

## NOTES ON NEOTROPICAL TABANIDAE (Diptera), VII. THE SPECIES DESCRIBED BY C. R. W. WIEDEMANN

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**Abstract:** A study of the existing type specimens of the Neotropical Tabanidae described by Wiedemann resulted in the recognition of types of 72 of the 78 species described, in Copenhagen, Berlin, Frankfurt and Vienna. Lectotypes of 37 species were selected, suggested, or confirmed. The following new synonymies resulted: *Chrysops sublaeta* Philip 1955=*C. varians* var. *tardus* Wied. 1828; *Dichelacera cearensis* Fchld. & Philip 1960=*D. varia* Wied. 1828; *Fidena basalis* Walk. 1848=*F. leucopogon* Wied. 1828; *Stibasoma mallophoroides* Walk. 1857=*St. festivum* ssp. Wied. 1828; *Tabanus alboater* Walk. 1850, *senior* Walk. 1850, *albibarbis* Wied. 1824, *crassicornis* Wied. 1821, *angustifrons* Macq. 1847, and *atricornis* Big. 1892=*T. pelucidus* Fab. 1805; *Tabanus rufoniger* Walk. 1850, *communis* Kröb. 1930, and *Chelommia melanocnemis* Barr. 1957=*T. discus* Wied. 1828; *Tabanus piceus* Thunb. 1827, *impressus* Wied. 1828, *monochroma* Wied. 1828, *ferreus* Walk. 1848, and *T. erythraeus* Big. 1892=*T. fuscus* Wied. 1819; *Tabanus monogramma* Wied. 1828=*T. importunus* Wied. 1828; *Tabanus plangens* Walk. 1854=*T. modestus* Wied. 1828; *Tabanus ruficolor* Kröb. 1934=*T. pungens* Wied. 1828; *Tabanus barrettoii* Phil. 1958=*T. trinitatus* Wied. 1828; *Tabanus hyalineus* Kröb. 1934=*T. vestitus* Wied. 1819. Identifications of Wiedemann species by previous workers were confirmed in most cases, corrected in the remainder.

Christian Rudolf Wilhelm Wiedemann was among the best and most prolific writers on Diptera of the last century. He was not an innovator in classification, being content for the most part to follow Fabricius and Meigen. Although he proposed few generic names, none were applicable to Neotropical Tabanidae. His descriptions were a great advance over the brief and often inaccurate diagnoses of his predecessors and most of his contemporaries, and remain models of clarity and insight. In general, there has been little difficulty in recognizing his species, and the bulk of his names are in current use. His species have been made the types of 26 generic names. However, the concept of a single specimen as "type" of a species was unknown in his time. A species was an ideal concept of which individual specimens were "typical" examples. The exigencies of our nomenclatural system, however, have forced us to base our names upon single specimens for purely nomenclatural reasons. A species may be a population, but a specific name refers to a specimen first, and only secondarily to the population it purports to represent. Like his contemporaries, Wiedemann attached no special importance to particular specimens, and did not hesitate to replace poor specimens which may have formed the basis for a description with better ones if they became available. This is clear from quotations from his correspondence given by Zimsen (1954: 6) in her most useful summary of the Wiedemann types in Copenhagen.

The species of Neotropical Tabanidae which form the subject of this paper were described by Wiedemann in 5 publications, as follows:

1819. Brasilianische Zweiflugeler beschrieben vom Herausgeber. *Zoologisches Magazin*, Kiel, Vol. 1, p. 3, pp. 40-56.

1821. *Diptera exotica. Kiliae. Part 1*, pp. 1-244.

1824. *Analecta entomologica ex Museo Regio Hafniensi maxime congesta. Kiliae.* pp. 1-66.

1828. *Aussereuropaische zweifflugelige Insekten*, als Fortsetzung des Meigenschen Werkes. Hamm. Vol. 1, pp. 1-608.

1830. Same. Vol. 2, pp. 1-684.

Of these, the two-volume *Aussereuropaische zweifflugelige Insekten* is the most important, as it includes copies of the descriptions, or redescriptions of all his previous species. In citing these, I have given only the date and page under each species. In the *Auss. Zweifl. Ins.* the repository of the specimens is given in all but a few cases. In the case of the species described in *Zool. Mag.*, the introduction states that nearly all the species there described were from Brasil and in von Winthems collection, so that no mention of locality or collection is given under the individual descriptions. Wiedemann very rarely mentioned the number of specimens he had, and inferences based on presence of specimens in more than one collection, or the giving of more than one measurement, tell only that he had more than one specimen in that particular case. In the cases of species discussed in more than one publication, he often included additional specimens in the later publication.

Wiedemann did not label any of his specimens with distinctive type labels. The labels they now bear represent the subsequent judgement of individuals of varying views and competence, some of whom appear to have had little concept of what a true type is. Further confusion was added by the remounting and relabelling of considerable material. This is especially true in Berlin, where few if any original labels remain. The "green copperplate" labels referred to below, are green labels in an old fine script, not Wiedemann's. Many of the name labels are in this script, and those which bear an asterisk appear to indicate presumed original Wiedemann material. In a fair number of cases the specimens now labelled "type" seem to represent the labeler's idea of a typical specimen of the species, rather than a type in the modern sense.

In discussing this material and in selecting lectotypes, I have tried to adhere to certain criteria. They are:

1, The specimen must be of the sex stated in the description. 2, The specimen cannot deviate widely from the description. 3, The present repository must have been one mentioned in the description. 4, The labels cannot contradict any information in the description.

These criteria eliminate a number of specimens labelled as types, but leave a far larger number with insufficient evidence as to whether they are in reality types. Since there seems no way to decide in many cases, it seems best for the sake of stability to consider specimens meeting the above criteria and labelled as types or with original Wiedemann labels, as being material seen by him. Where measurements are mentioned, I have considered that Wiedemann's line=2.18 mm.

In regard to the localities from which Wiedemann's species came there is little information. Fifty-eight of the species are described simply from Brasil. Of the remainder, 8 are said to be from Montevideo in Brasil, now Uruguay; 2 from Cassapawa, which I

think is in the state of S. Paulo; 1 from Rio de Janeiro; 1 from Bahia; 1 from Para; 3 from Mexico; 3 from Amerika or Sudamerika and 1 without locality. With the exception of *T. maculipennis*, which is Nearctic, all Wiedemann's specimens labelled Brasil could have come from the more accessible parts of that country. In a few cases types bear additional information, and historical research as to the movements of the collectors named on many labels might yield additional information, though I have not the facilities to pursue this suggestion.

Wiedemann types are presently in the following collections: Universitetets Zoologiske Museum, Copenhagen, Denmark. This includes the species mentioned by Wiedemann as being in "Königl. Mus. zu Kopenhagen" and "in Westermanns Sammlung." Zoologisches Museum der Math.-Naturwissenschaftlichen Fakultät der Humboldt-Universität zu Berlin, Berlin, East Germany. This includes material mentioned by Wiedemann as being in Mus. Berolin., Berlin Museum, Mus. Hoffmannsegg and Königl. preussischen Museum. Senckenbergische Naturforschende Gesellschaft, Frankfurt a. M., West Germany. Material stated to be from Frankfurter Museum and some specimens from Wiedemann's own collection are in Frankfurt. Naturhistorisches Museum, Vienna, Austria. Most of the species stated by Wiedemann to be in his or von Winthem's collections are now in Vienna, plus the few stated to be in Mus. Wien.

I have used only the name of the city in referring to these collections.

In the following discussion, the names are listed alphabetically under the genera in which I believe they belong, the generic names used by Wiedemann, when these differ, being inserted in parentheses. Genera are also arranged alphabetically for ease of reference. Of the 78 specific names for Neotropical species proposed by Wiedemann, presumed types of 72 were seen; the remaining 6 are either lost or unrecognizable as types. Lectotypes have been designated, suggested or confirmed for 37 names; the remainder were either originally based on single specimens, or but one authentic specimen now remains, or the existing syntypes are so nearly indistinguishable that lectotype designation seemed superfluous. In only a few cases did I actually label lectotypes, but I have here given sufficient details as to the characters, condition, and labelling of the respective specimens to allow of their recognition and subsequent labelling by those responsible for their care.

The accompanying figures were made with a built-in camera lucida on a Wild binocular microscope. The magnification given in the explanation of each figure is the objective magnification used; 8× eye pieces were used throughout. This is, of course, not the final magnification of the figures as printed here, but indicates only relative size.

*Acknowledgments:* The following persons aided this study in various ways. Dr S. L. Tuxen and especially Drs Leif Lyneborg and Ella Zimsen in Copenhagen helped in the interpretation of the types in their charge. Dr H. Schumann most generously sent me the Wiedemann material in Berlin. Dr Eli Franz and especially Dr H. Schroeder provided facilities and aid in Frankfurt. Dr Max Beier in Vienna placed at my disposal the unrivalled collections under his charge. I am most grateful for both the official assistance and the personal aid and courtesies extended to me by these colleagues. My wife was of inestimable aid in typing notes and in relieving me of most of the time-consuming details of travel. Financial support provided by a travel grant from the Bache Fund of the National Academy of Sciences made travel to Europe possible.

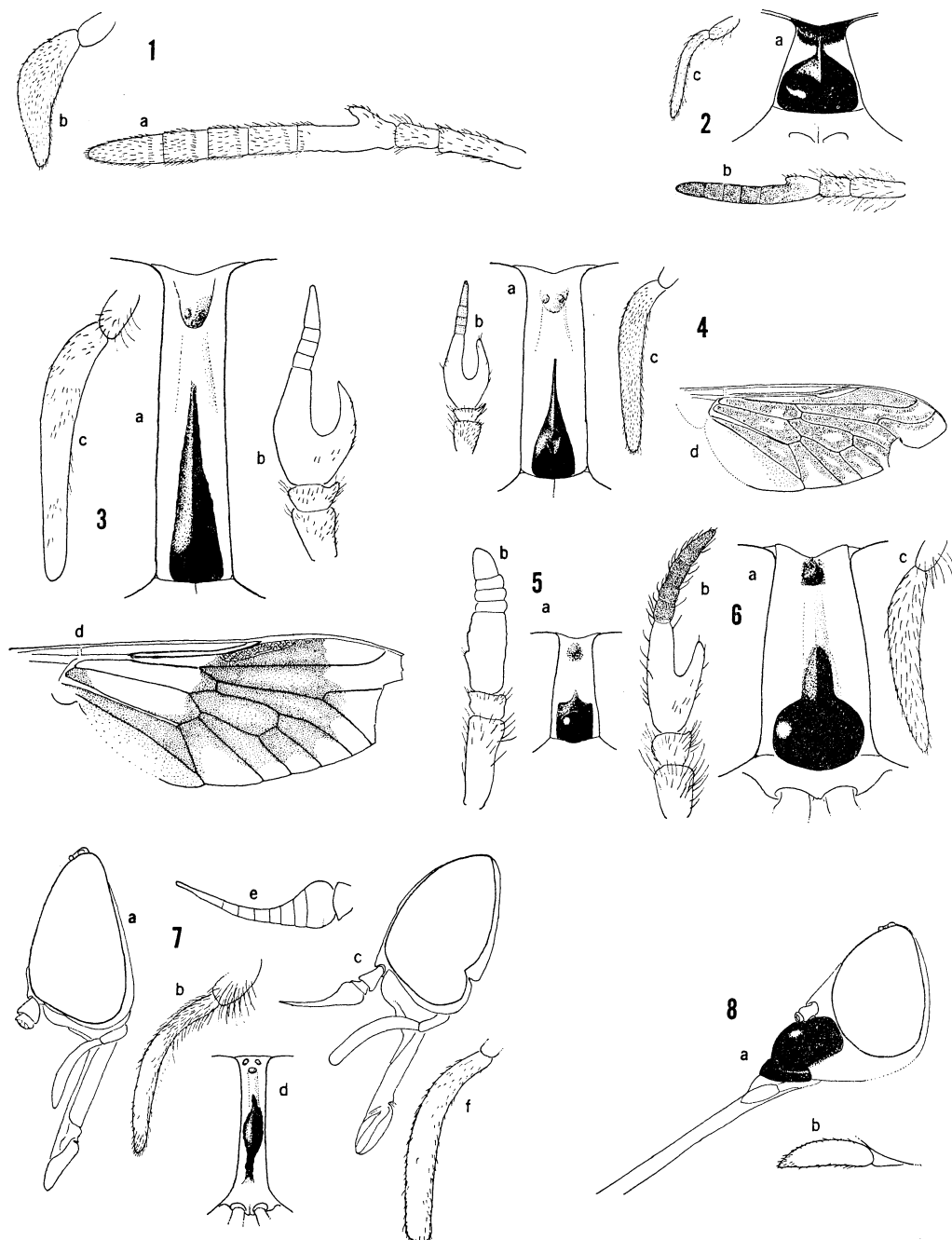
**Acanthocera coarctata** (Wied.) (*Haematopota*) 1828: 578-579, ♀, aus Brasilien. In Westermann's Sammlung.

