

# Neuroptera of the Amazon Basin

## Part. 5, Coniopterygidae

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### Abstract

From the Amazon Basin 3 spp of *Neoconis* End., 4 spp of *Semidalis* and 15 spp of *Coniopteryx* are reported. The biogeography of the Coniopterygidae of South America is discussed. New species are: *Semidalis normani* sp. n., *S. rondoniensis* sp. n., *Coniopteryx (Scotoconiopteryx) bicornis* sp. n., *C. (S.) canopia* sp. n., *C. (S.) cucuminicola* sp. n., *C. (S.) quadricornis* sp. n., *C. (S.) rondoniensis* sp. n., *C. (S.) silvicola* sp. n. and *Coniopteryx (Coniopteryx) jorgei* sp. n.

### INTRODUCTION

The family Coniopterygidae are the dwarves of the lace wings. The family is ancient and the morphological spectrum very narrow, except for the genitalia. The family is divided into two subfamilies, which are both distributed all over the world. Meinander, in his revision of the family (1972), recorded 12 species from South America. Later, he (Meinander 1973, 1974b, 1980) and Adams (1973) have described some new species, but still the number of species is comparatively low. The present material shows that the diversity of Coniopterygidae in the Amazon Basin apparently is high, and that most species live high in the canopy. The lack of coniopterygids from Central Africa may also be due to the fact that no collecting of them has been done up in the canopy. The present study reveals 22 species from the Amazon Basin, most of them hitherto not recorded from any other place. Only four of these species are recorded south or north of the Amazon Basin.

### BIOGEOGRAPHY OF THE CONIOPTERYGIDAE OF SOUTH AMERICA

Most species are known only from some scattered specimens and the many new

species in almost every collection received for examination indicate that there still are many undescribed species in the continent. Thus, hardly anything can be said about the biogeography of the different species. It is notable that among the species here recorded from the Amazon Basin, only four species are known from elsewhere. Most remarkable is *Neoconis inexpectata*, which was described from Arizona in the U.S.A.

From South America only five genera of Coniopterygidae are recorded, i.e., *Neoconis* (11 species from s. U.S.A. to the Amazon Basin), *Pampoconis* (4 species in Chile and Argentina), *Incasemidalis* (3 species, Chile, Colombia and Peru), *Coniopteryx* and *Semidalis* (a genus widely distributed in the world), of which the *S. inconspicua* group is represented in South America. All species of *Semidalis* are very closely related and perhaps some of the described species will prove to be conspecific when the variation within the species is better known. Eighteen species of the group are described, occurring in all parts of America, except Canada. *Coniopteryx* is represented by two subgenera, *Scotoconiopteryx* (18 species from Mexico, Central and South America) and *Coniopteryx* (a world-wide distributed subgenus, represented in South America by the *C. westwood* group, of which 16 species are recorded from the U.S.A., Mexico, Central and South America).

The zoogeography of *Neoconis* and *Pampoconis* was analysed in Meinander (1979), and the origin of the genera was stated to be Gondwanian. *Incasemidalis* is an isolated genus, endemic to South America. There is no indication as to whether it is of Gondwanian or

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northern origin. *Scotoconiopteryx* belongs to the world-wide distributed genus *Coniopteryx*, which apparently is of very ancient origin and very likely existed before the continents broke up. *Scotoconiopteryx* may be the sister group to *Xeroconiopteryx*, which is distributed all over the Old World and apparently secondarily invaded North America. It is thus possible that *Coniopteryx* was distributed over the Gondwanian continent and that *Scotoconiopteryx* developed in South America after the isolation from the other Gondwanian continents, and thus, may be of southern origin. The *Coniopteryx westwoodi* group has its main distribution in North America and most likely invaded South America after the continents met and the same seems to be true for *Semidalis* in South America.

#### SYSTEMATICS

The genera occurring in South America are extensively described in Meinander (1972) and the descriptions are not repeated here. The terminology used in the keys and the descriptions of the species are those used in Meinander (1972). As the distribution of the species in South America still is very poorly known, species described from other areas may turn up in the Amazon Basin. Therefore, references to all species of the genera known from South America are listed, where no modern appropriate list is available.

Where nothing is mentioned, the material is preserved in Instituto Nacional de Pesquisas da Amazonia, Manaus, 69000, Brazil. Some duplicates are preserved in the Zoological Museum of the University, SF-00100 Helsingfors 10, Finland (MZH).

#### KEY TO SUBFAMILIES AND GENERA OF SOUTH AMERICAN CONIOPTERYGIDAE

- 1a. Two radio-medial cross-veins in middle of fore wing. In hind wing *Rs* branching off from *R* very near base of wing. Plicaturae present on abdomen (Aleuropterygidae) . . . . . 2

- 1b. One radio-medial cross-vein in middle of fore wing. In hind wing *Rs* not branching off from *R* very near base of wing. No plicaturae on abdomen (Coniopterygidae) . . 3
- 2a. Penis tubular . . . . . *Neoconis*
- 2b. Penis dorsally open . . . . . *Pamproconis*
- 3a. *M* of hind wing unforked . . *Coniopteryx*
- 3b. *M* of hind wing forked . . . 4
- 4a. Cross-vein *M-Cu* in both wings striking the stem of *M* . . . . . *Incasemidalis*
- 4b. Cross-vein *M-Cu* in both wings striking the branch *M*<sub>3+4</sub> . . . . . *Semidalis*

#### *Neoconis* Enderlein, 1930

The genus is distributed from the southern parts of the U.S.A. down to Peru and the Amazon Basin, and in addition to the three species recorded from the Amazon Basin, the following 8 species are described: *N. bifurcata* Meinander, 1974a (U.S.A.: Arizona); *N. bispina* Meinander, 1972 (Virgin Islands); *N. cubana* (Banks, 1938) (Cuba); *N. dentata* Meinander, 1972 (Guatemala); *N. garleppi* Enderlein, 1906 (Peru); *N. insulana* (Meinander, 1974b) (Jamaica); *N. marginata* Meinander, 1972 (SW U.S.A. and Mexico) and *N. pistrinx* (Enderlein, 1906) (Peru). All these species were described in Meinander (1972), except the two described by Meinander (1974b). Here only the species recorded from the Amazon Basin are keyed.

#### KEY TO AMAZONIAN SPECIES OF NEOCONIS (MALES)

- 1a. Outer gradate cross-veins of fore wing bordered by dark markings; no spines on ectoprocts . . . . . 2
- 1b. Membrane of fore wing distally hyaline; three spines on ectoproct . . . *N. inexpectata*
- 2a. Penis sinuous . . . . . *N. brasiliensis*
- 2b. Penis straight . . . . . *N. tubifera*

**Neoconis brasiliensis** Meinander, 1980

Meinander 1980:129, f. 1 A-E (description).

Description of male

*Head* capsule light brown. Eye black, fairly large, height 0.27 mm. Antenna dark greyish brown, 25 segmented. Scape almost twice as long as broad, pedicel about one and a half times as long as broad, asal flagellar segments slightly broader than long; apical segments

about as long as broad. Palpi greyish brown. *Thorax*: Sclerotized parts light brown with dark sutures.

*Legs*: greyish brown, tarsi whitish.

*Wings*: (Fig. 2E). In fore wing the radial cross-vein lies basally of cross-vein  $Sc-R_1$  and the fork of  $R_s$ . Distinct dark markings on the membrane surrounding cross-veins  $R_{4+5}-M_{1+2}$ , fork of  $M$  and cross-vein  $M-Cu_1$ . In hind wing the radial cross-vein strikes the stem of  $R_s$  and not

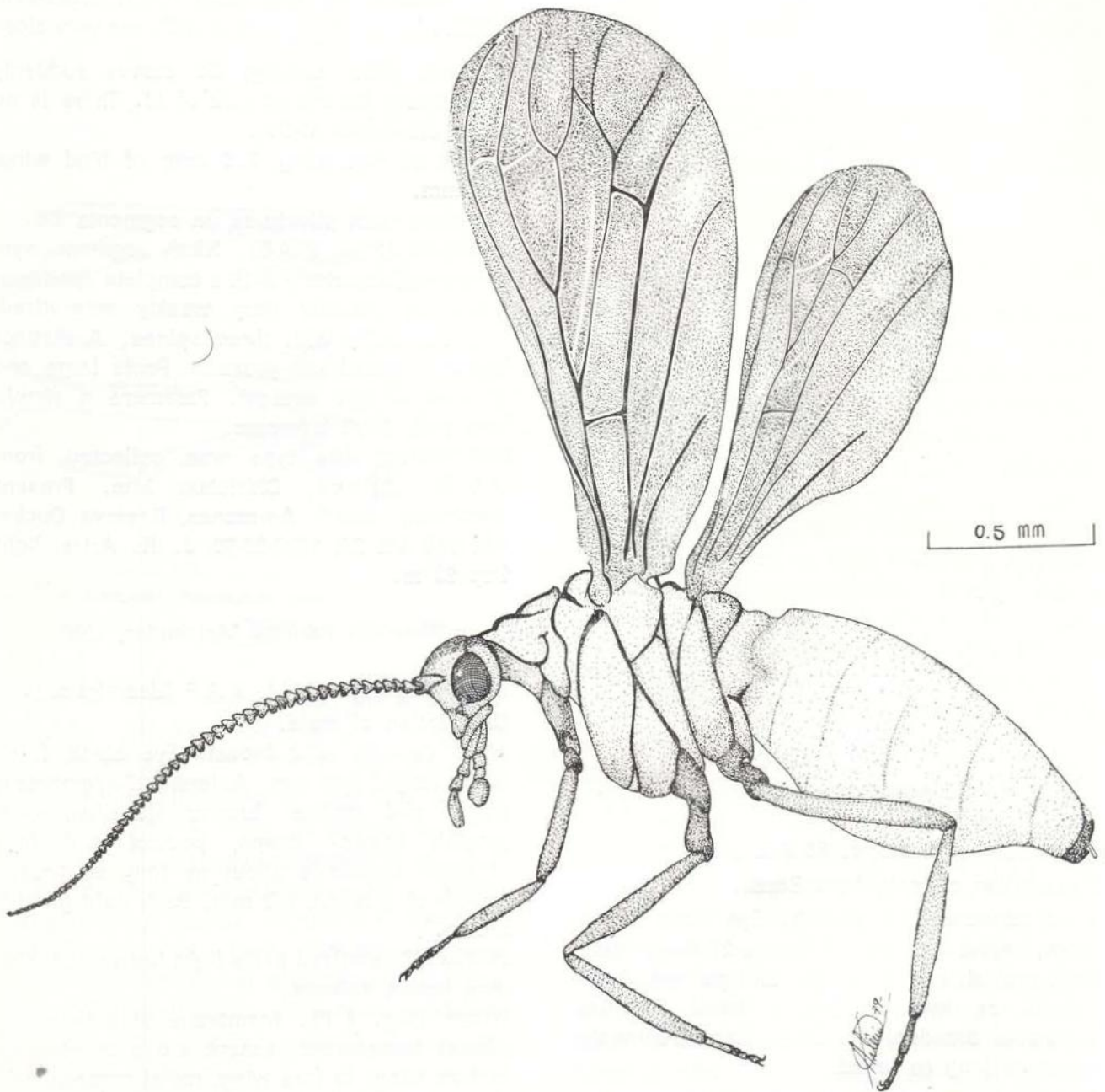


Fig. 1 — A general view of a coniopterygid.



