.289		.37
Prothorax	.16	.24	.195	.293
Pterothorax	.228	.27	.24	.30
Abdomen	.92	.303	1.43	.50
Antennae	.12	.065	.24	.035

Oxylipeurus garrulae n.sp.
(Figs. 59-63)

Types — Male and female from *Ortalis g. garrula*, collected by the author at La Gloria, Dept. Magdalena, Colombia, May 20, 1943: in coll. U.S.Nat.Mus.

This species resembles in certain characters both *postemarginatus* and *costaricensis*, while in others it differs from both. The head of the male is very similar in shape to that of *costaricensis*, while the clypeal bands and markings are almost identical, as well as the antennal and temporal bands. but the occipital bands are slightly curved inward, with the inner margin strongly concave, not straight; the occipital signature is longer and decidedly pointed anteriorly (not rounded).

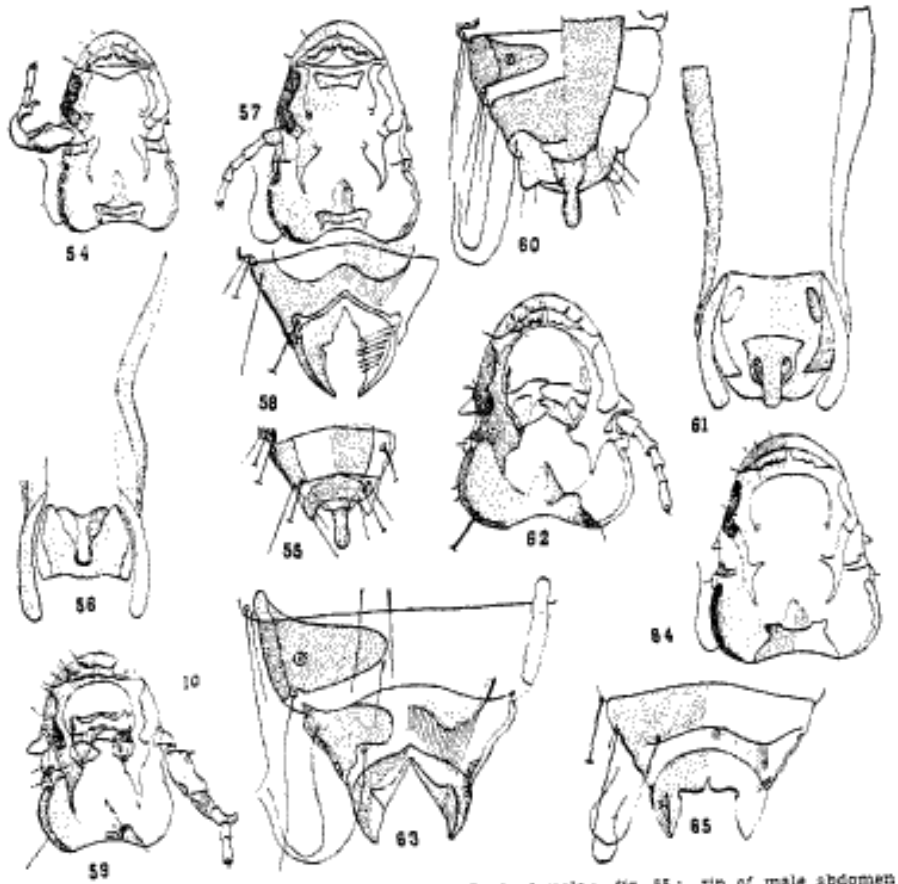
There is one character which is very striking. the very large trabeculae, much larger than in any other know species. Aodominal segment VIII in the male is shaped much like that of *postemarginatus*, with anterior margin curving, but with each side slightly flattened; the posterior margin of IX is also convex, but the tubular appendage is like that of *costaricensis*. The posterior margin of segment VIII differs from both, being transverse and sinuate (see fig.).

The male genital armature also differs from both *postemarginatus* and *costaricensis* (see fig.). In the female the shape of the head is nearer to *costaricensis*, except that it is more rounded anteriorly (less pointed), but the antennal bands are heavier at their posterior ends; the occipital signature is longer and more pointed, and the temples are more rounded.

The fused segments VIII and IX are very similar in shape to those of *postemarginatus*, with the frontal margin strongly sinuate and lateral margins of VIII concave forward of the suture. Segment IX is narrower than in *postemarginatus*, but wider than in *costaricensis*, and with the anterior margin more rounded than in *postemarginatus*. The claspers and the opening between them are very similar to those of *postemarginatus*, as well as the position and length of the spines along their lateral margins. The fringe of setae in the anterior portion of segment VIII is of a different shape than either of the above mentioned species, but the hairs are long as in *postemarginatus*. The type series consists of 3 ♂ ♂ and 11 ♀ ♀. There are but two other know species which approximate

this one in size ; — the ♀ of *O. chiñiri variegatus* and the ♀ of *tenuicapitis*, the remainder being smaller.