The specimen in Copenhagen is intact and well preserved. It bears an old handwritten "H. coarctata Wied. Brazils", is labelled Mus. Westerm. and with a red Type label. It differs from my description and figures (1939) in having mid and hind tibiae blackish, antennal style over twice length of basal plate and with a shorter dorsal tooth, and will not key out in my key. Sides of thorax entirely dark, lacking the small tuft of yellow hairs beneath wing bases found in my specimens, and with paler wings. Among a series of specimens there is considerable variation in color of tibia, pleura, wings and length of antennae, so that the type of *coarctata* seems merely the darkest form. Lutz (1915) figured a lighter form, with largely white tibiae, much yellow on thorax, and shorter antennae. Intermediate specimens make it seem unnecessary to name the lighter form without more evidence. A figure of the antenna and palpus of the type is here given. (fig. 1).

**Acanthocera exstincta** (Wied.) (*Haematopota*) 1828: 214, ♀, von Montevideo in Brasilien. In meiner Sammlung und in Berliner Museum.

A ♀ in Berlin museum is labelled as follows: "La Plata Beschi"; 251; red printed Type; green copperplate "*exstincta* n. *Haemat. exstincta* Wied.\*" The specimen is in excellent condition and agrees with the brief description. In Vienna museum are 3 specimens of the same species. One of these bears the following labels: printed Coll. Wiedem, with *exstincta* written in; old Wiedemann handwritten label with "*H. exstincta* m. Montevideo"; a 1927 Kröber det. label. It bears no type label, is old, dusty, and lacks one wing. It is, however, the only specimen with the right locality and with a Wiedemann label, and is here selected as Lectotype. One of the other two Vienna specimens bears a type label, a Coll. Winthem label and a det Wiedem. label. It is beautifully preserved but almost certainly not a type. The third Vienna specimen bears an old handwritten La Plata label and a printed det. Wiedem. label with *exstincta* written in. I think the Berlin and the La Plata specimen in Vienna may be paratypes. I had no specimens exactly agreeing. The species is close to *A. eristalis* Lutz, but differs in having more slender palpi, yellow spotted pleura, slightly broader and more divergent frons, shorter and more slender antennal style with shorter basal tooth. The abdomen is barely narrowed basally, the wings as in *coarctata* but very pale. It will key out to *eristalis* in my key (1939) but lacks the scattered yellow hairs on terminal abdominal segments. The species I keyed as *exstincta* (1939) seems not the same, differing in more extensively pollinose face, 3rd antennal segment longer and heavier, palpi slender, black and shiny. It is possible that all three concepts are but variants, but material is still too limited for decision. The species figured by Lutz (1915) as *exstincta* seems quite different, as pointed out by Kröber (1928). Head structures of the Berlin paratype are illustrated (fig. 2).

Figs. 1-8. 1, *Acanthocera coarctata* (Wied.): a, antenna; b, palpus  $\times 25$ . Holotype, Copenhagen. 2, *Acanthocera exstincta* (Wied.): a, frons, b, antenna, c, palpus  $\times 25$ . Paratype, Berlin. 3, *Catachlorops capreolus* (Wied.): a, frons, b, antenna, c, palpus  $\times 50$ ; d, wing  $\times 12$ . Holotype, Berlin. 4, *Catachlorops circumfusus* (Wied.): a, frons, b, antenna, c, palpus  $\times 25$ ; d, wing  $\times 6$ . Holotype, Berlin. 5, *Diachlorus glaber* (Wied.) (left): a, frons  $\times 25$ ; b, antenna  $\times 50$ . Berlin specimen. 6, *Dichelacera varia* (Wied) (right): a, frons, b, antenna, c, palpus  $\times 50$ . Lectotype, Berlin. 7, *Esenbeckia vulpes* (Wied.), ♂: a, head  $\times 12$ ; b, palpus  $\times 25$ . Allotype, Berlin. ♀: c, head, d, frons  $\times 12$ ; e, antenna, f, palpus  $\times 25$ . Frankfurt, specimen. 8, *Fidena basilaris* (Wied.): a, head  $\times 12$ ; b, palpus  $\times 25$ . Holotype, Frankfurt.



***Amphichlorops flavus* (Wied.) (*Tabanus*)** 1838: 163-164, ♀, von Montevideo. In meiner Sammlung.

There are 3 old and damaged specimens in Vienna Museum. The one labelled as type bears a printed Brasilien, a printed Coll. Winthem with *flavus* written in, and an old handwritten *flavus* Wied. Another specimens has only a Coll. Wiedem. label, while the third is Coll. Winthem from Bahia. The last cannot be type, and the Coll. Wiedem. specimen would probably be the best choice as lectotype, as no Coll. Winthem specimens were mentioned in the original description. All three are the same and agree with current interpretations of the species. This is the type of *Amphichlorops* Lutz.

***Catachlorops capreolus* (Wied.) (*Tabanus*)** 1828: 162, ♀, aus Brasilien. Im Berliner Museum.

The type in Berlin museum bears the following labels: green copperplate Brasil Sello; white printed 236; red Type; green copperplate *capreolus* Wied.\*; Kröber det. 1928 as *capreolus*. The specimen is in only fair condition, lacking left antenna and some legs, left wing damaged and thorax denuded. I had no specimens exactly agreeing. The figure given by Barretto (1946) of the wing seems to indicate the present species, while Kröber's (1939) figure of wing of type is good, of head structures less accurate, the palpi being too slender, the antennal style much too short. Head structures of the type are illustrated (fig. 3).

***Catachlorops circumfusus* (Wied.) (*Tabanus*)**, 1830: 624, ♀, aus Mexiko. Im Berliner Museum.

The type is in fair condition and is labelled Mexico Deppe, and *circumfusus* Wied.\* A pale brown stout species with bare subepaulets, slender sclerotized labella and theca, very slender palpi, bare eyes, rather broad frons with strong vestiges of ocelli and a drop-shaped callus. Antennae slender, with a long dorsal spine reaching 1st annulus. Thorax light brown with rather prominent dark brown stripes, a pair of broad dorsolaterals and a hair-fine median. Legs all brown, not bicolored, no hind tibial fringe. Antennae reddish, style darker, only terminal annulus black. Palpi pale brown, short black-haired. Beard brown. Abdomen reddish brown, with small vague dark median integumental spots on anterior part of 2nd and 3rd tergites. Hairs largely lost, but apparently largely dark or blackish, except for narrow pale-haired median triangles, now visible only on tergites 4, 5 and 6 but possibly present on others. Sides of all tergites broadly pale-haired. Sternites largely black-haired, but with indistinct spots of pale hairs laterally and in middle on at least 1st 3 sternites. Wings uniquely marked. All veins broadly bordered with brown, except at their extreme tips at wing border. This brown border is fainter and more reddish next to the veins, darker at its margin, and wide enough so that it nearly or quite fills space between veins, leaving clear streaks or spots only at places where veins are farthest apart. A ♂ from Pelotas, Rio Grande do Sul, Brazil, from Dr M. Leclercq agrees closely with this ♀. This specimen is one of a considerable lot of tabanids from Pelotas collected by Biezanko in 1961, and I believe there is no doubt of the locality. This makes it practically certain that Wiedemann's type is mislabelled and not from Mexico. It would be very aberrant in the Mexican fauna, but fits in well in Brazil. The ♂ has a large upper area of well demarcated large facets, bare, and with a small tubercle sunk between eyes. Re-examination of the type of *Tabanus pictipennis* Macq. 1850 (nec Macq. 1834) in Paris, from Maldonado, Uruguay shows it to be synonymous with *circumfusus* (New Synonymy).

Kröber (1939) includes *circumfusus* in *Catachlorops*, though he saw no specimens and merely copies Wiedemann's description. The type is illustrated to aid in identification (fig. 4).

**Catachlorops potator** (Wied.) (*Tabanus*), 1828: 149-150, ♀, aus Brasilien. In meiner Sammlung. 1830: 624, var. Cassapawa, Brasil. Im Berliner Museum und meiner Sammlung.

The type in Vienna museum is intact, mesonotum split, somewhat faded and grease darkened. It bears the following labels: printed Brasilien; printed Coll. Winthem with "*potator* Wied. Type" written in; red type; old handwritten "*potator* Wied. Brasilia." It differed from a compared specimen in broader frons, brown callus and stouter antennae. There is a further series of specimens in Vienna, 3 from Cassapawa and 1 Brasilien, Alte Sammlung. Two of the Cassapawa specimens have Coll. Wiedem. labels with "*potator* var. Wied. Type" written in, the other is Coll. Winthem with *potator* written in. The 3 from Cassapawa seem to be some of the specimens discussed in 1830. These appear quite different, much grayer, with large gray triangles on abdomen, broader frons and much reduced wing pattern. The type is intermediate between these and my compared specimen. Others may be in Berlin, but I did not see them, nor would they be types. From the descriptions of Barretto (1946), he seems to have taken a form similar in wing pattern to the Cassapawa specimens as typical *potator*, and erected *C. lanei* Barr. for those with even more heavily marked wings. No 2 of my series of 6 specimens are quite alike and I suspect that the species may be quite variable, perhaps geographically. I do not think that *C. lanei* will prove to be more than a subspecies, if that, but I lack sufficient material for decision.

**Catachlorops psolopterus** (Wied.) (*Tabanus*), 1830: 181, ♀, von Montevideo. In meiner Sammlung.

No specimens labelled as type were seen in Copenhagen, Berlin, Frankfurt or Vienna. Kröber (1939) says "Type ♀ Wien; Brasilien." This seems to refer to 1 of 2 specimens in Vienna Museum both labelled Brasilien, Coll. Winthem with *psolopterus* written in. One of these is old and denuded, lacking antennae and most legs and is det. Kröber 1928 as *C. immaculata* Macq. The other is intact, well preserved, and is det. Kröber 1928 as *psoloptera*. As far as conditions allow, they appear to be the same species. Although neither is labelled Montevideo nor Coll. Wiedem., there seem no other specimens with as good a claim to have formed part of the original material. I have therefore labelled the well preserved specimen above as lectotype. The species has been adequately described and figured by Kröber (1939).

**Chrysops crucians** Wied. 1828: 211, ♀, Brasilien. In meiner Sammlung und im Frankfurter Museum.

As noted by Kröber (1925), the only certain type is in Vienna Museum. It is labelled Type; Coll. Winthem with Brasilia written in; printed Wied. det., and Kröber det. 1924. It is on an old thick pin, lacks terminal antennal segments and is rather dirty. Three specimens in Frankfurt labelled as type and paratypoids from Brasilia, Freireiss, are *C. variegata*. A ♂ in Berlin is also labelled type, presumably by Enderlein, possibly with the intention of allotype designation. It may be the ♂ of *crucians*, or of one of the other forms in the

group. Kröber (1925) noted the complexity and apparent intergrades in this group, making *ecuadorensis* Lutz and *fusciapex* Lutz varieties of *crucians* and describing var. *peruvianus* and var. *lutzi*. See also my comments on *fusciapex* (1961), which I believe to be a distinct species. The type of *C. crucians* var. *peruvianus* in Munich is certainly a distinct species also. My homotype agrees closely with Kröber's figure of wing of *crucians*, but the abdomen of mine is much darker, 1st segment wholly black and dorsolateral pale streaks faint and only on tergites 4 and 5.

**Chrysops guttula** Wied. 1828: 203, ♀, aus Brasilien. Im Berliner Museum.

The type has 1 wing largely missing but is otherwise well preserved. The species has been long placed in synonymy of *C. leucospilus* Wied., from which it differs only in that the contrast between the isolated hyaline spot in 4th posterior cell and the adjoining paler extension in 5th posterior cell is greater, the 5th posterior cell being nearly uniformly blackish, while in type of *leucospilus* there is a contrasting dilute band to hind margin. There appears to be a north-south cline in this character, Argentine specimens figured by Hack (1951) having the 5th posterior cell largely hyaline and a large spot in 4th, while northern examples have fifth cell wholly black and spot in fourth cell very small, even occasionally absent. All intermediate conditions appear to exist.

**Chrysops leucospilus** Wied. 1828: 202-203, ♀, aus Brasilien. Im Berliner Museum.

The type is in fair condition, lacking 1 antenna, 1 hind leg, and with pest hole in left eye and thorax. See discussion of *C. guttula*. There is also an old Coll. Winthem specimen labelled type in Vienna, and another specimen det *leucospilus* by Wiedemann, but since only Berlin material is mentioned in the original description, these cannot strictly be considered types.