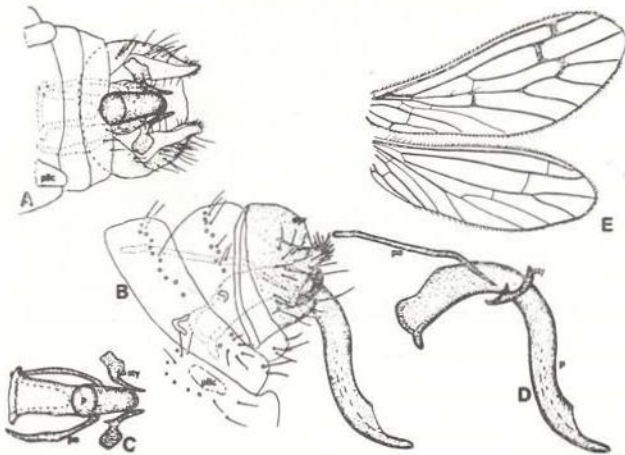


Fig. 2 — *Neoconis brasiliensis* male: A. Genitalia, ventral view. B. Ditto, lateral view. C. Internal genitalia, ventral view. D. Ditto, lateral view. E. Wings. (from Meinander, 1980).

the branch  $R_{2+3}$ .  $M$  and  $Cu$  of hind wing run very close to each other until the distal cross-vein  $M-Cu_1$ , which is present. Length of fore wing, 3.1 mm; of hind wing, 2.7 mm.

*Abdomen* with small plicaturae on segments 2-3, large on segments 4-6.

*Genitalia* (Figs. 2 A-D). Ectoproct with large blunt projection, but with no spines. A distinct ligulate hypandrium present. Penis tubular, sinuous, cephalad with a transverse ventral ridge. Stylus articulating with segment 9, acute and clavate. Paramere simple rod-like, distally without any separate sclerite.

*Distribution*: The type was collected from Brazil, Amazonas, AM 010 km 26.

#### *Neoconis inexpectata* Meinander, 1972

Meinander 1972:155, f. 88 A-E (description).

*Description of male from Brazil.*

*Head capsule* light greyish. Eye black, fairly large, height 0.30 mm. Antenna 27-segmented, dark greyish brown. Scape and pedicel about 1.5 X as long as broad; basal flagellar segments broader than long; distal segments about as long as broad.

Length of antenna, 1.3 mm. Palpi greyish brown.

*Thorax*. Sclerotized parts of thorax very light greyish brown with brown sutures and trochantines.

*Legs* greyish brown, tarsi whitish.

*Wings* (Fig. 3F). Membrane of both wings almost transparent, no dark spot around point where cross-veins  $Rs-M$  and  $M-Cu_1$  strike  $M$ . In fore wing the radial cross-vein is about as distal as cross-vein  $Sc-R_1$ . Distal cross-vein  $M-Cu_1$  lies slightly distad of cross-vein  $Rs-M$ , which strikes  $M$  at apical median thickening.  $Cu_2$  sinuous. In hind wing radial cross-vein strikes branch  $R_{2+3}$ .  $M$  and  $Cu$  run very close to each other basally;  $Cu$  curves suddenly off, slightly basally of fork of  $M$ . There is no distal cross-vein  $M-Cu_1$ .

Length of fore wing, 2.5 mm; of hind wing, 2.1 mm.

*Abdomen* with plicaturae on segments 2-6.

*Genitalia* (Figs. 3 A-E). Ninth segment synsclerotous, anteriorly with a complete apodeme. Ectoproct dorsally very weakly sclerotized, caudoventrally with three spines. A distinct ligulate hypandrium present. Penis large and tubular, almost straight. Paramere a simple long rod. Styli bifurcate.

*Distribution*: The type was collected from U.S.A., Arizona, Chirichua Mts. Present specimen: Brazil, Amazonas, Reserva Ducke, AM 010 km 26, 1979-05-30, J. R. Arias, light trap 20 m.

#### *Neoconis tubifera* Meinander, 1980

Meinander 1980:131, f. 2 A-F (description).

*Description of male.*

*Head capsule* light brown. Eye black, fairly large, height 0.30 mm. Antenna 27-segmented; scape and pedicel brown; flagellum dark greyish brown. Scape, pedicel and first flagellar segments about as long as broad. Length of antenna, 1.3 mm. Palpi light greyish brown.

*Thorax*. Sclerotized parts light brown and with dark brown sutures.

*Wings* (Fig. 4 F). Membrane of both wings almost transparent, except along cross-veins in fore wing. In fore wing, radial cross-vein is about as distal as cross-vein  $Sc-R_1$ . Distal cross-vein  $M-Cu_1$  lies distinctly distally of cross-

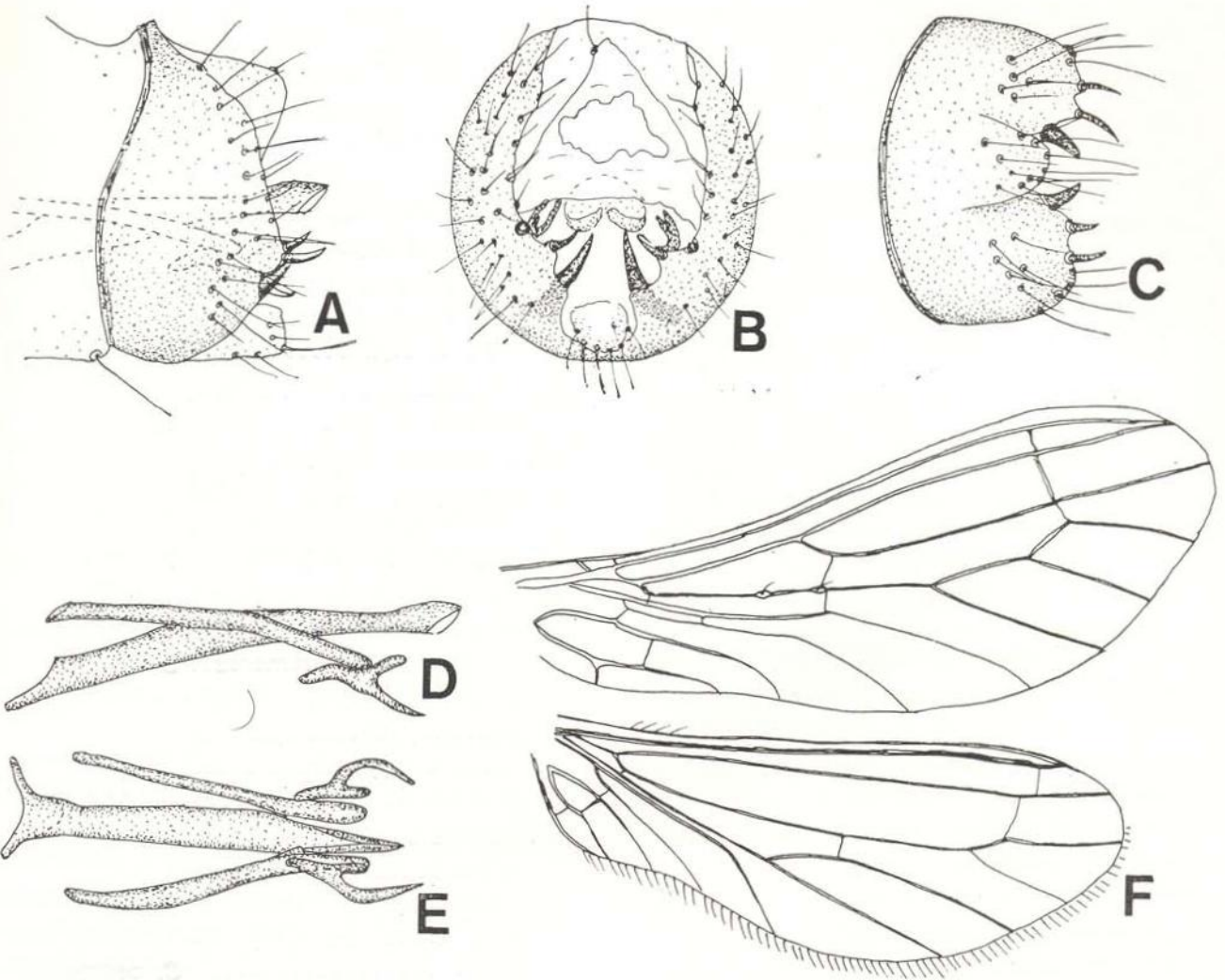


Fig. 3 — *Neoconis inexpectata* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Ditto, ventral view. D. Internal genitalia, lateral view. E. Ditto, ventral view. F. Wings.

vein *Rs-M*, which strikes *M* at distal median thickening. Length of fore wing, 2.7 — 3.0 mm; hind wing, 2.3 — 2.5 mm.

*Abdomen* with plicaturae on segments 2-6.

*Genitalia* (Figs. 4 A-E). Sctoproct caudally terminating in a clavate downwards directed projection. Ectoproct without spines. Ninth segment along anterior margin with ventrally complete apodeme. Penis tubular and very long. Stylus articulating with segment 9, blunt and slightly sinuous. Parameres rod-like, medially with inwardly directed projections, which meet above penis.

*Distribution*: The type material was collected from Brasil, Amazonas, 26 km NE of Manaus.

#### **Coniopteryx** Curtis, 1834

There are 15 species recorded from the Amazon Basin and obviously there are still many more species to be discovered. The species belong to the subgenus *Scotoconiopteryx* and the subgenus *Coniopteryx*, in the *C. (C.) westwoodi* group. Both of these species groups have several species recorded from South and Central America, which at least have not yet been recorded from the Amazon Basin. A list of all species with references is found in Meinander (1981). Here are keyed only the species recorded from the Amazon Basin.



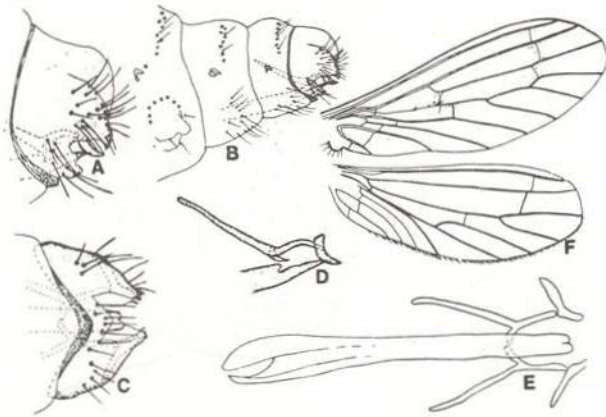


Fig. 4 — *Neoconis tubifera* male: A. Genitalia, lateral view. B. Tip of abdomen, lateral view. C. Genitalia, ventral view. D. Caudal parts of internal genitalia, lateral view. E. Internal genitalia, ventral view. F. Wings. (from Meinander, 1980).