MEASUREMENTS (OF THE TYPES)	MALE		FEMALE	
	length	width	length	width
Body	1.76	—	2.31	—
Head... { fronts	.477	.205	.56	.338
Head... { temples		.326		.413
Prothorax	.185	.24	.195	.303
Pterothorax	.24	.326	.228	.412
Abdomen	1.02	.38	1.44	.62
Antennae 1st seg. ♂	.12	.073	.28	.043



Oxylipeurus tenuicapitis n. sp. — Fig. 54 : Head of male ; fig. 55 : tip of male abdomen ; fig. 56 : male genitalia ; fig. 57 : head of female ; fig. 58 : tip of female abdomen. *Oxylipeurus garrulae* n. sp. — Fig. 59 : Head of male ; fig. 60 : tip of male abdomen ; fig. 61 : male genitalia ; fig. 62 : female head ; fig. 63 : tip of female abdomen. *Oxylipeurus angustifrons* n. sp. — Fig. 64 : Head of female ; fig. 65 : tip of female abdomen.

Oxylipeurus angustifrons n.sp.
(Figs. 64 and 65)

Type — Female adult, from *Ortalis motmot ruficeps*, collected in east Brazil, January, 1901; type and only specimen in Meinertzhagen coll.

Nearest to *postemarginatus* in the shape of the head, and in some respects in the shape of the last two abdominal segments, but differs from that species in having the head much more tapering between the trabeculae and frons. The raised, corrugated line of chitin across the front of the clypeus is broken medially (entire in *postemarginatus*) as in *costaricensis* and *tenuicapitis*. The trabeculae are of medium size, larger than in some species, but smaller than in *postemarginatus*.

The shape of the claspers is unique. They are quite straight, with outer and inner sides of practically the same shape, while there is a raised, thickened, median line, also straight. The only other species I have seen which has claspers approximating this shape, and with thickened median line, is *postemarginatus*, although in that species the whole segment is very differently shaped. Apparently there are *no bristles* along the outer edge of the claspers, but there are two just within the tip of segment VIII. It is possible that the others have been lost, but no trace of their point of attachment is discernible.

The genital plate extends beyond the middle of segment VIII, and has the posterior margin less curving medially than in most species, with the fringe of setae *short*.

MEASUREMENTS (OF THE TYPE)	FEMALE	
	length	width
Body	1.82	—
Head, frons	.53	.326
Head, temples		.40
Prothorax	.13	.29
Pterothorax	.22	.39
Abdomen	.90	.46
Antennae	.27	—

TABLE OF MEASUREMENTS OF SPECIES OF *OXYLIPEURUS* TAKEN ON *ORTALIS*.

MALES

PORTION OF BODY	post-emarginatus (type)	costaricensis (av)	chiniri chiniri (av)	chiniri variegatus (av)	chiniri vetulae (av)	garrulae (type)	brevipilis (type)
Body (length)	1.45	1.37	1.60	1.79	1.68	1.76	1.62
Head (length)	.44	.483	.455	.48	.48	.477	.467
Head frons (width)	.29	.28	.278	.285	.291	.295	.26
Head temples (width)	.320	.303	.288	.323	.30	.328	.286
Prothorax (length)	.16	.16	.163	.195	.17	.185	.16
Prothorax (width)	.25	.239	.252	.26	.25	.21	.21
Pterothorax (length)	.265	.183	.20	.195	.219	.21	.228
Pterothorax (width)	.29	.297	.280	.336	.316	.326	.27
Abdomen (length)	.71	.85	.90	1.03	.945	1.02	.92
Abdomen (width)	.38	.312	.295	.385	.320	.38	.303
Antennae (seg. I, ♂) length	.13	.124	.127	.115	.137	.12	.12
Antennae (seg. I, ♂) width	.062	.065	.068	.075	.077	.073	.065
Cephalic index (frons)	.66	.58	.61	.62	.60	.62	.557
Cephalic index (temples)	.74	.63	.64	.67	.625	.68	.61

FEMALES

PORTION OF BODY	sub-marginatus (type)	costaricensis (av)	chiniri chiniri (av)	chiniri variegatus (av)	chiniri vetulae (av)	garrulae (type)	brevipilis (type)	angustifrons (type)
Body (length)	2.12	2.01	1.99	2.22	2.03	2.31	2.25	1.82
Head (length)	.50	.54	.505	.527	.51	.56	.525	.53
Head frons (width)	.35	.313	.314	.338	.32	.358	.39	.326
Head temples (width)	.40	.373	.351	.39	.35	.415	.37	.49
Prothorax (length)	.184	.16	.188	.196	.175	.195	.195	.13
Prothorax (width)	.28	.265	.265	.297	.270	.303	.293	.29
Pterothorax (length)	.26	.217	.255	.21	.24	.228	.24	.22
Pterothorax (width)	.38	.37	.346	.303	.33	.412	.39	.39
Abdomen (length)	1.20	1.26	1.25	1.44	1.27	1.41	1.43	.987
Abdomen (width)	.40	.45	.479	.35	.345	.42	.39	.46
Antennae length	.217	.236	.24	.257	.252	.28	.24	.27
Antennae width	.04	.039	.051	.035	.037	.043	.035	.0165
Cephalic index (frons)	.70	.60	.62	.64	.64	.64	.57	.66
Cephalic index (temples)	.80	.70	.70	.74	.70	.74	.705	.75

NOTE: Above measurements, unless marked "type", are the average of the whole of the type series. In the ♂ antennae, only the 1st. segment is taken, in the whole antennae, length of prothorax, pterothorax and abdomen is total length of segment, including portion covered by preceding segment. The width of head at frons is taken at junction of anterior edge of trabeculae with head.