**Chrysops molestus** Wied. 1828: 205-206, ♀, aus Brasilien. Im Berliner Museum und in meiner Sammlung.

There are 3 rather damaged specimens from Brasil, v. Olfers in Berlin museum, all labelled as types. One of these, with the No. 2372 and an old det. label is surely a type, the others may be. Another specimen in Vienna museum is also labelled type, Coll. Wiedem., and bears a Wiedemann det. label with "Chr. molestus m. Brasilia Hamburg." It is intact though somewhat glue smeared, and in better preservation than the Berlin material. The Vienna specimen should be lectotype, though I did not so label it. All agree with current interpretations of the species as treated by Kröber (1925).

**Chrysop tardus** Wied. 1828: 576-577, ♂, aus Brasilien. In meiner Sammlung und im Frankfurter Museum.

A ♂ in Vienna museum bears a red type label, printed Coll. Winthem with Brasilia written in, printed det. Wiedem. with *tardus* written in, old handwritten "*tardus* Wied. Brasilia", and a 1924 Kröber det. as *varians*. Another ♂ in Frankfurt Museum is also labelled type, Brasilia Freiriess, and handwritten *Chrysops tardus* Wd. It is also det. Kröber 1924 as *varians*. Specimen is obviously old, lacks some legs and 3rd antennal segments. The 2 types agree and I believe represent the ♂ of *C. sublaeta* Philip (New Synonymy).



*C. tardus* represents the darker form of *C. varians* Wied. Kröber (1925) considered the Vienna specimen as type of *tardus*, and it is hereby designated lectotype. Kröber (l. c.) considered *tardus* synonymous with *variens* and the latter a form of *laetus* Fab. But as shown by Philip (1955) the true *laetus* is entirely distinct, and what Kröber and others considered *laetus* was renamed *sublaetus* by him. The name therefore becomes *C. varians* var. *tardus* Wied. Specimens can usually be assigned to the species or its variety, although there is complete intergrading in some areas. One or the other or both may be present in any given locality so that there is no evidence as yet that *tardus* is more than a color form.

**Chrysops varians** Wied. 1828: 208-209, ♀, aus Brasilien. Im Berliner und Frankfurter Museum und in meiner Sammlung.

I have seen a total of 8 specimens labelled as types of this species, 2 in Berlin, 2 in Frankfurt and 4 in Vienna. These represent at least 3 different species, and several of them are very doubtfully original Wiedemann specimens. The 2 in Berlin agree with specimens det. Pechuman as *fusciapex* Lutz and with specimens det. Lutz as *variens*. The 2 in Frankfurt also seem to be similar, and are *C. crucians* Wied. or a form of that species, and are so det. by Kröber 1923. Of the 4 specimens in Vienna, 2 are Coll. Wiedem. and 1 of these bears a Wiedemann hand label with "*variens* m. Brasilian Hamburg" on one side and "*laetus* var *variens* m. Brasilia" on the reverse, while the other bears only printed labels. I have selected the Vienna specimen bearing Wiedemann's hand label as lectotype and so labelled it. This is the pale form of *laeta* auct. nec Fab. as treated by Kröber (1925) and most later authors. The *C. varians* of Lutz is, I believe, different; at least specimens so det. by him are not the present species, but agree with the dubious types in Berlin. The remaining 2 Vienna types are Coll. Winthem and det. *crucians*. These are darker, approaching var. *tardus* Wied.

**Cryptotylus unicolor** (Wied.) (*Tabanus*), 1828: 141, ♀, aus Brasilien. Im Berliner Museum.

A ♂ specimen in Berlin museum is labelled Brasil Sello; 198; red Type; green copper-plate *unicolor* Wied.\*. Since a ♀ was clearly described this cannot be the type, though it is *unicolor*. Previous search by others in Berlin, Copenhagen, Vienna and Frankfurt has not revealed the true type, so it must be presumed lost. Philip & Fairchild (1956) have discussed and figured the species. This is the type of *Cryptotylus* Lutz.

**Diachlorus afflictus** (Wied.) (*Chrysops*), 1828: 204, ♀, aus Brasilien. Im Berliner Museum.

The type in Berlin is labelled Bahia Gomez and "*afflictus* n. *Chrysops afflictus* Wied.\*" It lacks flagellum of right antenna, 1 wing torn and somewhat denuded. I could not match it among specimens available to me. It is closest to small pale specimens of *bimaculatus* Wied., but with narrower, less divergent frons and callus as high as wide. Wings much as in *distinctus* Lutz, more strongly marked than in any *bimaculatus* seen. Lutz (1913), who claimed to have seen this specimen, named a var. *trivittatus* on basis of a dark median stripe on abdomen. This is present on the type also, though faint. Kröber (1928) figured this type, though showing frontal callus too narrow. It is practically square, not flared out above. The basal antennal segments are also stouter than he shows.

**Diachlorus bimaculatus** (Wied.) (*Chrysops*), 1828: 201-202, ♀, aus Brasilien. Im Berliner Museum.

The type is much damaged, antennae missing, 1 hind leg and all but femur of other gone, abdomen crushed and glued, 1 wing glued to a card. It is labelled Brasil; Type; and with a green copperplate "*bimaculata* n. Chrys. bimac. Wied.\*" Kröber's figure (1928) is inaccurate, showing frons too wide and callus too small and narrow, the latter actually as wide as high and not drop shaped. I have a compared specimen from Salobra, Matto Grosso which agrees as well as can be expected, considering the condition of the type.

**Diachlorus bivittatus** (Wied.) (*Tabanus*) 1828: 193, ♀, aus Brasilien. Im Frankfurter Museum, auch in meiner Sammlung.

A specimen labelled type in Berlin has following other labels: green handwritten "Brasilien Senckenburg-Museum Frankfurt a. m." old white handwritten "Wied. Mus. Senkb.", white printed "Coll. H. Loew." It bears no name label. It may be a type secured from Frankfurt subsequently by Loew. In Vienna there is a long series, none labelled type and none with original Wiedemann labels, though 2 are Coll. Wiedem. and 2 Coll. Winthem. In Frankfurt there is a nearly perfect specimen labelled type and Brasília Freireiss, with an old handwritten "*Chrysops bivittatus* Wd." and a 1924 Kröber det. label as *bivittatus*. Kröber (1928) says "Type ♀. Berlin und Wien." In view of Wiedemann's statement as to location of specimens, as well as the superior condition of the Frankfurt specimen, I hereby select it as lectotype. It and the other specimens agree with Kröber's (1928) description and figures.

**Diachlorus glaber** (Wied.) (*Tabanus*), 1828: 192-193, ♀, aus Brasilien. Im Frankfurter Museum.

A specimen in Berlin is labelled type, Coll. H. Loew, Brasilien, and *glaber* W.\*. It has been double mounted on an old short pin, is greasy and denuded, but nearly intact. Another specimen in Frankfurt is also labelled type, Brasília Freireiss, *Chrysops glaber* Wied. and with a Kröber det. label 1924 as *glaber*. It has thorax split and lacks an antenna. Another specimen Coll. Winthem in Vienna is not labelled as type. Kröber (1925) redescribes a type from Frankfurt and another from Vienna, saying the first was teneral. It did not seem so to me. Drawings made of the Berlin specimen agreed also with the Frankfurt specimen, but not with Kröber's figure (1928). They are here given for comparison (fig. 5). Although the Berlin specimen may have come from Frankfurt via H. Loew, the Frankfurt specimen is here designated lectotype. Kröber (l. c.) suggests that *D. altivagus* Lutz may be a synonym, though Lutz (1913) pointed out differences. I have seen Lutz type and believe it different, though I unfortunately had no material and made no detailed notes.

**Diachlorus immaculatus** (Wied.) (*Chrysops*), 1828: 202, no sex, locality or collection. Very briefly described by comparison with *bimaculatus*.

A specimen in Berlin museum is labelled type, Brasil, 256, green copperplate "*immaculata* n. Chrys. *imaculatus* Wied.\*" It is very dirty and denuded, hole in thorax, abdomen glued on. Kröber's description and figures (1928) are adequate, and Lutz (1913) colored figure excellent. I have a compared specimen. No specimens of this species were seen in other

museums, so this is the only one available as type.

**Dichelacera alcicornis** (Wied.) (*Tabanus*), 1828: 158-159, ♀, aus Brasilien. Im Berliner Museum.

The specimen labelled type in Berlin museum is labelled Brasilien Rio de Janeiro von Olfers S. and with a handwritten *alcicornis* Wied. None of the labels are old. Specimen is well preserved, lacking only 1 antenna. There are also 2♂♂ in Berlin labelled as types, with same locality labels, one bearing also an old *alcicornis* Wied.\*, but no ♂♂ were described and these cannot be types. The species was discussed and figured by Lutz (1915) and Fairchild & Philip (1960). It is the type of *Lanemyia* Barretto.

**Dichelacera januarii** (Wied.) (*Tabanus*), 1819: 43, ♀, Rio de Janeiro, aus dem Königl. preussischen Museum; 1821: 94; 1828: 162, ♀, von Rio de Janeiro. In meiner Sammlung. Variants in Berlin Museum and his collection.

The only specimen with type label in Berlin museum is a ♂, Brasil Sello and green copperplate "*januarii* Wied.\*" labels. Since only the ♀ was described in 1819 and subsequently, this cannot be a type, and the original 1819 ♀ is either lost or unrecognizable through transference of labels under this name. In Frankfurt there are 5 old ♀♀ from Brasilia Freireiss. One of these bears a type label, 3 others paratype labels. Two of the "paratypes" bear old det. labels, possibly in Wiedemann's hand, and Kröber det. labels. Four specimens are heavily marked, like specimens from Petropolis in my collection, the other paler and approaching *flavescens* Thunb. None are the paler form considered typical by Fairchild & Philip (1960). There are 2♀♀ labelled type in Vienna, both Coll. Winthem, Brasilien and both with "*januarii* Wd. Type" written in on the Coll. Winthem printed label. One of these is the typical form common around Rio de Janeiro, the other a yellower more heavily marked form. There are other Coll. Wiedem. and Coll. Winthem specimens in Vienna, det. variously as *januarii*, *capricornis* and *alcicornis*, so that it is now impossible to tell which specimens Wiedemann thought were which species. None have determinations in his hand or Rio de Janeiro localities. In the absence of a certain type, it seems best to fix the name to the pale form found in Rio and illustrated by Fairchild & Philip (l.c.). This agrees best with the original description, and the first of the 2 "types" in Vienna might be made neotype. Elucidation of the status of the various forms in this complex can only come through detailed field studies in Brasil.

**Dichelacera varia** (Wied.) (*Tabanus*), 1828: 189, ♀, aus Brasilien. In meiner Sammlung und im Berliner Museum.

The type in Berlin is labelled Para Sieber, printed 231, red Type, and green copperplate *varius* Wied.\*. It is pest eviscerated, somewhat denuded, lacks abdomen beyond 5th segment and has been repinned. The type in Vienna is labelled Brasilien, Coll. Winthem with "*varius* Wd. type" written in, red type, old handwritten *varius* Wd. Brasilia, and a Kröber 1925 det. as *Rhamphus varius*. It is badly preserved, crushed, dirty, lacks antennae and 1 wing, the other wing glued below on a card. It is too badly preserved to be of much use. On the basis of study of the Vienna specimen, we decided (Fairchild & Philip 1960) that *bifascies* Wlk. and *varia* Wd. were synonymous, and erected the name *cearensis* to cover the species considered *varia* by Lutz (1915) and Barretto (1949). The much better pre-

served syntype in Berlin, however, is *cearensis* (**New Synonymy**), as comparison of the figure of the Berlin type here given (fig. 6) with our figure of *cearensis* demonstrates, so that Lutz and Barretto were correct. The Berlin syntype has been labelled lectotype. The species is the type of *Neorhamphus* Kröber.

**Di cladocera guttipennis** (Wied.) (*Tabanus*), 1828: 153-154, ♀, aus Brasilien. Im Berliner Museum.

There are 2♀♀ labelled type in Berlin. One is labelled Brasil Sello, printed 35, green copperplate *guttipennis* Wied.\* It is somewhat damaged, lacking left antenna and palpus and with pest hole in right eye. The other specimen has same locality and collector and a modern det. as *Di cladocera guttipennis* Wied. The specimens are conspecific though with slight differences. The 1st specimen above has been labelled lectotype. Both agree with current concepts of the species. It is the type of *Di cladocera* Lutz.

**Elaphella cervus** (Wied.) (*Pangonia*), 1828: 94-95, ♀, aus Para in Brasilien. Im Berliner Museum.

The type in Berlin is labelled Para Sieber and with a green copperplate *cervus* Wied. Abdomen pest damaged, head and 1 wing glued on. The species is variable in series, the type being about midway between available extremes of most characters. The species is the type of *Elaphella* Bezzi and its several synonyms.