KEY TO AMAZONIAN SUBGENERA AND SPECIES (MALES ONLY)

- 1a. Gonarcus and hypandrium discleritous; parameres apically with a small, dorsal process (Subgenus *Coniopteryx*) ..... 2
- 1b. Gonarcus and hypandrium synscleritous; parameres generally bent downwards, caudally without dorsal process (Subgenus *Scotocniopteryx*) ..... 3
- 2a. Median apical incision of hypandrium broadly U-shaped; caudal branch of styli sinuous ..... *C. callangana*
- 2b. Median apical incision of hypandrium broadly V-shaped; caudal branch of styli almost straight .... *C. jorgei*
- 3a. Gonarcus synscleritous; caudally both lateral plates are connected by transverse apodeme ..... 4
- 3b. Gonarcus discleritous, consisting of two lateral plates ..... 5
- 4a. Median apical incision of hypandrium about as deep as 2/3 of length (longitudinal direction of body) of hypandrium ..... *C. silvicola*
- 4b. Median apical incision about as deep as 1/3 of length of hypandrium .... *C. indivisa*
- 5a. Gonarcus in caudal view continuing inwards from base of styli ..... 6
- 5b. Gonarcus not reaching inwards of base of styli.. 10
- 6a. Parameres apically connected by large ventral membranous, sclerotized structure below penis ... 7
- 6b. No large ventral, additional membranous structure associated with parameres.. 8
- 7a. Paramere distally a simple bent rod; median apical incision of hypandrium about as broad as deep ..... *C. amazonica*
- 7b. Paramere distally with outwards curved structure; median apical incision about twice as deep as broad .. *C. pennyi*
- 8a. Styli fused to arch below parameres, which distally are membranously fused above penis ..... *C. panamensis*
- 8b. Styli not fused; parameres not membranously connected ..... 9
- 9a. Paramere caudally twice as broad as more cephalad... *C. canopia*
- 9b. Paramere of about equal breadth for whole length.. *C. flinti*
- 10a. Paramere caudally spirally twisted around penis .... *C. torquata*
- 10b. Paramere not spirally twisted ..... 11
- 11a. Hypandrium with distinct digitate apophyses laterally of median apical incision ..... 12

- 11b. Hypandrium without digitate apophyses; cephalad of median apical incision a strongly sclerotized plate ..... 14
- 12a. Two very long digitate apophyses on hypandrium *C. bicornis*
- 12b. Four digitate apophyses on hypandrium ..... 13
- 13a. Paramere very broad, with a long, narrow, dorsal, caudal spine ..... *C. ariasi*
- 13b. Paramere not terminating in spine; about of equal breadth for whole length.. *C. quadricornis*
- 14a. Paramere broad, blunt and slightly curved ..... *C. rondoniensis*
- 14b. Paramere more slender, terminating in tapering and downwards directed part.. *C. cucuminicola*

**Goniopteryx** (*Scotoconiopteryx*) **amazonica**  
Meinander, 1980

Meinander 1980:134, f. 4 A-E (description)

Description of male.

*Head* capsule light brown with blackish sutures and dark brown caudal part of gena. Eye large and black. Frons normal. Antenna 28-segmented; blackish brown. Scape about as long as broad; pedicel slightly longer than; basal flagellar segments almost twice as broad as long; segments gradually narrowing towards apex; about segment 22 being as broad as long; the most apical segments being distinctly longer than broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls. No setae on flagellar segments. Palpi light greyish brown.

*Thorax*. Sclerotized parts light yellowish brown with brown sutures. Shoulder spots and trochantines blackish brown.

*Legs* greyish brown with whitish tarsi. Fore femur with 8 light setae. Setae of fore tibia short.

*Wings*. Membrane of both wings greyish brown; in fore wing with narrow, transparent fasciae between *Rs* and *M* as well as between

*Cu*<sub>2</sub> and *A*<sub>1</sub>. In hind wing no cross-vein *R*<sub>4+5</sub>-*M*. Marginal fringes of hind wing basocaudally long, elsewhere medium sized. Fore wing fairly broad. Length of fore wing, 1.8 mm; hind wing, 1.4 mm.

*Genitalia* (Figs. 5 A-E) Hypandrium in lateral view more than twice as high as broad. Apodeme along anterior margin ventrally complete. Processus terminalis in lateral view fairly acute; processus intermedius prominent, triangular; and processus lateralis insignificant. Median apical incision broadly rounded, about twice as broad as deep. Gonarcus basally fused to hypandrium. Ventral apodeme distinct, terminating in stylus; apically of which gonarcus is continued in inwardly directed, flap-like part. Styli forming simple arc below parameres. Paramere a fairly narrow rod with short processus ventralis. Paramere apically smoothly bent downwards. Just before apex, parameres are connected by sclerotized, membranous structure supporting single, rod-like penial sclerite.

*Distribution*: One single specimen from Amazonas, 69 km NNW de Manaus.

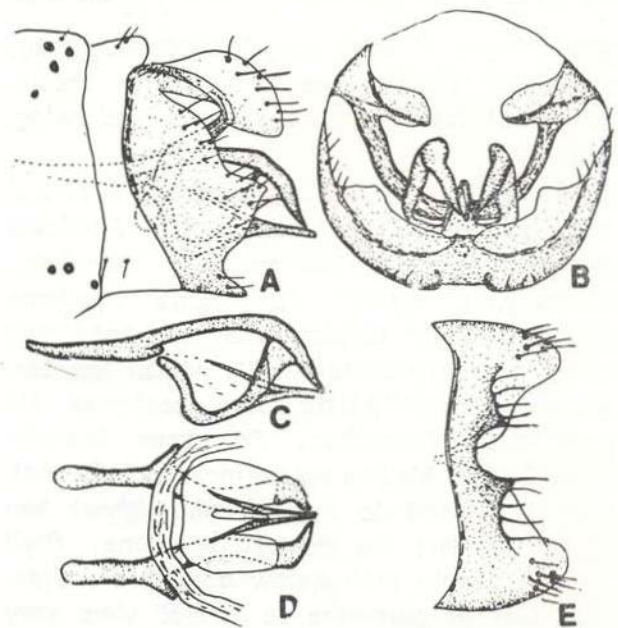


Fig. 5 — *Coniopteryx amazonica* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view. (from Meinander, 1980).



**Coniopteryx (Scotoconiopteryx) ariasi**  
Meinander, 1980

Meinander 1980:135, f. 5 A-E (description).

Description of male.

**Head** capsule dark brown. Eyes large and black. Frons normal. Antenna 32-segmented; greyish brown, except for about five apical segments, which are greyish white. Scape and pedicel about as long as broad; basal flagellar segments about one and a half times as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls. No setae on flagellar segments. Palpi whitish; apical segment of labial palpus light greyish brown.

**Thorax.** Sclerotized parts light brown; sutures, shoulder spots and trochantines dark greyish brown.

**Legs** greyish brown with whitish tarsi. Fore femur with 7 transparent setae. Fore tibia with short transparent setae.

**Wings:** Membrane of both wings dark brown; in fore wing with light, narrow fasciae along  $Sc_2$  and between  $R_s$  and  $M$ , as well as  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5}$ . Marginal fringes of hind wing basocaudally long; elsewhere short. Fore wing fairly broad. Length of fore wing, 1.8 mm; hind wing, 1.4 mm.

**Genitalia** (Figs. 6 A-E). Hypandrium in lateral view slightly higher than broad. Apodeme along anterior margin ventrally complete. Ventrally, a median, longitudinal apodeme which medially divides into two apodemes going to processus terminalis, which has two prominent inwardly bent acute apophyses. No processus intermedius. Processus lateralis insignificant. Median apical incision indistinct. Gonarcus fused to hypandrium without any visible border; no ventral apodeme. Styli forming simple arch below parameres. Proximal part of paramere in lateral view very broad; in dorsal view very narrow. Paramere apically a simple straight, narrow rod. Penis consisting of two very long, parallel rods proximally with flattened apodeme. No membranous sclerite below parameres.

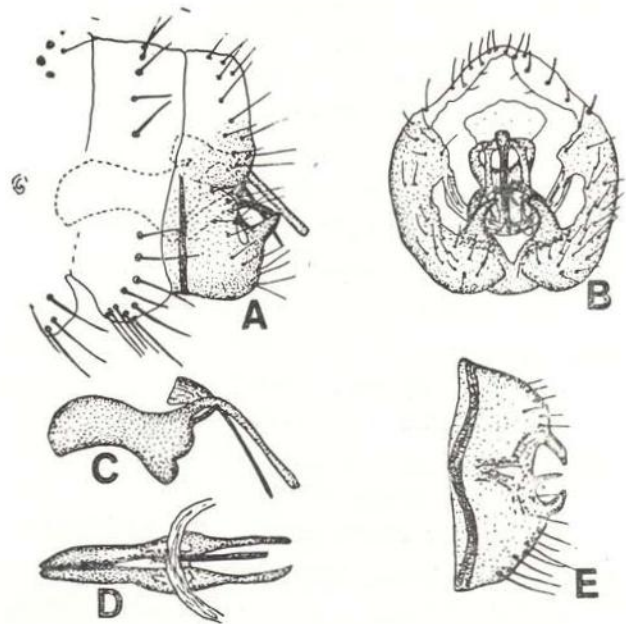


Fig. 6 — *Coniopteryx ariasi* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view. (from Meinander, 1980).

DESCRIPTION OF FEMALE

The present female, which was collected together with a male of *C. ariasi* agrees in coloration with the known males and we hope that we are correct in assuming that they are conspecific. The basal flagellar segments of antenna are slightly broader than long; the distal segments slightly longer than broad. Antennae are 31-segmented; length of fore wing, 1.9 mm; of hind wing, 1.5 mm; of antennae, 1.3 mm.

**Female Genitalia** (Figs. 7 A-D). Ninth tergite with an anterior, slightly sclerotized apodeme, which ventrad is broadened. Ninth sternite weak and unsclerotized. Tenth sternite an unsclerotized plate ventrad of anus. Gonapophyses laterales broadly separate; caudally and ventrally sclerotized. Bursa copulatrix strongly sclerotized.

**Distribution:** The type was from Amazonas, AM 010 km 26. Additional specimens: Rondonia, BR 319 km 5+3, 1980-11, 1 male (antennae 33-segmented), 1 female, J.R. Arias in Malaise trap.



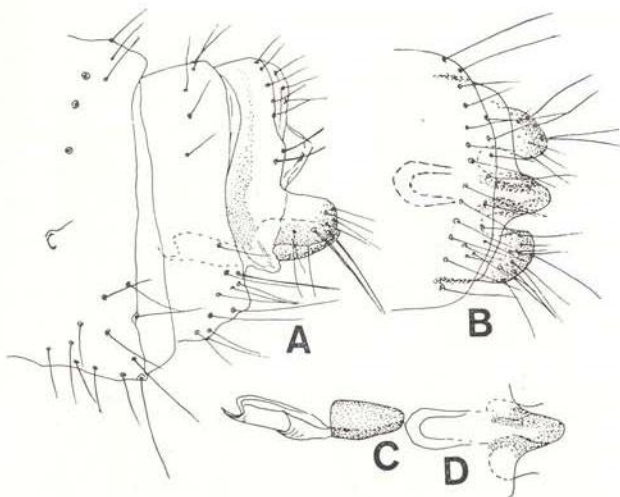


Fig. 7 — *Coniopteryx ariasi* female: A. Genital segments, lateral view. B. Ditto, ventral view. C. Bursa copulatrix, lateral view. D. Ditto, ventral view.