**Erioneura fuscipennis** (Wied.) (*Tabanus*), 1828: 179, ♀, aus Brasilien. Im Frankfurter Museum.

The type in Frankfurt is labelled Brasilia Freireiss, an old handwritten *Tabanus fuscipennis* Wied., and a square blue 60. It lacks antennae and somewhat denuded, but agrees well with current interpretations. This is the type of *Erioneura* Barretto.

**Esenbeckia basilaris** (Wied.) (*Pangonia*), 1830: 621, ♂, aus Mexiko. No collection mentioned.

In Vienna there is a ♀ in excellent condition with a pink Kröber type label, a Coll. Winthem label, and an old handwritten *basilaris* Wied. Mexico. This cannot be the true type, which was a ♂, although Philip (1954) in discussing the species under *wiedemanni* Bell. and *tepicana* Towns. assumed it was Wiedemann's type. There is no guarantee, therefore, that either Bellardi's *wiedemanni* or Townsend's *tepicana* are in reality the same as Wiedemann's species. However, since *basilaris* is a homonym of the earlier *Pangonia basilaris* Wied. 1828 it seems best to dispose of it as a synonym of *tepicana*, as Philip has done.

**Esenbeckia esenbeckii** (Wied.) (*Silvius*), 1830: 623, ♀, aus Brasilien. No collection mentioned.

No specimens labelled types have been found in any of the Museums where search has been made. In Vienna museum there are 1♂, 2♀ over the name label. The ♀♀ have Brasil and Alte Sammlung labels with Esenb. *pangonina* written in, and 1 is det. Kröber as *esenbeckii*. The ♂ is from Paraguay. One or both of the ♀♀ might be types, but there is no certainty, although Kröber (1932a) says "Type ♀; Wien, von Brasilien", so he no doubt based his discussion of the species on the ♀ det. by him above. Establishment of

this specimen as neotype would stabilize future work.

**Esenbeckia fuscipennis** (Wied.) (*Pangonia*), 1828: 95, ♀, aus Brasilien. In von Winthem's und meiner Sammlung.

There are 3 specimens in Vienna labelled type, all probably syntypes and all the form with basal 1/3 of wing yellow. I have selected the specimen labelled Coll. Wied. with *fuscipennis* written in and an old handwritten "*P. fuscipennis* m. Brasilia" as lectotype. It lacks antennae but is otherwise in good condition. The variety mentioned at the end of the original description as having only extreme bases of wings yellow is also in Vienna, labelled "*fuscip. var. m.*" in Wiedemann's hand. My treatment of these forms (Fairchild 1961) thus appears correct. The species is type of *Dyspangonia* Lutz.

**Esenbeckia semiflava** (Wied.) (*Pangonia*), 1830: 622, ♂, aus Mexiko. Im Berliner Museum.

The type in Berlin is labelled Mexico Deppe, 280, and green copperplate *semiflava* Wd. It is in near perfect condition and agrees with current concepts of the species. It is type of *Ricardoa* Enderlein.

**Esenbeckia vulpes** (Wied.) (Silvius), 1828: 111, ♂, ♀, aus Brasilien. Im Berliner Museum das Mannchen, meiner Sammlung das Weibchen.

The ♂ type in Berlin is labelled Brasil Gom., 281, and green copperplate "*vulpes* Wied\*." It lacks antennae and 2 legs. This is a wholly rufous insect with evenly reddish brown wings and all hairs rufous except blackish hind tibial fringe. I have figured the head characters (fig. 7). A ♀ in Frankfurt is labelled Brasilia Freireiss, 68, old handwritten "*Silvius vulpes* Wd.", Kröber det 1927, and modern "Wiedemann det." It is rather dirty and denuded but largely intact and is probably conspecific with the Berlin ♂. A specimen in Vienna is labelled Brasilia, "*vulpes* Coll. Winthem", and old Wiedemann hand "*vulpes* Wied. Brasilia," red type and a Krober det. 1928. The left eye is destroyed, left wing broken, denuded and dusty. It agrees with the Frankfurt specimen and both may be types, although only the Vienna specimen is so labelled. I hereby select the latter as lectotype. A figure of the Frankfurt specimen is included (fig. 8). This is the type of *Esenbeckia* Rondani.

**Fidena basilaris** (Wied.) (*Pangonia*), 1828: 554-558, ♀, aus Brasilien. Im Frankfurter Museum.

The type in Frankfurt is labelled Brasilia Freireiss, 77, and with a Kröber det. 1919 as *Phaeoneura basilaris* Wied. It lacks antennae and parts of some legs. This is not the species later treated as *basilaris* by Lutz (1909) or Kröber (1933a), but it agrees closely with Wiedemann's description. It is somewhat like *F. analis* (Fab.), differing in sharply black basal cells of wing. Legs bicolored, femora black, tibiae yellow. Beard white, pleural and mesonotal vestiture brown. Face much produced, wholly shiny. Basal and anal cells of wing blackish, remainder glass clear. Mesonotum and scutellum reddish in ground color, both grayish pruinose and dark haired. Abdomen blackish, tergites 1-3 largely black-haired, but 2 with small median posterior yellow hair tuft, 3 with larger yellow triangle, 4 with most of hind margin yellow, 5 to last wholly bright long yellow haired. Sides of tergites 2-7 have increasing amounts of yellow hair. Sternites all margined behind with pale hairs, the bands increasing in width posteriorly. Head characters of type

are here figured (fig. 8). Both Lutz and Kröber seem to have confused *F. basilaris* Wied. with *F. basalis* Wlk., and it is the latter that both have figured. *Phaeoneura* Lutz was based on this misdetermination.

**Fidena besckii** (Wied.) (*Pangonia*), 1828: 97, ♀, aus dem Innern von Brasilien. In meiner Sammlung.

There are 5♀♀ in Vienna det. as this species. Three are labelled Brasilia, printed Coll. Winthem with *besckii* written in, and red type labels. One of these is also det. *besckii* by Kröber 1929. The other 2 specimens are not labelled as types. Both bear Coll. Wied. labels with *besckii* written in, and in addition one of these bears a Wiedemann handwritten label reading "*P. Besckii* Brasilia." I believe the latter 2 specimens are more certainly types than the 3 so labelled, and I have labelled the specimen with Wiedemann's handwritten det. as lectotype. The specimens fall into 2 groups on the basis of degree of production of the face. The lectotype and 2 of the Coll. Winthem specimens have the face less produced than the other 2. I detect no other difference. My only available specimen for comparison has the more produced face. I do not at present think that this difference is of specific importance.

**Fidena fulvithorax** (Wied.) (*Pangonia*), 1821: 52, ♂, Brasilia, Mus. reg. Havn. 1828: 89, ♂, ♀, aus Brasilien. Im Königl. und im Berliner Museum, auch in meiner Sammlung.

The ♂ type is in Copenhagen, bears a red type label and an old handwritten, possibly Wiedemann's, "*P. fulvithorax* W. Brasilia." It is intact and fairly well preserved. A specimen in my coll. from Rio de Janeiro agrees closely, except for admixture of dark hairs on mesonotum, all yellow in type. A ♂ sent me from Berlin is also labelled type, but is surely part of the material mentioned in 1828. It agrees closely with the Copenhagen specimen and is here figured (fig. 9). There are also 2♀♀ in Vienna labelled type, Coll. Winthem, which are probably also part of the 1828 material. They cannot be types, as only the ♂ was originally described. This species was selected as type of *Melpia* Walker, *Erephopsis* Rondani and *Sackenimyia* Bigot.

**Fidena leucopogon** (Wied.) (*Pangonia*), 1828: 92, ♀, aus Brasilien. Im Berliner Museum.

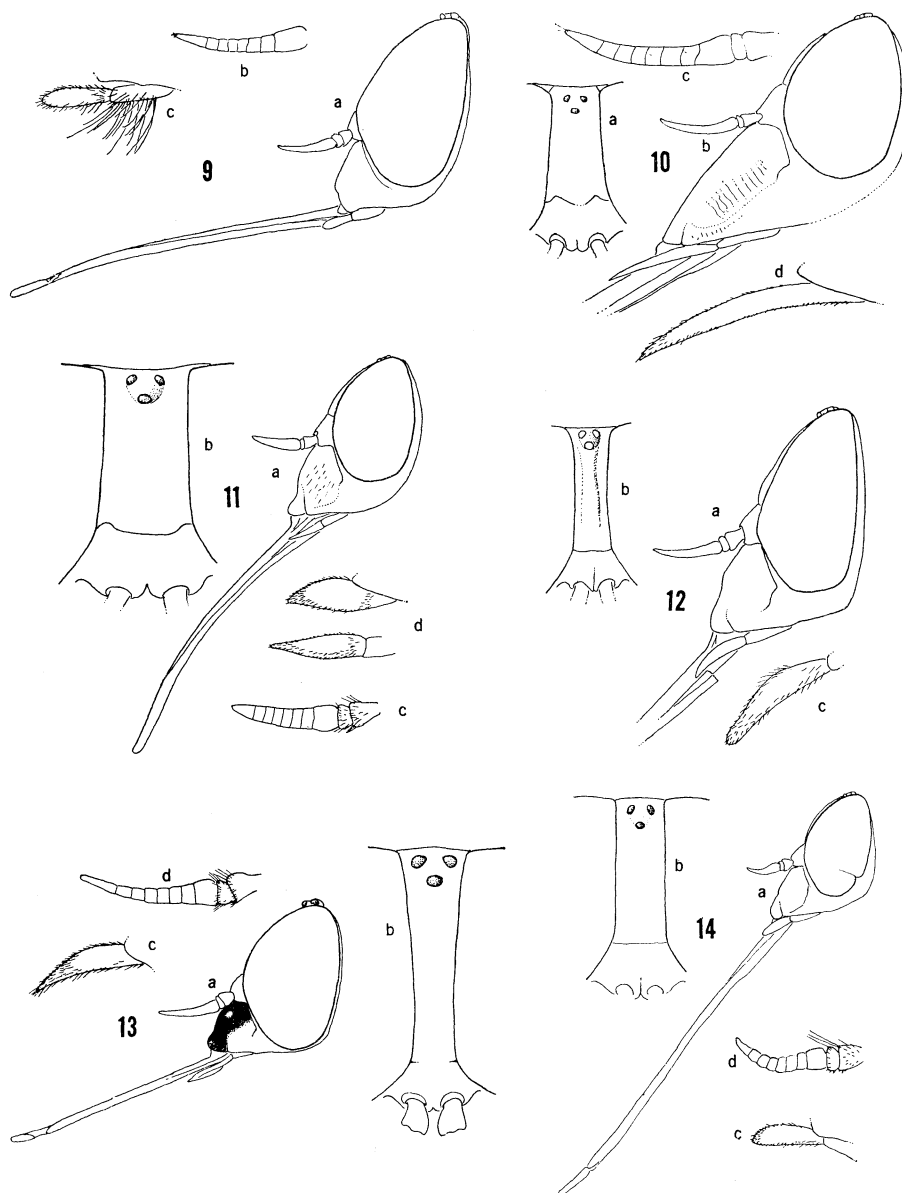
*Pangonia basalis* Wlk., 1848, nec. Macq., 1847.

*Phaeoneura basilaris* Lutz, 1909, nec. Wied., 1828.

*Fidena basilaris*: Kröb., 1933, 1934, nec. Wied., 1828.

*Fidena basilaris* var. *acutipalpis* Kröb., 1933. **New Synonymy.**

Two specimens det. as *leucopogon*, neither with type labels, were sent from Berlin. One is det. Enderlein *leucopogon*, is rather dirty and denuded, and agrees with a homotype of *F. longirostre* Macq. (= *nigripes* v. Röd.). The other specimen is badly denuded but appears to be the same as a homotype of *F. basalis* Wlk. I believe this specimen represents *leucopogon* and may be the missing type. It agrees with the description as far as its condition will allow. What Lutz (1909) and Kröber (1933a) consider *leucopogon* is the same as *albibarba* End., in fact one of Enderlein's types is det. *leucopogon* by Kröber. Kröber (l. c.) says type of *leucopogon* in Vienna, but this contradicts Wiedemann and I found no specimens labelled type in Vienna. The species figured by Lutz (l. c.) as *F. basilaris* Wied. and treated as *F. basilaris* var. *acutipalpis* by Kröber (1931a), agrees well with Wiedemann's description



Figs. 9-14. 9, *Fidena fulvithorax* (Wied.), ♂. a, head  $\times 12$ ; b, antenna, c, palpus  $\times 25$ . Berlin specimen. 10, *Fidena lingens* (Wied.): a, frons, b, head  $\times 12$ ; c, antenna, d, palpus  $\times 25$ . Syntype, Vienna. 11, *Fidena marginalis* (Wied.): a, head  $\times 12$ ; b, frons, c, antenna, d, palpus  $\times 25$ . Homotype, Copenhagen. 12, *Fidena venosa* (Wied.): a, head; b, frons  $\times 12$ ; c, palpus  $\times 25$ . Holotype, Copenhagen. 13, *Fidena winthemi* (Wied.): a, head  $\times 12$ ; b, frons, c, palpus, d, antenna  $\times 25$ . Berlin specimen. 14, *Scione aurulans* (Wied.): a, head  $\times 12$ ; b, frons, c, palpus, d, antenna  $\times 25$ . Lectotype, Berlin.

of *leucopogon* and with the presumed unmarked type in Berlin, but not at all with the description or type of *basilaris* Wied. *Fidena basalis* Wlk. 1848 was omitted from Kröber's (1934) and Surcouf's (1912) catalogues, though Kröber earlier (1933a) had listed it as a synonym of *basilaris* Wied., claiming to have seen both types. It is, however, a synonym of *leucopogon* in my opinion (**New Synonymy**) and a homonym of *Pangonia basalis* Macq. 1847 from N. Africa. The species is type of *Fidena* Walker.

**Fidena lingens** (Wied.) (*Pangonia*), 1828: 87-88, ♀, aus dem Innern von Brasilien. In meiner Sammlung.

Three ♀♀ in Vienna are labelled type and bear the same labels, a handwritten Brasilia, and a printed Coll. Winthem with *lingens* written in. All are same species, and I had none agreeing. As Kröber noted (1933a) the species is notable for its enormously produced face, the head being longer than mesonotum and scutellum. Lutz (1909) has given a colored figured which shows the snout too short and abdominal bands too contrasting. Head structures of one of the syntypes are illustrated (fig. 10). I made no lectotype selection; any one of the 3 specimens would serve equally well.

**Fidena marginalis** (Wied.) (*Pangonia*), 1830: 620, ♀, aus Cassapawa in Brasilien. Im Berliner Museum und in meiner Sammlung.

Two specimens in Berlin are labelled type. The first bears a green copperplate Cassapav. Sello, a printed 301, and a green copperplate *marginalis* Wd.\* It is intact, but denuded, and the face entirely pollinose. The other has a modern Brasilien Casapav. Sello, an Enderlein det. as *Fidena marginalis* Type Wied. and a Kröber. det. as *Fidena sorbens* var. *marginalis*. This specimen has face with shiny lateral areas, dark spots on abdomen larger and palpi more slender, but is otherwise the same. In Vienna there are 4 specimens. Two are Brasilia and Coll. Winthem and labelled type, but are probably not true types. Of the other 2 specimens, not labelled as types, 1 bears a Wiedeman handwritten "P. marginalis W. Cassapawa Brasil Berlin", a printed Coll. Wiedem. with *marginalis* written in, a Kröber det. 1929 as *Scaphipalpa marginalis* Wied., and another Kröb. det. 1928 as *Fidena marginata*. This specimen is intact except for a hole in the thorax. The last specimen has only a printed Coll. Wiedem. with *marginalis* written in. It is my opinion that the 2 Coll. Winthem specimens labelled types are doubtfully true types, but that the 2 unlabelled Coll. Wiedem. specimens are. One or both of the specimens in Berlin may also be types. I have selected and labelled the specimen in Vienna with Wiedemann's handwritten label as lectotype. This has the face wholly pollinose. I give here figures of head characters of a specimen compared and agreeing with the lectotype, this homotype now in Copenhagen museum (fig. 11). The form with shiny areas on face is the one described and figured by Kröber (1933a), although he shows both palpi and antennae much too slender. Whether this is a variant or a distinct species must await further material. The species is stout and chunky, and at first glance resembles *Scaptia australis*. Lutz (1909) figure is also recognizably *marginalis*.

**Fidena sorbens** (Wied.) (*Pangonia*), 1828: 93-94, ♀, von Montevideo. Im Berliner Museum und meiner Sammlung.

One ♂ and 2♀♀ are labelled as types in Berlin museum. The ♂ cannot be a type, as



only ♀♀ were originally described, although it is labelled Montevidei. Sello and det. *sorbens* Wied. The 2♀♀ also bear the same locality label, but do not agree with the description in several respects and in my opinion are not the same species as the ♂. The material in Vienna consists of a long series of specimens, only one of which appears available as a type. This specimen is labelled Coll. Wiedem. with *sorbens* written in, and a Philip det. 1955 as *sorbens*. The head structures are intact, but the specimen is much denuded and wings torn. I have labelled this specimen as lectotype. An important character of this species appears to be the produced and shiny yellow face, with a small dorsal strip of gray pollinosity. This is mentioned in the original description, and is present on the lectotype and the ♂ in Berlin, but is absent in the two ♀♀ in Berlin, which have brown and wholly gray pollinose faces. These latter agreed closely with a homotype of *F. longirostre* Macq. (= *nigripes* v. Rod.) in my collection. Kröber (1933a) appears to have correctly determined the species, though he believed the Berlin specimens to be the types, on account of the locality labels.

***Fidena venosa* (Wied.) (*Pangonia*), 1821: 52, ♀, Brasilia. Mus. reg. Havn. 1828: 87, ♀, aus Brasilien. Im Königl. Museum. Variants ♂, ♀, im Berliner Museum und meiner Sammlung.**

The type in Copenhagen is so labelled and bears a Wiedemann handwritten label "*P. venosa* W. ♀ Brasilia." It is intact and well preserved. An entirely black species with wing veins broadly brown margined. It is not the same as *rufohirta* Wlk. or as the Berlin specimen labelled type. This latter is labelled Brasil Leach, and lacks antennae, 1 palp, parts of legs and mesonotum denuded. There is also a series of 6♂♂, 7♀♀ in Vienna, Coll. Wied., 2 with Wied. det. labels. None are entirely black and represent the variants discussed in 1828, as does the Berlin specimen. I had no specimens quite agreeing with the Copenhagen type, though one from Butantan, S. Paulo agreed structurally, but was brown, with light brownish wings and last 4 tergites yellow haired. A figure of head structures of the type is here given (fig. 12).

***Fidena winthemi* (Wied.) (*Pangonia*), 1819: 44, ♀, Brasilia. Mus. n. 1821: 53; 1828: 91, ♀, aus Brasilien. In von Winthems und meiner Sammlung.**

A ♀ in Berlin Museum is labelled type. It bears a green handwritten Brasilien Winthem S, and old handwritten Winth., and a green copperplate *Winthemii* Wied. The specimen is intact, though pest eviscerated and denuded. I made a drawing of this specimen, here reproduced (fig. 13). In Vienna there are 3 specimens bearing type labels, 2 labelled simply Coll. Winthem with *Winthemii* written in, the other Coll. Wiedem. with *Winthemii* written in. All are same species and agree also with the Berlin specimen. In Frankfurt there are 2♀♀ labelled type and paratype. The type is labelled Brasilia Freireiss, 78, and with Dipt. 75 on underside of the large red typus label. The paratype also has Brasilia Freireiss, a handwritten *Pangonia winthemi* Wd., a Kröber det. 1927, and a red Paratypus with 75a on underside. Except for color of the beard, which ranges from chocolate brown in the Berlin and Frankfurt types to whitish yellow in the Vienna specimens, I can see no important differences in these specimens. My compared specimens have orange to white beards. Kröber (1933a) says type in Frankfurt with brown beard, although the 1828 description says beard yellowish. I prefer the Coll. Wiedem. specimen in Vienna as lectotype, though I did not so label it,

**Lepiselaga lepidota** (Wied.) (*Tabanus*), 1828: 193-194, ♀, aus Brasilien. In meiner Sammlung und im Frankfurter Museum.

A specimen in Frankfurt museum is labelled type, "Brasilia Freireiss", and a square blue "64." It bears a modern pencilled det. as *Lepiselaga lepidota* Wied. and is well preserved. Another specimen, not a type, is labelled Cuba, Von Heyden and is det. Kröber 1927. Both are *L. crassipes* Fab., under which the name has long been placed. None of a long series in Vienna are labelled as type, though one or more may be. All are *crassipes*. This is the type of *Lepiselaga* Macquart.

**Leptapha fumata** (Hffg. in Wied.) (*Tabanus*), 1821: 91, ♀, Brasilia. Mus. Hgg. et n. 1828: 177, ♀, aus Brasilien. In Berliner Museum und meiner Sammlung.

There are 2 specimens in Berlin, both in quite good condition and both labelled as types. One bears a green copperplate "Bahia Gom.", printed 247 and green copperplate "*fumatus* Wied.\*" The other has a handwritten "Brasilia Bahia Gomez S." In Vienna there are 3 ♀♀, all labelled type and with printed Brasilien and Coll. Winthem labels with *fumatus* written in. There are 3 other specimens, not labelled as types, also det. *fumatus* and Coll. Wiedem. All are same species and agree with current concepts. Kröber (1928) adequately redescribes and figures the species, but says type in Vienna. I would think that the first Berlin specimen above the most likely to be authentic, and hereby select it as lectotype. I believe also that the Coll. Wiedemann specimens in Vienna are more likely types than those now so labelled. *Leptapha* Enderlein was based on this species.

**Leucotabanus leucaspis** (Wied.) (*Tabanus*), 1828: 179; 180, ♀, aus Brasilien. In meiner Sammlung.

The type in Vienna is so labelled, and with a printed Brasilien and a printed Coll. Winthem with "*leucaspis* Wied. type" written in. It is old, dirty, and denuded, but certainly the species currently placed in synonymy of *Leucotabanus exaestuaris* (Linn.). This is type *Leucotabanus* Lutz.

**Oopelma globicornis** (Wied.) (*Tabanus*), 1821: 96, ♀, Brasilia, Mus. Hgg. et n. 1828: 190, ♀, aus Brasilien. Im Berliner Museum und meiner Sammlung.

A ♀ in Berlin museum is labelled type and bears a green Bahia Gom, a printed 2436 and green copperplate "*globicornis* Wied.\*" The specimen lacks right antennal flagellum, has a large old rusty pin-hole in thorax, abdomen glued on and much denuded. Lack of hair makes abdominal mid stripe appear continuous, rather than a series of triangles as in fresh material. In Vienna are 2 ♀♀, both labelled type, Bahia, Coll. Winthem with *globicornis* written in and with Kröber det. 1927 labels. These are same as Berlin type, and one is pretty well preserved, the other crushed and damaged. I have selected and labelled the well preserved Vienna specimen as lectotype. Kröber (1929) says types in Halle and Vienna, and describes and figures the species. It is the type of *Oopelma* End.

**Phaeotabanus aphanopterus** (Wied.) (*Tabanus*), 1828: 148-149, ♀, aus Brasilien. Im Berliner Museum und meiner Sammlung.

In Berlin there is a ♂ labelled as type, bearing green copperplate Brasil Sello, printed

92 and green copperplate "*aphanopterus* Wied.\*" Although agreeing with ♀♀, this cannot be a type, since only ♀ was described. The type in Frankfurt is labelled Brasilia Freireiss and with an old handwritten *Tabanus aphanopterus* Wied. It unfortunately lacks head and some legs. The type in Vienna is labelled Brasilia, Coll. Winthem with "*aphanopterus* Wd. Type" written in and bears a Kröber 1929 det. It is pest eviscerated and moldy, but has been selected and labelled lectotype. The Frankfurt specimen appears to be a different species, the same as my homotype of *Ph. minor* Kröb., though without the head certainty is impossible. Kröber (1930) says types in Frankfurt and Vienna, but adds that the Vienna specimen was labelled as type, presumably by him. His description and figure refer to this and not the Frankfurt specimen.

**Phaeotabanus apicalis** (Wied.) (*Tabanus*), 1828: 142, ♀, aus Brasilien. Im Berliner Museum.

The type bears a green Brasil v. Olf, printed 16, and green copperplate "*apicalis* Wied.\*" It is faded and denuded, large pest hole in mesonotum, but all appendages intact. The differences between this and type of *limpidapex* are very slight and the original descriptions of the 2 species do not very clearly separate them. *Apicalis* has paler wings, especially the discal, 2nd basal, 4th and 5th posterior, and anal cells, which are subhyaline. Head structures are very similar, but palpi more slender and antennal styles reddish in *apicalis*, black in lectotype of *limpidapex*. Frons and pattern of wing apex and all other characters same. They may eventually prove to be no more than color forms.

**Phaeotabanus limpidapex** (Wied.) (*Tabanus*), 1828: 140-141, ♀, aus Brasilien. Im Berliner Museum.

Two specimens in Berlin Museum are labelled as types. The first bears a green copperplate Brasil v. Olf., a printed 90, and a green copperplate "*limpidapex* Wied.\*". It lacks right antenna, otherwise well preserved. The second has a green handwritten Brasilien von Olfers S, but no name label, and lacks hind tarsi, 1 hind tibia, 1 wing torn and has been repinned. The 2 agree, though both are longer than the 7 lines (=15.2 mm.) given by Wiedemann. I have labelled the first specimen above as lectotype, though the condition of the second might make it seem more authentic. The species is very close to *apicalis* Wied., as noted.