***Coniopteryx* (*Scotoconiopteryx*) *bicornis***  
Meinander, sp. n.

Type material: holotype, male, Brazil. Amazonas, Reserva Ducke, AM 010 km 26, 1979-05-30, J.R. Arias, light trap at 20 m.

Description of male.

*Head* capsule light greyish brown. Eyes large and black. Frons normal. Antennae 25-segmented, dark greyish brown. Scape and pedicel about as long as broad; basal flagellar segments about twice as long as broad; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls. Flagellar segments with seta. Length of antenna, 1.1 mm. Palpi light greyish brown.

*Thorax*. Sclerotized parts of thorax yellowish brown. Shoulder spots, sutures and trochantines dark, almost blackish brown.

*Legs* greyish brown. Fore femur with about 24 light setae.

*Wings*. Membrane of both wings rather dark greyish brown. Fore wing with transparent fasciae between  $R$  and  $Sc$ ,  $Rs$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5} \cdot M$ . Marginal fringes in hind wing caudobasally long. Length of fore wing, 1.7 mm; of hind wing, 1.4 mm.

*Genitalia* (Figs. 8 A-E). Hypandrium in lateral view about three times as high as broad. Apodeme along anterior margin continuing ventrad only a short distance below processus intermedius, but dorsally the apodemes continue over ectoprocts forming a complete arch. Processus terminalis very long and slender; more than five times as long as broad. Processus intermedius very broadly triangular; processus lateralis insignificant. Gonarcus basally fused to hypandrium and also border to ectoprocts is indistinguishable. Ventral apodeme of gonarcus distinct, continuing from base to base of styli. Gonarcus does not continue inwards from base of styli. Styli forming simple arch below parameres. Paramere slender, forming broad arch from processus ventralis, which are prominent. Parameres distally of processus ventralis connected by membranous structure supporting base of penis, which is single long sclerite, forming dorsally open tube; terminally dichotomously branched.

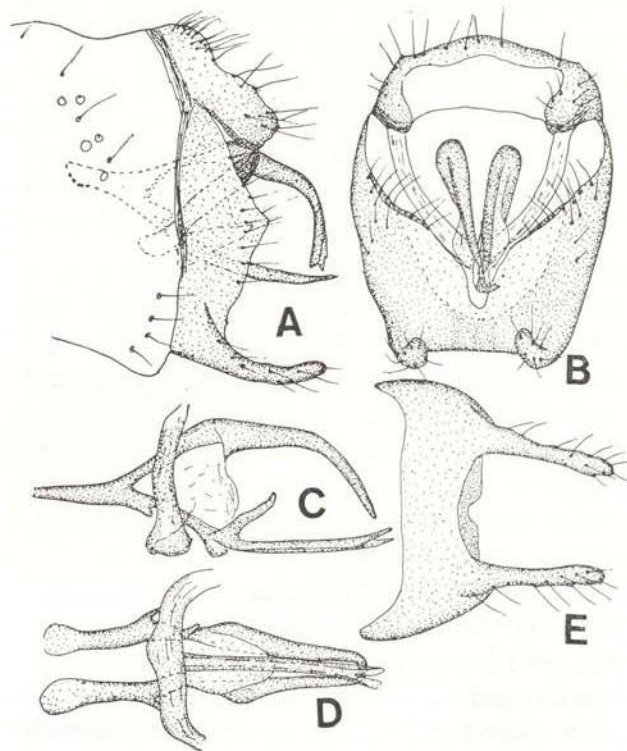


Fig. 8 — *Coniopteryx bicornis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.



**Coniopteryx** (*Scotoconiopteryx*) **canopia**  
Meinander, sp. n.

Type material: holotype, male, Brazil, Rondonia, BR 364 km 48, 1979-09-27, J.R. Arias, CDC light trap at 40 m; paratypes, Rondonia, BR 364 km 50, 1979, S. U. C. A. M., Malaise trap, 1 male and 1 female (MZH).

Description of male.

**Head** capsule light brown. Eyes large and black. Frons normal. Antennae 28-32-segmented; greyish brown, except scape and pedicel, which are dark brown. Scape and pedicel about as long as broad; basal flagellar segments about twice as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls on flagellar segments, which also have setae. Palpi whitish.

**Thorax.** Sclerotized parts of thorax light brown. Shoulder spots large; sutures and trochantines dark, almost blackish brown.

**Legs** greyish brown with whitish tarsi. Fore femur with about 15 transparent setae. Fore tibia with shorter transparent setae.

**Wings.** Membrane of both wings greyish brown; in fore wing with light, narrow fasciae along  $Sc_2$  and between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5} - M$ . Marginal fringes in hind wing basocaudally long; elsewhere short. Fore wing fairly broad. Length of fore wing, 1.8 - 2.0 mm; of hind wing, 1.5 - 1.6 mm.

**Genitalia** (Figs. 9 A-E). Hypandrium in lateral view about twice as high as broad. Apodeme along anterior margin ventrally complete. Processus terminalis blunt and short; processus lateralis and intermedius insignificant. Median apical incision square-shaped. Gonarcus broad; basally fused to hypandrium. Ventral apodeme distinct, running from ventral base past base of stylus. Gonarcus continues inwards past base of stylus and terminates in rather acute tip; both tips almost reaching each other. Styli ventrally not connected. Paramere thick; caudoventrally with a large, triangular appendix. Parameres not connected. Penis consisting of two long sclerites, which cephalad are fairly broad.

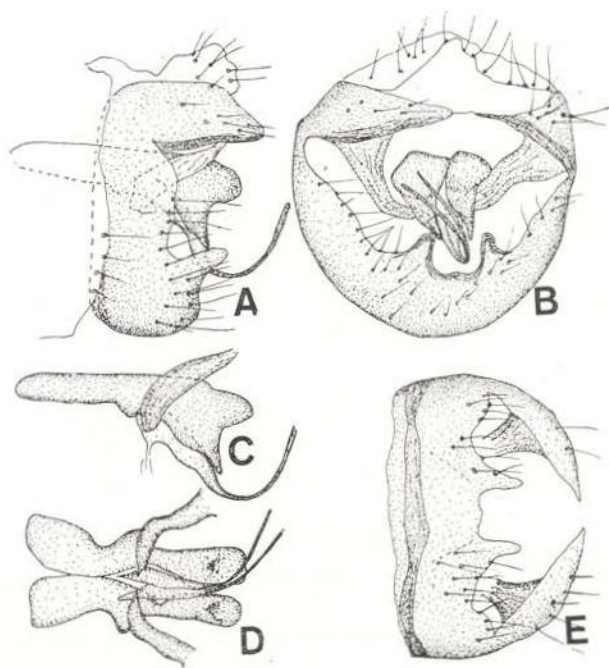


Fig. 9 — *Coniopteryx canopia* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium and gonarcus, ventral view.

**Coniopteryx** (*Scotoconiopteryx*) **cucuminicola**  
Meinander, sp. n.

Type material: holotype, male, Brazil, Rondonia, BR 364 km 48, 1979-09-27, J. R. Arias, CDC light trap at 40 m; paratypes, BR 364 km 48, 1979-09-10, S.U.C.A.M., light trap at 60 m, 2 males, 3 females and 1 male (MZH); BR 364 km 50, 1979-10-09, S.U.C.A.M., Malaise trap, 3 males, 7 females, and 1 male (MZH).

Description of male.

**Head** capsule ochreous brown. Eyes large and black. Frons normal. Antennae 35-36-segmented; dark brown. Scape and pedicel about as long as broad. Basal flagellar segments more than twice as broad as long; distal segments about as broad as long. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls on flagellar segments, which also have setae. Length of antennae, 1.4 — 1.5 mm. Palpi whitish.

**Thorax.** Sclerotized parts of thorax ochreous brown; shoulder spots, sutures and trochantines dark, almost blackish brown.



*Legs* greyish brown. Fore femur with about 24 light setae.

*Wings*. Membrane of both wings light greyish brown; fore wing with transparent fasciae along  $Sc_2$ , between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5}-M$ . Marginal fringes in hind wing basocaudally long. Length of fore wing, 1.8 — 1.9 mm; of hind wing, 1.5 — 1.6 mm.

*Genitalia* (Figs. 10 A-E). Hypandrium in lateral view more than twice as high as broad. Apodeme along anterior margin ventrally complete. Processus terminalis in lateral view prominent; in caudal view very smoothly rounded. Processus lateralis and processus intermedius insignificant. Median apical incision deep; innermost part of incision bordered by strongly sclerotized part of hypandrium. Gonarcus basally fused to hypandrium very broadly; ventral apodeme from base to base of stylus thus very short. Gonarcus does not continue inwards of base of stylus. Paramere about medially sharply bent downwards. Apical part tapering towards tip. Processus ventralis prominent. Penis consisting of two long, narrow, parallel rods.

***Coniopteryx (Scotoconiopteryx) flinti***  
Meinander, 1975

Meinander 1975:30, f. 2 A-E (description).  
Description of male from Brazil.

*Head* capsule dark brown. Eyes large and black. Frons normal. Antenna 28-segmented; dark greyish brown. Scape and pedicel about as long as broad; basal flagellar segments about twice as broad as long; distal segments slightly longer than broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls. Flagellar segments with seta. Length of antenna about 1.3 mm. Palpi greyish brown.

*Thorax*. Sclerotized parts greyish brown; large shoulder spots; sutures and trochantines dark brown.

*Legs* greyish brown. Fore femur with about 20 light setae.

*Wings*. Membrane of both wings dark greyish brown; in fore wing with transparent fasciae along  $Sc_2$ , between  $R_s$  and  $M$ , and between  $Cu_2$  and  $A_2$ . In hind wing no cross-vein  $R_{4+5}-M$ .

Marginal fringes of hind wing basocaudally long; elsewhere medium sized. Length of fore wing, 1.7 mm; of hind wing, 1.4 mm.

*Genitalia* (Figs. 11 A-E). Hypandrium in lateral view more than twice as high as broad. Apodeme along anterior margin ventrally discontinuous; both lateral apodemes terminate ventrally in processus terminales; which in lateral view are fairly acute; in ventral view blunt, slightly tapering towards apex, about twice as long as broad. Processus intermedius very broad and blunt; processus lateralis insignificant. Median apical incision small; broadly rounded; about as deep as broad. Gonarcus basally fused to hypandrium. No ventral apodeme. Gonarcus continues inwards apically of base of styli in flap-like, rounded part. Styli form simple arch below parameres. Parameres fairly broad; in lateral view almost uniformly thick for whole length; apically with short downwardly directed, fairly blunt apophysis. Penis consisting of two long, parallel, narrow rods.