**Psalidia furcata** (Wied.) (*Pangonia*), 1828: 99-100, ♂, aus Brasilien. A variety with fenestrate wings. Im Frankfurter Museum.

A ♀ in Frankfurt museum is labelled type, Brasilia Freireiss, 76, old handwritten "*Dicranidia furcata* Wied.", and a Kröber det. 1927 as *Psalidia furcata* Wd. It lacks antennae and 1 wing is broken. This is apparently the specimen studied by Kröber (1932b), but it can hardly be the type, which was a ♂, as clearly indicated by the description. Wiedemann is not clear as to whether the type ♂ was in Frankfurt, or only the variant of unspecified, though probably ♂, sex mentioned at the end of the description. It is very probable that the true type was the same species, and there seems no good reason to upset a long-recognized name, unless an undoubted and different type subsequently turns up. This is the type species of *Psalidia* Enderlein.

**Pseudoscione molesta** (Wied.) (*Pangonia*), 1828: 91-92, ♀, aus Brasilien. In von Winthem's

und meiner Sammlung.

There are 4♀♀ labelled as types in Vienna museum. Three are Coll. Winthem, and 1 Coll. Wiedem. All are old specimens, in only fair condition, and the same species. One of the von Winthem specimens bears an old, possibly Wiedemann, handwritten "*P. molesta* m. S. Paulo Brasilia v. Winth." and a Kröber det. 1928 label, and I have labelled it as lectotype. Kröber (1930b) places in *Parosca* End., considered by Mackerras (1955) a synonym of *Scaptia* (*Pseudoscione*) Lutz. The structure of the proboscis of this and *seminigra* Ric. (= *ferruginea* End.) is peculiar, as discussed elsewhere (Fairchild, in press) and may necessitate erection of a separate taxon to contain them. *P. exeuns* Wlk. is a pale-haired form of *molesta*, as treated by Kröber (l. c.).

**Scione aurulans** (Wied.) (*Pangonia*), 1830: 620-621, ♀, aus Mexiko. Im Berliner Museum und in meiner Sammlung.

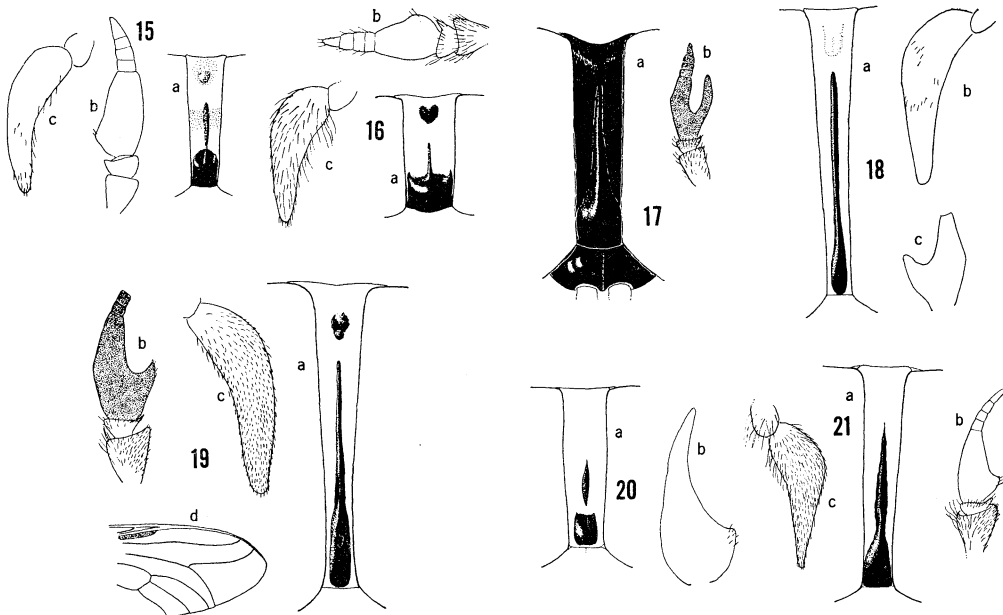
The type in Berlin Museum is labelled Oaxaca Deppe, 315, and green copperplate *aurulans* Wd. It is intact but somewhat faded and dusty. In Vienna there are 2♀♀ labelled type. The first has an old handwritten "*P. aurulans* W. Mexico" and an indecipherable collector's name, and a printed Coll. Wiedem. with *aurulans* written in. It lacks 1 antenna but is in otherwise fair condition. The second specimen has a handwritten Mexico, and printed Coll. Wiedem with *aurulans* written in. It lacks both antennae and is dusty and denuded. There are other specimens, not labelled as type, including a ♂ and a specimen from Venezuela, which probably represents Enderleins subspecies *lurida*. The Berlin specimen is best preserved and the one with most definite locality and is here selected as lectotype. It is here figured (fig. 14).

**Stenotabanus (Phorcotabanus) cinereus** (Wied.) (*Tabanus*), 1828: 167, ♀, aus Südamerika. In meiner Sammlung.

In Vienna there are 2♀♀ labelled type. The first bears a handwritten Amer. Merid., printed Coll. Winthem with "*cinereus* Wd. Type" written in, red type, old handwritten "*cinereus* Wied. Amer. Merid.", and a Kröber det. 1929. Thorax is split and it is glued to pin, otherwise in good condition. The second specimen has the same labels except for the handwritten one, but is denuded and the last 5 abdominal segments glued on upside down. The specimen from Terr. Amapa figured by me (Fairchild 1961b) agreed closely. The first specimen above is hereby selected as lectotype. There is another ♀ from Tapirinha b. Santarem Zerny Coll. in Vienna. Two ♂♂ in Stuttgart are labelled Type and Cotype by Kröber. They formed the basis of his description (1929a) of that sex but are in my opinion very doubtfully associated with *cinereus*. This is the type of the subgenus *Phorcotabanus* Fairchild.

**Stenotabanus comitans** (Wied.) (*Tabanus*), 1828: 175, ♀, aus Brasilien. Im Wiener Museum.

The specimen in Vienna labelled as type bears also labels reading Natt. Brasil, old handwritten "*comitans* Wied.", handwritten "*comitans* Wied. Type", red Type, Kröber det. 1928. The specimen has been in liquid and is shrunken and denuded. It does not agree in many respects with Wiedemann's description, which was based on more than 1 specimen, and I suspect it is not the true type. Compare Kröber's redescription (1929) of this type with the original. Wiedemann gives length as 4-5 lines (=9-11 mm), Kröber 8.7 mm,



Figs. 15-21. 15, *Stenotabanus taeniotes* (Wied.): a, frons  $\times 25$ ; b, antenna, c, palpus  $\times 50$ . Paratype, Frankfurt. 16, *Stenotabanus* (*Aegialomyia*) *ixyostactes* (Wied.): a, frons  $\times 25$ ; b, antenna, c, palpus  $\times 50$ . Holotype, Berlin. 17, *Stibasoma triste* (Wied.): a, frons, b, antenna,  $\times 25$ . Holotype, Vienna. 18, *Tabanus crassicornis* Wied.: a, frons, b, antenna, c, palpus  $\times 25$ . Holotype, Copenhagen. 19, *Tabanus discus* Wied.: a, frons, b, antenna, c, palpus  $\times 25$ ; d, wing  $\times 6$ . Holotype, Berlin. 20, *Tabanus dorsiger* Wied.: a, frons  $\times 25$ ; b, antenna  $\times 50$ . Lectotype, Copenhagen. 21, *Tabanus sorbillans* Wied.: a, frons, b, antenna, c, palpus  $\times 25$ . Holotype, Berlin.

Wiedemann says abdomen with a series of middorsal white-haired broad triangles and dorsolateral quadrilateral oblique spots, Kröber says abdomen with a whitish yellow mid stripe, widened to a triangle on 6th tergite. Wiedemann says median callus (leiste) spindle shaped, Kröber shows it a mere line. Wiedemann mentions no callus at vertex; Kröber shows a strong one. Wiedemann says mesonotum striped, Kröber says unstriped. From the description *comitans* is either an *Aegialomyia* or, more likely, a species of *Tabanus* related to *pungens* Wied. Certainly the so-called type bears little relation to the description, and is hardly separable from *St. taeniotes* (Wd.).

***Stenotabanus* (*Aegialomyia*) *ixyostactes* (Wied.) (*Tabanus*), 1828: 190-191, ♀, aus Brasilien. Im Berliner Museum.**

A ♀ in Berlin is labelled type, Bahia Gom., *ixyostactes* Wied.\*, and det. Kröber 1928 as *Stenotabanus ixyostactes* Wied. It has been repinned, but is in fair condition. It is an *Aegialomyia* close to *paitillensis* Fchld. and *tobagensis* Fchld., but with slightly broader frons and different antennae. Kröber (1929) redescribed the type without figure. Head structures of the type are here figured (fig. 16), since I had no specimens agreeing.

***Stenotabanus taeniotes* (Wied.) (*Tabanus*), 1828: 188, ♀, aus Brasilien. Im Frankfurter Museum.**

In Berlin Museum there is a ♀ labelled type and with a handwritten "Brasilien Senckenberg's mus. (Frankf. a. M.)", a printed Coll. H. Loew, an old handwritten *taeniotes* W.\*, a green handwritten *taeniotes* Wied.\* and a Kröber det. 1929 as *Tabanus* s. lat. sp. It is intact, but is a *Tabanus*, perhaps of the *lineola* group, and does not agree with the description. It measures 11 mm, while Wied. gives  $3\frac{2}{3}$  lines (=8 mm) for his species. This cannot be a type, in spite of labels. The material in Frankfurt consists of 2♀♀, one labelled type, the other paratype. Both are Brasilia Freireiss, the paratype in addition has a handwritten "*Tabanus taeniotes* Wd.", a Kröber det. 1927 as *Stenotabanus* Wd. and a note by Philip giving the frontal index as 1 : 5.2. The paratype is better preserved. In Vienna there is a Coll. Winthem specimen with an old hand label reading "*taeniotes* ♀ Brasilia exempl. minor" which agrees with the Frankfurt material, though smaller. It is not labelled as type. Kröber (1929) says the Frankfurt specimens not labelled as type and the Vienna specimen is type, a statement now contrary to fact and to Wiedemann's description. Philip (1960) has selected the specimen labelled Type in Frankfurt as lectotype, though it now lacks antennae and is not as well preserved as the Paratype. I have none precisely agreeing, all having broader frons and differing in minor details, though probably but variants. Head structures of the Frankfurt paratype are given (fig. 15). The species is type of *Stenotabanus* Lutz.

**Stibasoma festivum** (Wied.) (*Tabanus*), 1828: 135-136, ♀, aus Brasilien. Im Berliner Museum.

A ♀ in Berlin museum is labelled type, Para Sieber and "*festivus* Wied.\*" It lacks left antenna, wing tips torn and wings glued on, mesonotum cracked and denuded, but abdominal vestiture and legs intact. This is a form of *mallophoroides* Wlk. 1857, not differing in structure from a specimen from Trinidad, but being larger and differing in color as follows: Clear area in center of wing smaller and narrower, only in discal cell and extreme apex of 2nd basal cell. White tufts before wing bases larger. Hind tibial fringe largely white, the longest hairs white, the shortest black. First tergite wholly yellow-haired, 2nd-5th black, laterally yellow-haired, the amount decreasing posteriorly. Second sternite black-haired anteriorly in middle, rufous-haired on posterior 1/2, yellow-haired laterally. Succeeding sternites rufous-haired, with sides yellow-haired to 5th sternite in decreasing amounts, last 2 all rufous. Kröber (1932) redescribes and figures the type. In my opinion *mallophoroides* is at most a subspecies of *festivum* (New Synonymy), if even that category can be maintained in view of notable variation in this genus.

**Stibasoma fulvohirtum** (Wied.) (*Tabanus*), 1828: 155-156, ♀, aus Brasilien. In meiner Sammlung und im Berliner Museum.

A ♀ in Berlin museum is labelled type, Georgia Somer (or? Gomez), and "*fulvohirtus* Wied.\*" It lacks right antenna, somewhat faded and denuded. It is paler than any specimens I had for comparison, practically wholly yellow and rufous-haired, in this agreeing with the description. A ♀ in Frankfurt labelled type, Brasilia Freireiss and "*Dichelacera fulvohirta* Wd." agrees with the Berlin type. It is well preserved except for 1 broken wing. In Vienna 2♀♀ Brasilia and Coll. Winthem with *fulvohirta* Wied. written in are also labelled type. One also has an old handwritten "*fulvohirtus* Wied. Brasilia." Both agree with the previous specimens in being mainly pale haired. Kröber (1932) says types in Berlin and Frankfurt, but Frankfurt not mentioned in the original description. The Vienna

specimen with old handwritten label is here selected as lectotype.

**Stibasoma (Rhabdotylus) planiventris** (Wied.) (*Tabanus*), 1828: 139-140, ♀, aus Brasilien. Im Berliner Museum

The ♀ labelled type in Berlin has a green copperplate "Brasil v. Olf", printed 98, and green copperplate "*planiventris* Wied.\*" It is also det. Kröber 1927 as *Amphichlorops planiventris* Wied. It is somewhat damaged and denuded, but matched a specimen from Angra, Japuhya, Rio de Janeiro in my collection. Specimens of *planiventris*, including this type, have pale hairs at sides of tergites 1-3 only, largely pale haired femora, frontal callus tridentate above, not merging smoothly into a broad ridge above, and wings yellowish along veins. Homotype and other specimens of the closely similar *viridiventris* Macq, have pale hairs also on sides of tergites 4-5, black haired hind femora, the frontal callus not tridentate above, wings clear or smoky but veins not yellow margined. This is type of both *Rhabdotylus* Lutz and *Gymnochela* Enderlein.

**Stibasoma theotaenia** (Wied.) (*Tabanus*), 1828: 136, ♀, von Montevideo in Brasilien. In meiner Sammlung.

A ♀ in Berlin is labelled Type, Montevideo Lw., 9450, printed Coll. H. Loew, old handwritten "*theotaenia* W.\*", handwritten "*Stibasoma* Schin.", antennae defective, repinned, dirty and has been in liquid. In Frankfurt a ♀ labelled type has also Brasilia Freireiss, old handwritten *Tabanus theotaenia*, and a Kröber det. 1927. It lacks antennae and tips of wings as well as hind tarsi, but well preserved otherwise. In Vienna there are 3 specimens, 2 labelled type. These 2 bear printed Brasilien, printed Coll. Wiedem with *theotaenia* written in, and one also has an old handwritten "*theotaenia* Wied. Brasil". The other specimen, which I have also labelled type, has the same labels as the above 2, plus a Wiedemann hand label with "*T. theotaenia* m. Brasilia Hamburg." The 1st is in fair condition, the 2nd lacks antennae, the 3rd also lacks antennae and wings dirty. The Berlin specimen is probably not a type and the dirt-encrusted subcallus and defective antennae make it uncertain whether it is the same as the others. The others are conspecific, and the first specimen mentioned above in Vienna is selected as lectotype. This species agrees closely in color with specimens of *St. panamensis* Curran from Panama, but structure of frons and antennae is not same. The frontal callus is well developed, the subcallus is pollinose and the antennae markedly longer and more slender. In structures of the head, the types agree closely with specimens of *St. willistoni* Lutz in my collection, and det. Kröber in Vienna, although that species is wholly black. Further collecting may reveal that *willistoni* is but a black variant of *theotaenia*, a possibility strengthened by the appearance of *St. luzzi* Barr. which seems to be intermediate in color and not markedly different in structure. This species is type of *Stibasoma* Schiner.

**Stibasoma triste** (Wied.) (*Tabanus*), 1828: 164, ♀, aus Brasilien. In meiner Sammlung.

The ♀ type in Vienna bears printed Brasilien, printed Coll. Wiedem. with *tristis* written in, and old handwritten "*tristis* Wied. Brasilia." One antenna missing, head glued on, dirty and denuded. Subcallus swollen and bare, wings yellow nearly to fork of 3rd vein, dusky at apex. Abdomen black-haired except 1st and sides and posterior margin of 2nd tergites, which are yellow-haired. This is a rather bare and slender species without the

fuzzy bee-like appearance of most *Stibasomas*. It appears related to *apicimacula* Fchld., but antennae, frons and wings are different. Kröber (1932) has redescribed the type. A figure of the frons and antenna is given (fig. 17).

***Tabanus albibarbis*** Wied. 1824: 21, not seen; 1828: 125-126, ♀, aus Sudamerika. Im Konigl. Museum.

The type in Copenhagen bears an old handwritten "*T. albibarbis* Wied. America (?)." The specimen is on an old pin, lacks 1 antenna and somewhat denuded. It agrees closely with the type of *T. pellucidus* Fabr., also in Copenhagen. This species is quite variable in degree of closure of 1st posterior cell and intensity of wing color, the first being open, closed or petiolate, the latter varying from clear to quite brownish, or with the veins margined. Ground color of abdomen may be chocolate brown or black, always with at least traces of median and dorsolateral rows of white-haired spots. Shape of 3rd antennal segment is also variable, but none of above characters appear to be correlated with each other. I consider the following species, of which I have seen the types, to be synonymous with *T. pellucidus* Fab. 1805. (**New Synonymy**). *T. crassicornis* Wied. 1821, *T. albibarbis* Wied. 1824, *T. angustifrons* Macq. 1847, *T. alboater* Wlk. 1850, *T. senior* Wlk. 1850, *T. atricornis* Big. 1892. *Chelommia amazonensis* Barr. 1949 is also probably synonymous, though I have seen only specimens det. Barretto in British Museum, not type material. All were described from the northern part of S. America.

***Tabanus cinerarius*** Wied. 1828: 121-122, ♀, aus Brasilien. In meiner Sammlung.

A replacement name for *T. glaucus* Wied. 1819, which see for discussion. A ♂ in Berlin museum is labelled type, but only ♀♀ were described.

***Tabanus crassicornis*** Wied. 1821: 71, ♀, Amerika?; 1828: 130, ♀, aus Amerika. In Fabricius Sammlung.

The type in Copenhagen museum has been commented on by Philip (1960). Head structures are intact, though rest of specimen badly soiled and denuded. It is the same as *pellucidus* Fab., as comparison with that type, also in Copenhagen, indicates. A figure of head structures is included here (fig. 18).

***Tabanus discus*** Wied. 1828: 123-124, ♀, aus Brasilien. Ein sehr abgeriebenes Exemplar im Berliner Museum.

The ♀ type in Berlin is labelled Brasil v. Olf., 76, green copperplate "*discus* Wied.\*." It is dirty and denuded, repinned, one antenna and tip of other gone. Compared specimens agree, except for black antennae and frontal calli, dark reddish brown in type, probably due to fading. This species, if such it is, is exceedingly close to *T. pellucidus* Fab. The only constant characters noted are the longer and more slender antennae and lack of pale abdominal spots in *discus*. I believe *T. rufoniger* Wlk. 1850, *T. communis* Kröb. 1930 and *Chelommia melanocnemis* Barr. 1957 are synonyms (**New Synonymy**). The last was described as sometimes having white median spots on some tergites, so that specimens of *pellucidus* may have formed part of the series. The paratype I saw in British Museum had abdomen greasy and no spots visible. Philip (1960) discussed this species with *albibarbis*, but his statement that the beard is dark and antennae reddish disagrees with the original description, which says "bart weiss" and "Fühler braunlichschwarz", which



agrees with the type and material I have seen. A figure of head structures of the type are here given (fig. 19).

**Tabanus dorsiger** Wied. 1821: 83-84, ♀, Brasilia. Mus. n. In Mus. Fab. cum *T. trivittato* confusus. 1828: 172-173, ♀, Brasilien. In Fabricius und unsrer Sammlung, in jener steckt er als eins mit *T. trivittatus*.

I have seen a total of 1♂, 4♀♀ specimens labelled as types of this species. The ♀ in Berlin is labelled Brasilien, Coll. H. Loew, and old handwritten "*dorsiger* W.\*" It may be a type secured by Loew from Frankfurt and does agree with what I believe are authentic types in Frankfurt and Copenhagen. A ♂ and ♀ in Vienna represent 2 different species, neither the same as the Frankfurt and Copenhagen specimens, and although the ♂ was labelled lectotype, I do not believe either specimen is a true type. The ♂ cannot be, as only ♀ was described, the ♀ is Coll. Winthem and was labelled type by Kröber, who appears to have based his description (1933) on it. The type in Copenhagen bears an old handwritten "*T. dorsiger* Wied. Brasilia" and 3 other indecipherable words, perhaps Wiedemann's remarks referred to by Zimsen (1954). It is somewhat pest damaged and denuded, 1 antenna in danger of being lost was glued to a card by me. The type in Frankfurt bears a printed Brasilia Freireiss, 55, handwritten *Tabanus dorsiger* Wied., red Type, and a note by Dr Franz stating "Typus in Wien nach Philip 1956." The Frankfurt and Copenhagen types appear to be the same species, differing slightly in that the Frankfurt specimen is paler, with very slight blackening of bases of femora, less black on base of abdomen, and frons slightly narrower with callus taller than wide. My compared specimen, from Argentina, is not in very good condition, but agreed best among the small assortment I had available for comparison. The choice here would seem to be between *carneus* Bell., *triangulum* Wied., and *stenocephalus* Hine. *Stenocephalus* generally has quite dark wings and more black on bases of femora and abdomen, especially beneath, and I have seen none from further south than Peru. *Triangulum* is generally darker with narrower abdominal stripes, if I have correctly associated the sexes, since the type is a ♂, and *carneus* typically has reddish scutellum and wholly pale femora, though South Brazilian examples often have the bases of femora more or less darkened and occasionally with scutellum almost entirely blackish. *Carneus* also almost always has callus higher than wide, while in *triangulum* it is round or square. My compared specimen is a pale *triangulum*, but I suspect that both the Frankfurt and Copenhagen specimens are *carneus*, with callus distinctly higher than wide. I hereby select the Copenhagen specimen as lectotype, and give a figure of frons and antenna (fig. 20), the latter so encrusted with mold that segmentation of the style not visible.

**Tabanus fuscus** Wied. 1819: 41, ♀, Brasilien (not seen); 1821: 68 (not seen); 1828: 121, ♀, aus Brasilien. In von Winthems und meiner Sammlung, 1828: 556 (variant). Im Frankfurter Museum.

There are 2♀♀ in Vienna labelled as types. Both bear printed Bahia, printed Coll. Winthem with "*fuscus* Wied. Type" written in, and one has an additional old handwritten "*fuscus* Wied. Bahia." One has thorax split but intact, the other lacks all but basal plate of 1 antenna. Both are same, with black abdomens, traces of white hair spots, and closed or nearly closed 1st posterior cell. There is another specimen in Vienna, not labell-

ed type, which bears printed Brasil and Coll. Wiedem labels with *fuscus* Wd. written in, and a Wiedemann hand label with "*T. fuscus* m. Brasilia v. Winthem" and a Kröber det. label. I believe this is as surely a type as the other two. There is also a ♀ labelled type in Frankfurt, Brasilien Freireiss, 51, and handwritten "*Tabanus fuscus* Wd." It is probably the specimen mentioned in 1828, p. 556 as having abdomen concolorous with thorax. I believe that only the Vienna specimens are true types, and I prefer the one with Wiedemann hand label as lectotype, though it was not labelled as a type. The following names I believe are synonyms. (**New Synonymies**) I have seen types of all except *piceus* Thunb. which Philip (1960) has already associated here. *T. piceus* Thunb. 1827, *T. impressus* Wied. 1828, *T. monochroma* Wied. 1828, *T. clausus* Macq. 1847, *T. ferreus* Wlk. 1848, and *T. erythraeus* Big. 1892, p. 687. *T. fuscus* is type of *Chelotabanus* Lutz.

**Tabanus glaucus** Wied. 1819: 42, ♀, Brasilien (not seen) 1821: 69, ♀, Brasilia, Mus. de Winthem (not seen).

**Tabanus cinerarius** Wied. 1828: 121-122, ♀, aus Brasilien. In meiner Sammlung. Replacement name for *T. glaucus* 1819, probably believed to be preoccupied by *T. glaucus* Meig. 1820.

In Vienna are 1♂, 2♀♀ labelled as types. The ♂ has Brasilia, Coll. Winthem with "*cinerarius* Wied. Type" written in. One ♀ has the same labels plus a handwritten label, not Wiedemann's, with "*cinerarius* Wied. *glaucus* olim Brasilia", and on the reverse "*glaucus* Ba" in Wiedemann's writing, the label obviously cut from a larger label. The other ♀ has a printed Brasilien, printed Coll. Wiedem. with *cinerarius* added, old Wiedemann handwritten label with "*cinerarius* m. *glaucus* Dipt. Exot. 1. 69. 13 Brasil", and an old dark red Type. All specimens lack antennae and are much denuded, so that the dorsolateral spots on abdomen are gone and the black median integumental stripe much more prominent. All are same species. Lutz (1928) has figured the species and Kröber (1931b) has redescribed the types. I select the ♀ from Coll. Winthem as lectotype. The ♂♂ in Vienna and Berlin can hardly be true types, as only ♀ was described, although they may have been seen by Wiedemann.