Distribution: The type was collected in Mexico, San Luis Potosi. Present specimen: Brazil, Rondonia, BR 364 km 48, 1979-09-27, 1 male, J.R. Arias, CDC light trap at 40 m.

***Coniopteryx (Scotoconiopteryx) indivisa***  
Meinander, 1980

Meinander 1980:137, f. 6 A-E (description).  
Description of male.

*Head* capsule light brown with brown sutures. Eye large and black. Frons normal. Antenna 30-segmented, light brown. Scape about as long as broad; pedicel slightly longer than broad; basal flagellar segments almost 1.5 X as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls. Ventral setae present on flagellar segments. Palpi whitish.



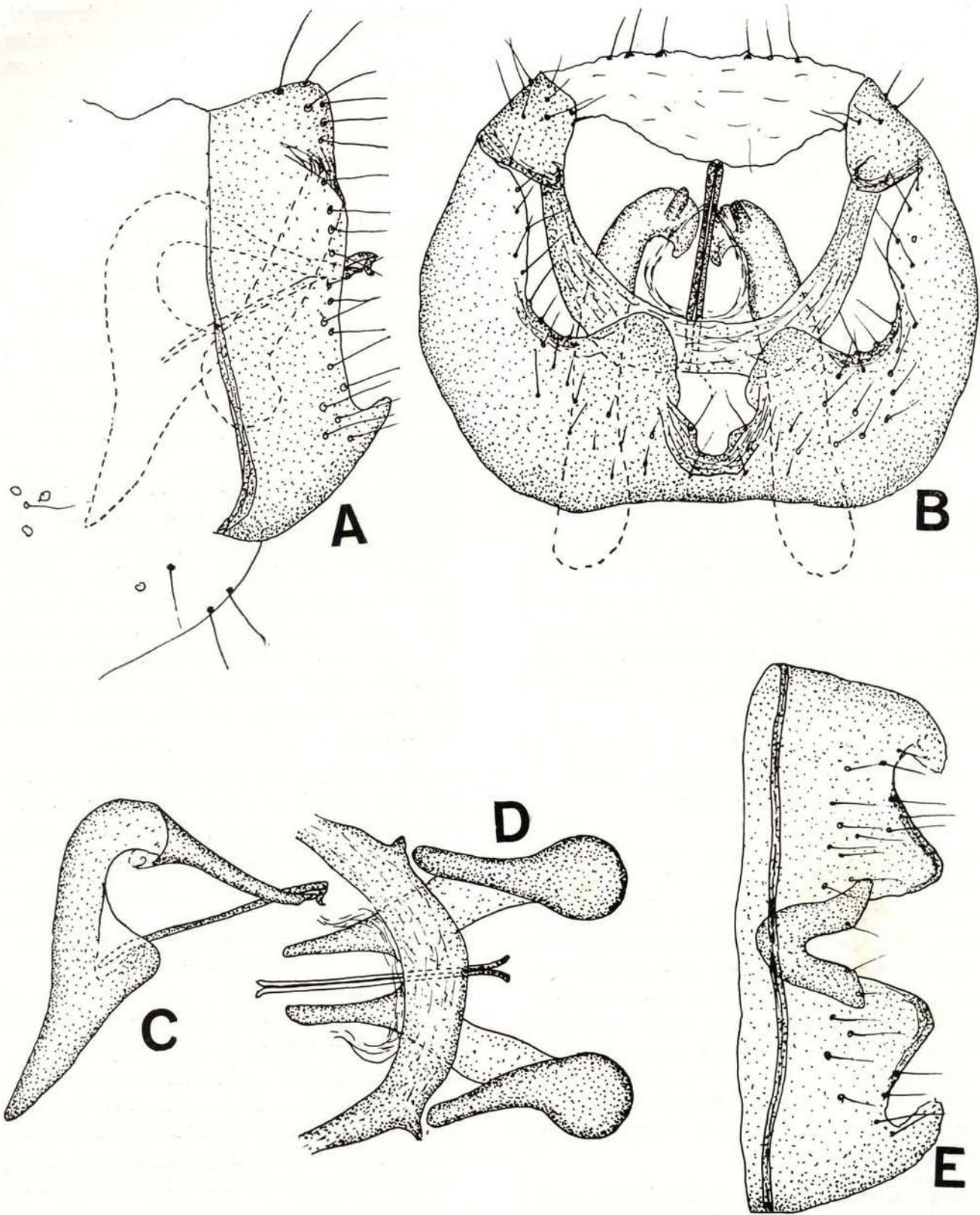


Fig. 10 — *Coniopteryx cucuminicola* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.



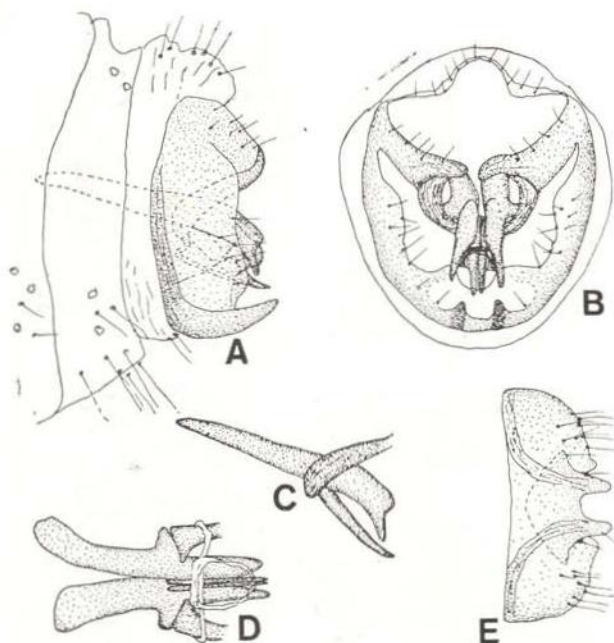


Fig. 11 — *Coniopteryx flinti* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.

Thorax Sclerotized parts light brown with brown sutures, shoulder spots and trochantines. Legs light greyish brown. Fore femur with about 14 relatively short, very light setae. Setae of fore tibia short.

Wings. Membrane of both wings light greyish brown without any distinct fasciae. In hind wing no cross-vein  $R_{4+5} \cdot M$ . Marginal fringes of hind wing basocaudally long; elsewhere medium sized. Fore wing fairly broad. Length of fore wing, 1.8 mm; of hind wing, 1.4 mm. Genitalia (Figs. 12 A-E). Hypandrium in lateral view about 2 X as high as broad. Apodeme along anterior margin ventrally complete. Processus terminales coalesced, very short; in lateral view hardly visible; in ventral view a small knob which is broader than long, without any median apical incision. Processus intermedius in lateral view broadly triangular; processus lateralis indistinct. Gonarcus fairly broad; ventral apodeme apically complete, thus connecting two lateral plates. Styli simple, caudally not connected. Paramere fairly thick, with a distinct processus ventralis. Caudally parameres bent downwards at sharp angle. No sclerotized, membranous structure

connecting parameres caudally. Penis consisting of two parallel, narrow rods. Dorsally of penis an unpaired, obscure, slightly sclerotized sclerite.

Distribution: The type is from Brazil, Amazonas, 69 km NNW of Manaus.

***Coniopteryx (Scotoconiopteryx) panamensis***  
Meinander, 1974

Meinander 1974b:100, f. 2 A-E (description). Description of male.

Head capsule light brown. Eyes large and black. Frons normal. Antenna 28-segmented; greyish brown. Scape and pedicel about as long as broad; basal flagellar segments almost twice as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls on flagellar segments; setae present. Length of antennae, 1.2 mm. Palpi whitish.

Thorax. Sclerotized parts of thorax light brown; shoulder spots, sutures and trochantines dark brown.

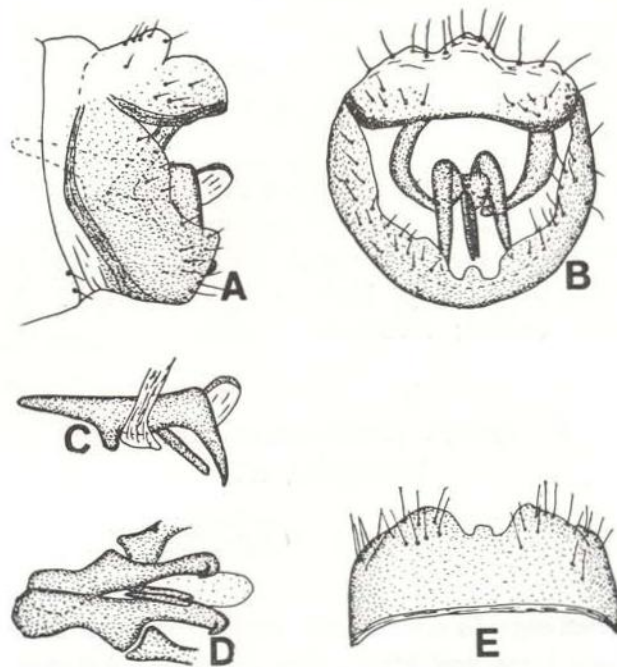


Fig. 12 — *Coniopteryx indivisa* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view. (from Meinander, 1980).



Legs greyish brown. Fore femur with about 12 light setae.

**Wings.** Membrane of both wings greyish brown; fore wing with light fasciae along  $Sc_2$ , between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5} - M$ . Marginal fringes in hind wing basocaudally long. Length of fore wing, 1.8 mm; of hind wing, 1.4 — 1.5 mm.

**Genitalia** (Figs. 13 A-E). Hypandrium in lateral view about twice as high as broad at processus lateralis. Apodeme along anterior margin ventrally complete. Another apodeme runs from base of processus terminalis around median apical incision, which is fairly large, about as deep as broad. Processus terminalis prominent; in lateral view acute; in ventral view rounded. Processus lateralis forming a smoothly rounded, but still distinct dorsocaudal corner of hypandrium. No processus intermedius. Gonarcus basally fused to hypandrium. Ventral apodeme distinct. Gonarcus continues slightly inwards of base of styli. Styli ventrally connected by bridge below parameres a slender rod with prominent processus ventralis. Parameres in caudal part connected by membranous structure, which is dorsad of penis. Penis consisting of two rods; in lateral view fairly broad, but in ventral view very narrow.

**Distribution:** The species was described from Panama Canal Zone. Present specimens: Brazil, Amazonas, Manaus, INPA, 1979-10-09, 1 male, J.R. Arias, Malaise trap; 1979-10-19, 1 male (MZH); 1979-10-22, 1 male.

**Coniopteryx** (*Scotoconiopteryx*) **pennyi**  
Meinander, 1980

Meinander 1980:137, f. 7 A-E (description).  
Description of male.