There seems no reason why *glaucus* Wied. needed to be changed, as it appears to antedate *T. glaucus* Meig. 1820. Kröber (1925a) lists *glaucus* Meig. as syn. of *maculicornis* Zett. 1842 and *tergestinus* Egger 1859, both later names, but in his Neotropical catalogue (1934) says *glaucus* Wied. is preoccupied. Kertész (1900) lists *glaucus* Meig. as syn. of *bromius* L., *glaucus* Wied. as syn. of *cinerarius* Wied. Surcouf (1921) also lists *glaucus* Meig as syn. of *tergestinus* Egg. and *bromius* var. *glaucescens* Schin., indirect evidence that *glaucus* Meigen was considered unavailable.

**Tabanus histrio** Wied. 1828: 625, no sex, von Cassapawa in Brasilien. Im Berliner Museum und in meiner Sammlung.

The ♂ type in Berlin has a green copperplate label originally reading Cassap. Sello to which has been added in a recent hand words and letters to make it read Brasilien Casapawa Sello w., printed 180, and an Enderlein label reading "Ist wohl sicher die Type von *Tabanus histrio* Wd. ♂ Dr. Enderlein det. 1920." Specimen is old and dusty, but reasonably intact. In Vienna 1♂, 2♀♀ are labelled type, Coll. Winthem with Casapawa written in, old handwritten "*histrio* Wied. Cassapawa", and Coll. Winthem with "*histrio* Wied.

Type" written in. One female also bears a Kröber det. 1927. These are same as the Berlin specimen. Wiedemann's description is brief, being a comparison with *4-punctatus* Fab. Kröber (1931) redescribes and figures, but says type ♀ Berlin, type ♂ Vienna. The species is distinct but close to *4-punctatus*. I have labelled the best preserved ♀ in Vienna as lectotype.

**Tabanus importunus** Wied. 1828: 127, ♀, aus Brasilien. In meiner Sammlung und im Berliner Museum.

Two ♀♀ in Berlin are labelled type. Both are Brasil Sello and one with green copperplate "*importunus* Wied.\*" The one with name label is intact though pest eviscerated, the other with abdomen broken. Both are same species and agree with current determinations. The single ♀ in Vienna labelled type is labelled Brasilia and Coll. Winthem with "*importunus* Type Wd." added. It lacks antennae and is somewhat denuded. I hereby select the intact specimen with name label in Berlin as lectotype. Based on study of the types, the following names are synonyms, in most cases long so considered. *T. monogramma* Wied. 1828: 150 (New Synonymy), *T. lividus* Wlk. 1848, *T. albidicollis* Macq. 1850, and *T. semisordidus* Wlk. 1854.

**Tabanus impressus** Wied. 1828: 126-127, ♀, von Montevideo in Brasilien. In meiner Sammlung.

There is a single ♀ in Vienna labelled type, Brasilien, Coll. Wiedem with "*impressus* Wied. Type", written in, a Wiedemann handwritten "*T. impressus* m. Brasilia Besk. de Winth." and a Kröber det. 1927. Specimen lacks antennae and is faded and dusty. It is a paler specimen of *T. fuscus* Wied. 1819, q. v. The species is type of *Brachypsalidia* Enderlein.

**Tabanus maculipennis** Wied. 1828: 138-139, ♀, aus Brasilien. Im Berliner Museum.

As shown elsewhere (Fairchild, in press) this is a mislabelled Nearctic species, the name replacing *Tabanus imitans excessus* Stone.

**Tabanus miles** Wied. 1828: 139, ♀, aus Brasilien. Im Berliner Museum.

Both ♀ types in Berlin are labelled Brasil Sello, one having in addition a printed 82 and green copperplate "*miles* Wied.\*" Both have been repinned and are intact though dusty. Both specimens agree with Kröber's redescription (1930a) and with my figure of a specimen in the Lutz coll. (1961a). Notable are the black 3rd antennal segments, absence of middorsal pale triangles on tergites 5-7, brown margined veins with strong appendix on fork. I have labelled the smaller specimen without name label as lectotype, as it agrees best with Wiedemann's size, 7 lines. Kröber seems to have taken the larger specimen as type, perhaps because of the labels.

**Tabanus modestus** Wied. 1828: 146, ♀, aus Brasilien. Im Berliner Museum.

There are 2♀♀ labelled type in Berlin. One bears a green copperplate Brasil v. Olf., printed 151, green copperplate "*var. modestus* Wied.\*" white modern handwritten label, perhaps by Enderlein, which appears to read "von *Tab. miles* auch durch das Geader versch." Lacks left antenna and thorax crushed, otherwise in good condition. It agrees best with a specimen from Ilheus, Bahia, Brasil det. *plangens* Wlk. The other specimen

bears a green handwritten Brasil, 9947, old white handwritten "*modestus* W.\*" modern ab. "*tabanides*." It is old but well preserved and has been remounted. It is *Stenotabanus cajennensis* Fab. and seems to have been taken as the type by Kröber (1933) although he had doubts of its authenticity, since he placed *modestus* as a queried synonym of *plangens*. I hereby select the first of the above specimens as lectotype of *modestus*. There is also a ♀ labelled type in Frankfurt which is also *cajennensis*, as noted by both Kröber and Franz on labels. Only the Berlin lectotype agrees with the original description. The name will replace *plangens* Wlk. (**New Synonymy**).

**Tabanus monochroma** Wied. 1828: 555-556, ♂, von Montevideo. In meiner Sammlung.

Three ♂♂ in Vienna are labelled as types. One has handwritten Montevideo, Coll. Winthem with "*monochroma* Wd. Type" written in, the other 2 Coll. Winthem with *monochroma* written in. Only the first has an antenna, and is hereby selected as lectotype. This is the ♂ of *fuscus* Wied. without doubt. (**New Synonymy**).

**Tabanus monogramma** Wied. 1828: 150, ♀, aus Brasilien. Im Berliner Museum.

The type in Berlin bears a green copperplate "Bahia Gom"; white printed 72; red printed Type; green copperplate "var/monogramma/Wied.\*" It is denuded and pest eviscerated, lacks right antenna and left hind tarsus. This is a variant form of *importunus* being small and pale, but with a strong median abdominal black integumental line. I have no specimens precisely agreeing, though 2 from Beni, Bolivia and another from Fordlandia, Para have equally or heavier abdominal stripe, but are otherwise larger and darker. Most specimens have only median black hair, or small median spots, many have no vestige of median black in the integument. Frons and palpi, especially the last, are very characteristic. Kröber (1934) listed with a query and had not seen type or specimens.

**Tabanus obsoletus** Wied. 1821: 85, ♀, Mus. n. et reg. Berolin; 1828: 174, ♀, aus Bahia in Brasilien. In meiner Sammlung und im Berliner Museum.

I have seen 10♀♀ labelled as types and 7 others possibly types, all belonging to the same species. In Vienna, 5 specimens Coll. Winthem are labelled and *obsoletus*; 6 others are Coll. Wiedem and *obsoletus*, but not types. None bear old labels. Of the four in Frankfurt, 3 are labelled type, and all "Brasilia Freireiss." One is labelled type and 58, 2 others labelled Paratypus and det. Kröber 1927. In Berlin 2♀♀ bear type labels. One has green copperplate "Brasil Gom.", printed 161, green copperplate *obsoletus* Wied.\* The other has green handwritten "Brasilien Bahia Gomez S." Both are intact and well preserved. I have specimens in fair agreement, except for darker antennae, which are yellow with black style in types. I here select the first mentioned Berlin specimen as lectotype. *T. lativitta* Wlk. 1848 is probably a synonym, as listed by Kröber (1934), though its type is headless.

**Tabanus pungens** Wied. 1828: 175-176, ♀, von Montevideo. In meiner Sammlung.

The 2 types in Vienna are in poor condition. The best preserved, here selected as lectotype, bears a handwritten Montevideo, printed Coll. Wiedem with *pungens* Wied. written in, Wiedemann handwritten "*T. pungens* m. Montevideo Bsch. de Winth." and a sketch of eye pattern by C. B. Philip. The other has a handwritten Montevideo, and printed Coll. Wiedem. with *pungens* written in. Philip (1960) has discussed this material. The follow-

ing names, the types of which have been seen by Philip (1960) or me (1956) or both of us, are synonyms. *T. desertus* Wlk. 1850, *T. nuntius* Wlk. 1854, *T. univittatus* Macq. 1855, *T. sallei* Bell. 1859, *T. dorsiger* var. *angustivitta* Kröb. 1929, *T. propinquus* Bell. 1859, *T. ruficolor* Kröb. 1934 (**New Synonymy**), and *T. discifer* Big 1892. The species ranges practically throughout the Neotropical region, except for the West Indies.

**Tabanus sorbillans** Wied. 1828: 141-142, ♀, aus Brasilien. Im Berliner Museum.

The type in Berlin bears a green copperplate Brasil Sello, printed 81, green copperplate "*sorbillans* Wied.\*" It has been repinned, right eye with pest hole, dusty, denuded and probably faded, but intact. I was unable to precisely match the type with any specimens of *sorbillans* or *rubripes* Macq. in my possession. The type has the wings clear, with but faint clouds around cross-veins and tips of  $R_2$  to  $R_4$ , appendix short, hardly longer than its basal stem, 1st posterior cell but slightly coarctate, fore tibiae bicolored, frons and antennae as in *sorbillans* auct. The short appendix, open cell, clouds on cross veins rather than tinted fore border are unlike any I have seen. In proper light, the hind borders of all tergites appear fringed with pale hairs, a character not seen on specimens of *sorbillans* auct. or *rubripes*. This may be a local variant, perhaps from Bahia. Structurally it is *sorbillans* as currently recognized, and I am not in favor of separating the species currently going under this name without further evidence. Figures of head characters of type are given here (fig. 21). The species is type of *Macrocornus* Lutz.

**Tabanus triangulum** Wied. 1828: 143-144, ♀, aus Brasilien. Ein abgeriebenes Exemplar im Berliner Museum.

The specimen labelled type in Berlin Museum is a ♂. Although Wiedemann says ♀, it is to be noted that he does not mention frons or frontal callus, which he almost invariably did in the case of ♀♀. I believe therefore that this specimen is best accepted as the type. It bears green copperplate Brasil Sello, printed 153, and green copperplate "*triangulum* Wied.\*" It is greasy and discolored, lacks 1 antenna and has a pest hole in mesonotum. It is what I have been calling *triangulum* (Fairchild 1942), with short pilose eyes, the large facets not extensive nor greatly enlarged, black bases to hind femora, black integumental triangle on 2nd tergite, and median black patches on 1st 3 sternites. The abdominal stripes are largely obscured by grease, but with proper illumination can be seen to consist of a narrow median and broad sublateral stripes. The yellow costal cell and shorter eye pilosity seem to separate it from *columbensis* Macq. Kröber (1933) did not see this type and lists as species dubia. *T. eutaeniatatus* Big. 1892, is a synonym, and I believe also *T. uruguayanus* Kröb. 1933, though I have not seen types of latter.

**Tabanus trinotatus** Wied. 1828: 182, ♀, aus Brasilien. Im Berliner Museum.

The type in Berlin is labelled Brasil. v. Olf., 164, and green copperplate "*trinotatus* Wied.\*" Left antenna missing and left wing torn, pest eviscerated, otherwise in fair condition. It agrees closely with the original description and with a specimen agreeing with a paratype of *T. barrettoii* Philip 1958 (**New Synonymy**). I have seen material from Ceara, Pernambuco and Bahia.

**Tabanus vestitus** Wied. 1819: 42, von Winthem's coll.; 1821: 70, Mus. de Winthem et n.; 1828: 128, ♀, aus Brasilien. In von Winthem's und meiner Sammlung.

A ♀ labelled type in Berlin museum is labelled "Wied. Mus Senkb." and "*vestitus* W.\*" and may be from the type series. It is intact though a little faded and denuded and agrees well with the 1828 description. In Frankfurt museum a ♀ type is labelled Brasília Freireiss, 52, handwritten *Tabanus vestitus* Wd. and a note by Dr Franz stating "Nach Philip ist der typus in Wien." The specimen lacks antennae but is otherwise in good condition, and agrees with the other types. In Vienna there are 2 ♀♀ labelled as types. One has handwritten Bahia, printed Coll. Winthem with "*vestitus* Wd. type" written in and old handwritten "*vestitus* Wied. Bahia." It lacks antennae and is denuded. The other specimen bears the same labels, except lacks the handwritten det. It is intact and in fair condition. Finally there is another ♀ in Vienna, not labelled as type, bearing the following labels: Brasilien; Coll. Wiedem. with *vestitus* Wd. written in and a Wiedemann hand label with "*T. vestitus* m. Brasília de Winthem." I believe this last specimen is more likely an original specimen and have labelled it lectotype. It is intact but very dirty, and is same as the other syntypes. I believe that *T. hyalineus* Kröb. 1934 is a synonym (**New Synonymy**), though I have not seen the type.

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