**Head** capsule dark brown with blackish sutures. Eyes large and black. Frons normal. Antenna 31-33-segmented; dark brown. Scape and pedicel about as long as broad; basal flagellar segments more than twice as broad as long; distal segments about as long, or longer, than

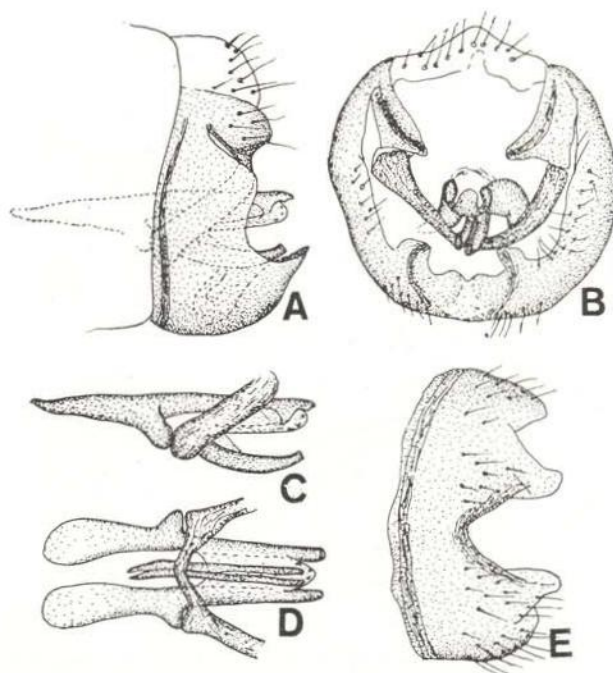


Fig 13. — *Coniopteryx panamensis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.

broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls on flagellar segments, all of which have distinct setae. Palpi brown.

**Thorax.** Sclerotized parts brown with dark brown sutures, shoulder spots and trochantines. **Legs** brown. Fore femur with about 13 rather long, light setae proximally. Setae of tibia short.

**Wings.** Membrane of both wings dark greyish brown with distinct narrow fasciae along  $Sc_2$ , between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing, no cross-vein  $R_{4+5} - M$ . Marginal fringes of hind wing basocaudally long; elsewhere medium sized. Fore wing fairly broad. Length of fore wing, 1.7 — 1.9 mm; hind wing, 1.4 — 1.5 mm.

**Genitalia** (Figs. 14 A-E). Hypandrium in lateral view almost one and a half times as high as broad. Apodeme along anterior margin ventrally complete. Processus intermedius in lateral and ventral view blunt; in caudal view more acute. Processus terminalis and processus lateralis indistinct. Median apical in-



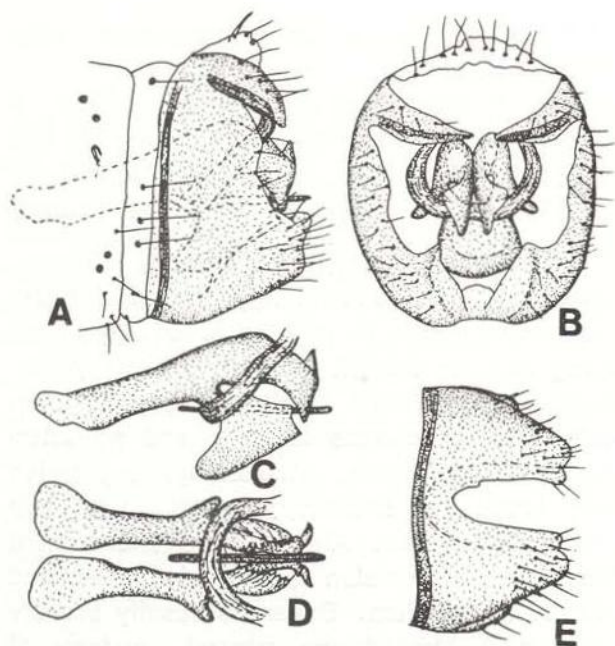


Fig. 14 — *Coniopteryx pennyi* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view. (from Meinander, 1980).

cision deep; about two-thirds as deep as breadth of hypandrium; rather parallel-sided and rounded at bottom. Gonarcus basally fused to hypandrium; in lateral view slightly clavate, with a distinct ventral apodeme. Gonarcus continuing slightly apical to base of stylus. Styli fused to simple arch below parameres. Proximal parts of paramere both in lateral and ventral view broad. Processus ventralis distinct. Distal part of paramere in lateral view broad; in ventral view narrow; apically slightly curved downwards and with an inwardly bent, short flap. Parameres apically connected by a sclerotized membranous structure supporting penis; which consists of two parallel, long, thin rods.

**Distribution:** The type series was from Brazil, Amazonas, 58 km north of Manaus. Additional specimens: Amazonas, AM 010 km 242, 1979-07-12, 1 male, J.R. Arias, 1 male, J.R. Arias (MZH); 58 km NW of Manaus, 1979, 02-22. 1 male, J.R. Arias; Rondonia, BR 364 km 48, 1979-09-10, 1 male, S. U. C. A. M., light trap at 60 m; 1979-09-27, 1 male S.U.C.A.M. (MZH); 1979-10-08, 1 male, S.U.C.A.M., light trap; 1979-10-09, 1 male, S.U.C.A.M., Malaise trap.

***Coniopteryx (Scotoconiopteryx) quadricornis***  
Meinander, sp. n.

**Type material:** holotype, male, Brazil, Rondonia, BR 364 km 50, 1979-09-09, S.U.C.A.M., Malaise trap.

**Description of male.**

**Head:** capsule Fairly dark greyish brown. Eyes large and black. Frons normal. Antennae 31-segmented; dark greyish brown. Scape and pedicel about as long as broad. Basal flagellar segments almost twice as broad as long; distal flagellar segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two distinct whorls. Flagellar segments with setae. Length of antenna, 1.3 mm. Palpi whitish.

**Thorax.** Sclerotized parts of thorax ochreous brown with blackish brown shoulder spots, sutures and trochantines.

**Legs** greyish brown. Fore femur with about 16 light setae.

**Wings.** Membrane of both wings light greyish brown; in fore wing with light fasciae between *Sc* and *A*, *Rs* and *M*, as well as between *Cu*<sub>2</sub> and *A*<sub>1</sub>. In hind wing no cross-vein *R*<sub>4+5</sub>-*M*.

Marginal fringes in hind wing basocaudally long. Length of fore wing, 1.8 mm; of hind wing, 1.4 mm.

**Genitalia** (Figs. 15 A-E). Ectoproct slightly sclerotized. Hypandrium in lateral view about twice as high as broad. Apodeme along anterior margin ventrally complete, with branches to base of processus terminales. Processus terminalis shortly digitate; processus lateralis almost indistinguishable; processus intermedius long and about twice as broad at base as in distal third. Short apodeme from processus intermedius dorsal along margin of hypandrium. Median apical incision broad and shallow. Gonarcus basally fused to hypandrium. Median apical incision broad and from base to base of stylus. Stylus terminating at processus ventralis of paramere; styli ventrally not fused. Parameres fairly broad; caudally forming downwardly bent arch with some teeth at tip. Penis consisting of two narrow, long, parallel rods.



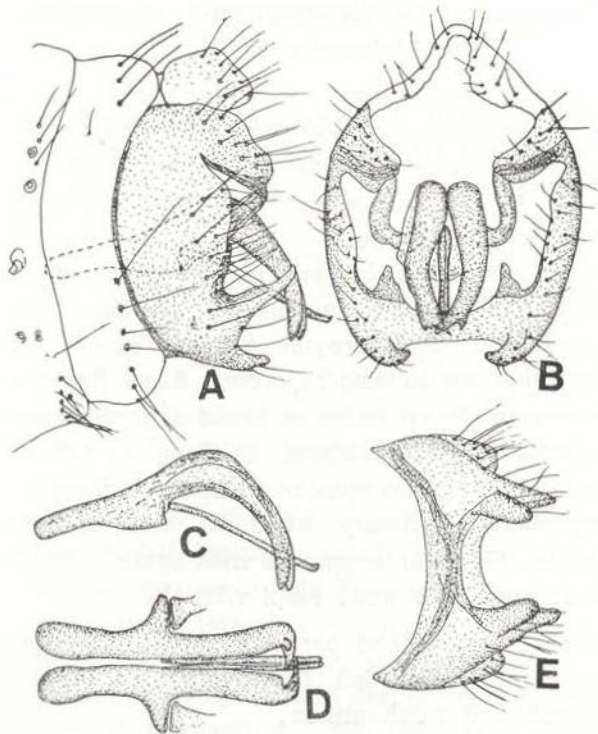


Fig. 15 — *Coniopteryx quadricornis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.

*Coniopteryx* (*Scotoconiopteryx*) *rondoniensis*  
Meinander, sp. n.

Type material: holotype, male, Brazil, Rondonia, BR 364 km 48, 1979-09-10, S.U.C.A.M., light trap at 60 m; paratype: same data, 1 male, (MZH).

Description of male.

Head capsule light ochreous brown. Eyes large and black. Frons normal. Antenna 34-segmented; light greyish brown. Scape and pedicel about as long as broad; basal flagellar segments more than twice as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two whorls on flagellar segments, all of which also have setae.

Length of antenna, 1.2 mm. Palpi light greyish. *Thorax*. Sclerotized parts of thorax light greyish ochreous. Shoulder spots, sutures and trochantines dark brown.

Legs greyish brown. Fore femur with about 13 light setae.

*Wings*. Membrane of both wings greyish, in fore wing with light fasciae between Sc and R, Rs and M, as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5} - M$ .

Length of fore wing, 1.7 mm; of hind wing, 1.5 mm. *Genitalia* (Figs. 16 A-E). Hypandrium in lateral view about twice as high as broad. Apodeme along anterior margin ventrally not complete. Processus terminalis small; almost triangular, but blunt. Processus lateralis and p. intermedius insignificant. Median apical incision very broad and shallow, in middle with two short appendages. Around base and frontad from base of incision is strongly sclerotized part of hypandrium. Gonarcus basally broadly fused with hypandrium; ventral apodeme of gonarcus distinct but short. Gonarcus not continuing past base of styli. Styli forming a simple arch below parameres. Parameres in lateral view very thick; processus ventralis distinct but short; caudally paramere slightly curved downwards, terminating in two short, blunt teeth. Penis consisting of two long, narrow, parallel rods.

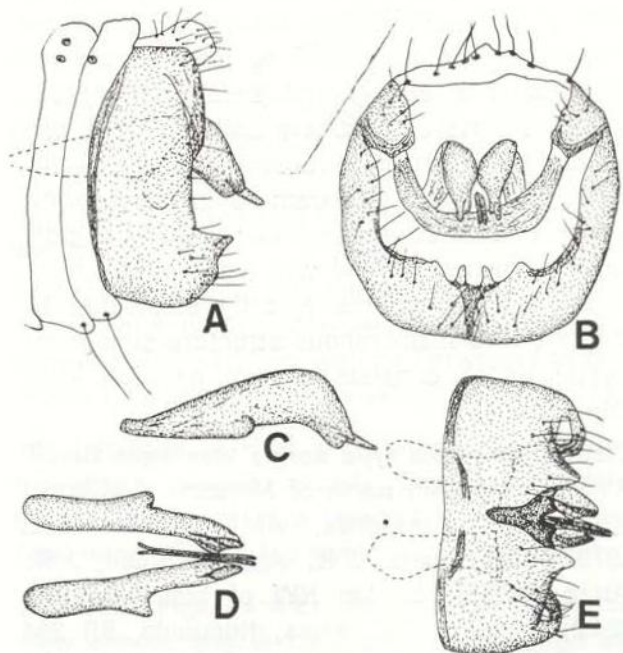


Fig. 16 — *Coniopteryx rondoniensis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Genitalia, ventral view.



**Coniopteryx (Scotoconiopteryx) silvicola**

Meinander, sp. n.

Type material: holotype, male, Brazil, Amazonas, AM 010 km 246, 1979-07-12, J.R. Arias; paratype: same data, 1 male (MZH).

Description of male.

**Head** capsule light brown. Eyes large and black. Frons normal. Antenna 28-segmented; light greyish brown. Scape and pedicel about twice as long as broad; distal segments nearly as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls on flagellar segments, all of which also have setae. Length of antenna about 1.0 mm. Palpi whitish.

**Thorax.** Sclerotized parts of thorax light ochreous brown; shoulder spots, sutures and trochantines brown.

**Legs** greyish. Fore femur with about 12 hyaline setae.

**Wings.** Membrane of both wings light greyish; fore wing with hyaline fasciae along  $Sc_2$  between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5-M}$ .

Marginal fringes in hind wing basocaudally long. Length of fore wing, 1.7 — 1.8 mm; of hind wing, 1.2 — 1.4 mm.

**Genitalia** (Figs. 17 A-E). Hypandrium in lateral view about twice as high as broad. Apodeme along anterior margin ventrally complete. Processus terminalis broadly triangular. Processus lateralis and p. intermedius insignificant. Median apical incision about as deep as 2/3 of breadth of hypandrium; rather narrow. Gonarcus basally fused with hypandrium. Ventral apodeme apically complete, thus connecting two lateral plates. Stylus terminating at processus ventralis of paramere; styli ventrally not fused. Parameres, approximately medially, slightly bent downwards. Processus ventralis long and prominent. Penis consisting of two rather blunt and short, parallel rods.

**Coniopteryx (Scotoconiopteryx) torquata**

Meinander, 1980

Meinander 1980:140, f. 8 A-E. (description).

Description of male.

Neuroptera...

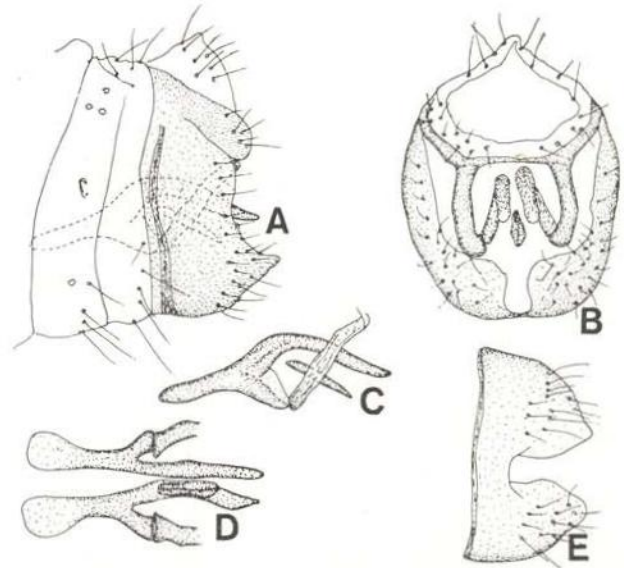


Fig. 17 — **Coniopteryx silvicola** male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.

**Head** capsule brown; vertex frontolaterally with large whitish spots; gena caudally dark brown. Eyes large and black. Frons normal. Antenna 30-33-segmented; dark brown. Scape and pedicel about as long as broad; basal flagellar segments about 1.5 X as broad as long; distal segments about as long as broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls; flagellar segments obviously without setae. Palpi very light greyish brown.

**Thorax.** Sclerotized parts light brown with dark brown sutures, shoulder spots and trochantines. **Legs** dark brown with light brown tarsi. Fore femur with about 14 light setae. Fore tibia with numerous light setae.

**Wings.** Membrane of both wings greyish brown; in fore wing with transparent fasciae between  $R_s$  and  $M$ , as well as between  $Cu_2$  and  $A_1$ . In hind wing no cross-vein  $R_{4+5-M}$ .

Marginal fringes of hind wing basocaudally long; elsewhere medium sized. Fore wing fairly broad. Length of fore wing, 1.8 mm; of hind wing, 1.4 mm.

**Genitalia** (Figs. 18 A-E). Hypandrium in lateral view about twice as high as broad. Apodeme along anterior margin ventrally complete; on



***Coniopteryx (Coniopteryx) callangana***  
Enderlein, 1906

Enderlein 1906:207, f. 9, 43, 46 (description); Enderlein 1908:9, f. 7 (synonymy, male genitalia); Enderlein 1930:109 (listed); Stitz 1931:94, f. 29 (morphology); Meinander 1972:255, f. 162 (description); Meinander 1974b:100 (faunistic record); Meinander 1980:141 (faunistic record).

Description of male.

**Head** capsule brown. Eyes black and large. Frons normal. Antenna 25-30-segmented; dark brown. Scape and pedicel about as long as broad. Basal flagellar segments only slightly broader than long; distal flagellar segments longer than broad. Scale-like hairs on apex of pedicel and flagellar segments. Ordinary hairs in two regular whorls on flagellar segments; one seta on each flagellar segment.

**Thorax.** Sclerotized parts of thorax light ochreous; shoulder spots, sutures and trochantines brown.

**Legs** light greyish brown; tarsi whitish. Fore femur with about 10 nearly uncolored, rather long setae.

**Wings.** Membrane of both wings light greyish brown; fore wing without distinct fasciae. No cross-vein *Rs-M* in hind wing. Length of fore wing, 1.7 — 2.2 mm (in Amazonas 1.7 mm); of hind wing, 1.4 — 1.8 mm.

**Genitalia** (Figs. 19 A-E). Hypandrium in lateral view slightly higher than broad. Apodeme along anterior margin ventrally interrupted. Processus terminales in lateral view long,

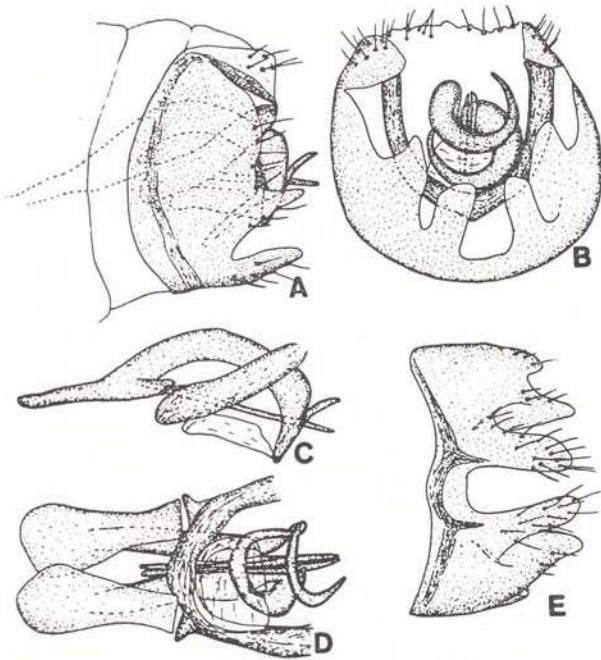


Fig. 18 — *Coniopteryx torquata* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view. (from Meinander, 1980).

both sides of median apical incision apicad branches of apodeme. Processus terminalis and p. intermedius in lateral view acute. Processus terminalis in ventral view long, ligulate; about twice as long as broad; apically smoothly rounded. Processus lateralis insignificant. Median apical incision deep; deeper than half the breadth of the hypandrium; narrow; broadening towards the bottom. Gonarcus basally fused to hypandrium; ventral apodeme distinct; terminating in stylus, the base of which is at apex of gonarcus. Styli forming a simple arch below parameres. Proximal part of paramere in ventral view broad; apical part twisted spirally around penis. Parameres cephalad of twisted part; caudally of processus ventralis are connected by a sclerotized membrane supporting penis, which consists of two long, thin, parallel rods. Distribution: The type was collected from Brazil, Amazonas, 69 km NNW of Manaus. Additional specimens: Amazonas, AM 010 km 246, 1979-07-13. . . 14, 1 male, J.R. Arias (MZH).

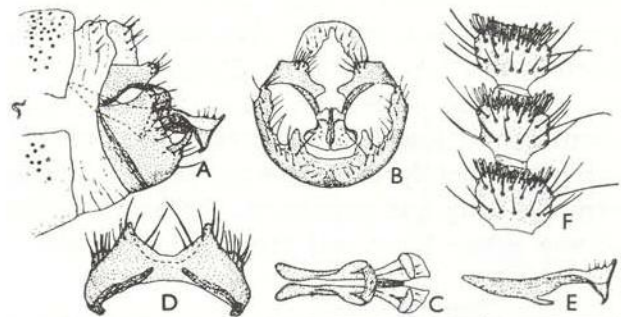


Fig. 19 — *Coniopteryx callangana* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Parameres, ventral view. D. Hypandrium, ventral view. E. Ditto, lateral view. F. Antennal segments 8-10. (from Meinander, 1972).



narrow and acute; in ventral view subtriangular. Processus lateralis prominent, forming a distinct dorsocaudal corner of hypandrium. Median apical incision very broad and shallow. Gonarcus broad with distinct ventral apodeme; not basally fused to hypandrium, Stylus forked; caudal branch sinuous; cephalic branch terminating at processus ventralis of paramere. Parameres in ventral view slender; in lateral view broader. Processus apicalis short, but below it a slightly longer, ventral process. Processus ventrales connected by membrane. Penis consisting of two short, parallel rods. Distribution: Peru and Brazil (Amazonas and Santa Catarina, Nova Teutonia). Present material: Amazonas, Reserva Ducke, AM 010 km 26, 1979-05-30, J.R. Arias, light trap at 20 m, 1 male.

**Coniopteryx (*Coniopteryx*) jorgei**  
Meinander, sp. n.

Type material: holotype, male, Brazil, Amazonas, AM 010 km 246, 1979-07-12, J. R. Arias. Only the genitalia are left, the rest of the rest of the body was lost during examination.

Description of male genitalia (Figs. 20 A-E). Hypandrium in lateral view about as high as broad. Processus terminalis subtriangular; in lateral view acute. Processus lateralis prominent, forming a distinct dorsocaudal corner of hypandrium. Median apical incision V-shaped; at bottom with two small appendices. Gonarcus basally not fused to hypandrium; fairly broad; terminating at base of stylus, which is forked and rather thin. Caudal branch of stylus only slightly curved; cephalic branch terminating at processus ventralis of paramere. Paramere slightly broader apically than basally; processus apicalis short, but below it a slightly longer, ventral process. Processus ventrales apparently not connected. Penis not sclerotized.

**Semidalis** Enderlein, 1905

There are two species groups of this world-wide distributed genus represented in America: the *S. vicina* group, which is re-

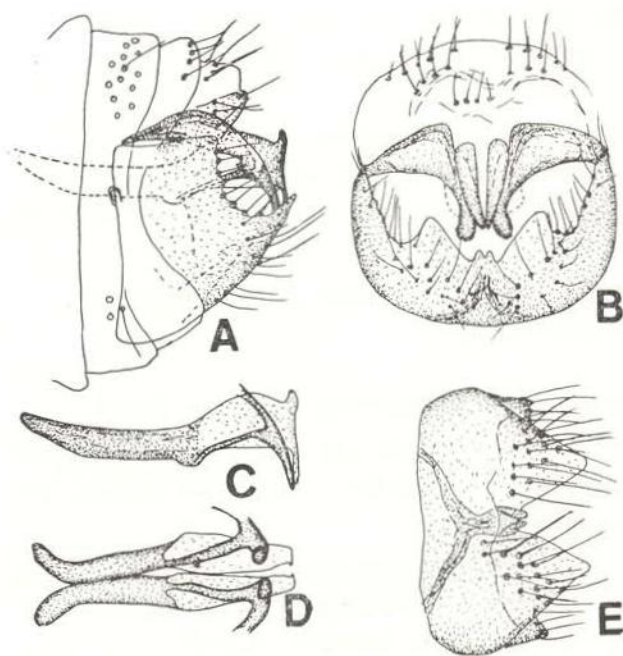


Fig. 20 — *Coniopteryx jorgei* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Hypandrium, ventral view.

stricted to the Holarctic Region, and the *S. inconspicua* group, which is distributed all over America, except the northernmost parts (Meinander 1974b) Eighteen very closely related species of the latter group have been described, and four of them are recorded from the Amazon Basin. Only these species are keyed here, but a check-list of all species is given, including all references which were not mentioned in Meinander (1972).

**KEY TO AMAZONIAN SPECIES OF SEMIDALIS (MALES ONLY)**

- 1a. Ectoproct caudoventrally with process with upwards directed tooth ..... 2
- 1b. Ectoproct caudoventrally without tooth or with simple tooth ..... 3
- 2a. Hypandrium deeply bifurcate; process caudoventrally on ectoproct acute. . *S. amazonensis*
- 2b. Hypandrium not bifurcate; process caudoventrally on ectoproct apically serrate . *S. rondoniensis*



3a. Hypandrium with two long narrow apophyses; paramere simple ..... *S. normani*

3b. Hypandrium simple; paramere apically with several sinuous branches ..... *S. manauensis*

CHECK-LIST OF SEMIDALIS INCONSPICUA GROUP SPECIES

*amazonensis* Meinander, 1980. — Brazil.

Meinander 1980:142, f. 10 A-D (description)  
*boliviensis* (Enderlein, 1905). — Bolivia, Venezuela.

Meinander 1972:332, f. 214 A-E (description);  
Meinander 1974b:103, f. 4 A-C (morphology, faunistic record).

*brasiliensis* Meinander, 1974. — Brazil.

Meinander 1974b:103, f. 4 D-F (description).  
*byersi* Meinander, 1972. — Mexico.

Meinander 1972:335, f. 217 A-D (description);  
Meinander 1974a:230 (faunistic record);  
Meinander 1974b:103 (list).

*deserta* Meinander, 1974. — U.S.A.: California.

Meinander 1974a:230, f. 12 A-D (description);  
Meinander 1974b:103 (listed).

*flinti* Meinander, 1972. — SW U.S.A., N. Mexico.

Meinander 1972:335, f. 218 A-C (description);  
Meinander 1974a:231 (faunistic records);  
Meinander 1974b:103 (listed).

*frommeri* Meinander, 1974. — SW U.S.A., Mexico.

Meinander 1974a:231, f. 13 A-E (description);  
Meinander 1975:32 (faunistic record).

*hidalgoana* Meinander, 1975. — Mexico.

Meinander 1975:31, f. 3A, D, F (description).

*inconspicua* Meinander, 1972. — U.S.A.

Meinander 1972:336, f. 219 A-C (description);  
Throne 1972:127 (faunistic note);  
Meinander 1974a:232 (faunistic note);  
Meinander 1974b:103 (listed);  
Meinander 1975:31 (faunistic note).

*kolbei* Enderlein, 1906. — Argentina, Chile.

Meinander 1972:333, f. 215 A-D (description);  
Meinander 1974b:105 (faunistic records).

*manausensis* Meinander, 1980. — Brazil.

Meinander 1980:144, f. 11 A-F (description).

*mexicana* Meinander, 1972. — NW Mexico.

Meinander 1972:334, f. 216 A-D (description);  
Meinander 1974b:102-103 (listed).

*normani* Meinander, sp. n.

*panamensis* Meinander, 1974. — Panama.

Meinander 1974b:103, f. 4 G-I (description).  
*peruviensis* Meinander, 1974. — Peru.

Meinander 1974b:105, f. 4 J-M (description)  
*rondoniense* Meinander, sp. n.

*sonorana* Meinander, 1975. — Mexico

Meinander 1975:32, f. 3 B,G,E (description).  
*wallacei* Meinander, 1972. — U. S. A.:  
Pennsylvania.

Meinander 1972:337, f. 220 A-C (description);  
Meinander 1974b:103 (listed).

The species can generally be recognized only from the male genitalia. There are several additional species described from females from South America. Most probably they belong to the *S. inconspicua* group, but at the present stage of our knowledge they cannot be interpreted.

*adsurdiceps* (Enderlein, 1908). — Bolivia.

Enderlein 1908:12, f. 12-13 (description);  
Lacroix 1924:54 (listed); Enderlein 1930:  
107 (listed); Stitz 1931:89, f. 19 (morphology);  
Meinander 1972:310 (description).

*nivosa* Enderlein, 1906. — Peru.

Enderlein 1906:216, f. 16 (description);  
Enderlein 1908:12 (synonymy); Enderlein  
1930:106 (listed); Meinander 1972:311  
(description).

*pruinosa* Enderlein, 1906. — Peru.

Enderlein 1906:216, f. 18 (description);  
Enderlein 1908:12 (synonymy); Enderlein  
1930:107 (listed); Meinander 1972:311  
(synonymy).



*scobis* Enderlein, 1906. — Peru.

Enderlein 1906:217, f. 17 (description);  
Enderlein 1908:12 (synonymy); Enderlein  
1930:107 (listed); Meinander 1972:311  
(synonymy).

***Semidalis amazonensis* Meinander, 1980**

Meinander 1980:142, f. 10 A-D (description).  
Description of male.

*Head* dorsally yellow with dark brown sutures;  
ventrally greyish brown. Palpi greyish brown.  
Antenna 27-30-segmented (in specimen from  
Manaus 1979-06-08, 35-36-segmented); scape  
and pedicel greyish brown; flagellum pale  
yellow.

*Thorax*. Sclerotized parts of thorax greyish  
brown. Legs light greyish brown with whitish  
tarsi.

*Wings* (Fig. 21 D). Membrane of wings with  
greyish brown markings in cells; hyaline along  
veins. Length of fore wing, 2.2 — 2.7 mm;  
of hind wing, 1.8 — 2.1 mm. A female which  
probably belongs here had longer wings, 3.0  
mm; resp., 2.5 mm.

*Genitalia* (Figs. 21 A-C). Segment 9 syncle-  
ritous. Ectoproct with outer process which is  
strengthened caudally by apodeme which  
terminates in upwardly directed tooth. No  
distinct process at inner angle of ectoproct.  
Hypandrium dorsally with deep parallel-sided  
incision and ventrolaterally with distinct pro-  
jection. Paramere fairly slender; apically  
slightly swollen; with long, dorsal, well scler-  
otized projection; an equally long membranous  
projection; and on inside, a short dorsal tooth.

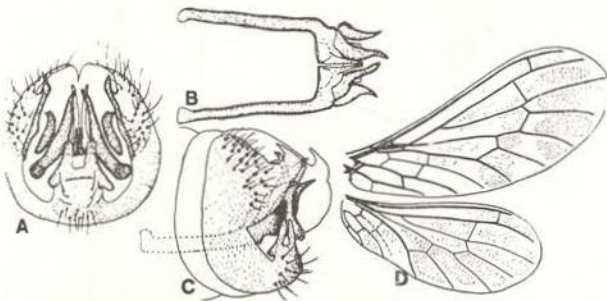


Fig. 21 — *Semidalis amazonensis* male: A. Genitalia, caudal view. B. Internal genitalia, ventral view. C. Genitalia, caudolateral view. D. Wings. (from Meinander, 1980).

In one specimen one of parameres has trans-  
verse short rod cephalad. Laterally of para-  
mere a sinuous sclerite, which is apparently  
the uncinus.

*Distribution*: The type material was from Brazil,  
Amazonas near Manaus. Additional material:  
Amazonas, Manaus, INPA, 1979-05-31, 1 male,  
J.R. Arias; 1979-06-08, Malaise trap, 1 male  
J.R. Arias; 1979-10-22, 1 male, J.R. Arias; 60 km  
N of Manaus, 1979-10-23, 1 male, N. Penny 83  
km N of Manaus, 1980-08-17, 1 male, N.D. Penny,  
Malaise trap; 1980-09-02, 1 male, N.D. Penny,  
Malaise trap; Rondonia, BR 319 km 866,  
1980-06-02, 1 male, J.R. Arias (MZH); BR 364  
km 20, 1980-11-22, 1 male, J.R. Arias, Malaise  
trap BR 319 km 866, 1980-03-01, 1 male;  
1980-03-01, 1 male, J.R. Arias (MZH);

***Semidalis manausensis* Meinander, 1980**

Meinander 1980:144, f. 11 A-F (description).  
Description of male.

*Head* dorsally yellow with dark brown sutures,  
ventrally greyish brown. Palpi light greyish  
yellow. Antenna 33-34-segmented. Scape and  
pedicel greyish brown; flagellum pale yellow-  
ish.

*Thorax*. Sclerotized parts of thorax greyish  
brown. Legs pale.

*Wings* (Fig. 22 F). Membrane of wings with  
greyish brown markings. Length of fore wing,  
2.2 mm; hind wing, 1.8 mm.

*Genitalia* (Figs. 22 A-E). Segment 9 syncle-  
ritous. Ectoproct ventrally with slightly  
sinuous apophysis. No distinct process at  
inner angle of ectoproct. Hypandrium dorsally  
simple. Paramere fairly slender; terminally  
with 3-4 barbed, sinuous apophyses. Caudo-  
ventrally of parameres two longitudinal rods.  
*Distribution*: The type material was from Brazil,  
Amazonas, 61 km NNW of Manaus.

***Semidalis normani* Meinander, sp. n.**

Type material: holotype, male, Brazil, Amazo-  
nas, AM 010 km 246, 1979-07-12, J.R. Arias.  
Description of male.

*Head* capsule yellowish brown; clypeus brown.  
Palpi light greyish. Antennae 32-segmented.



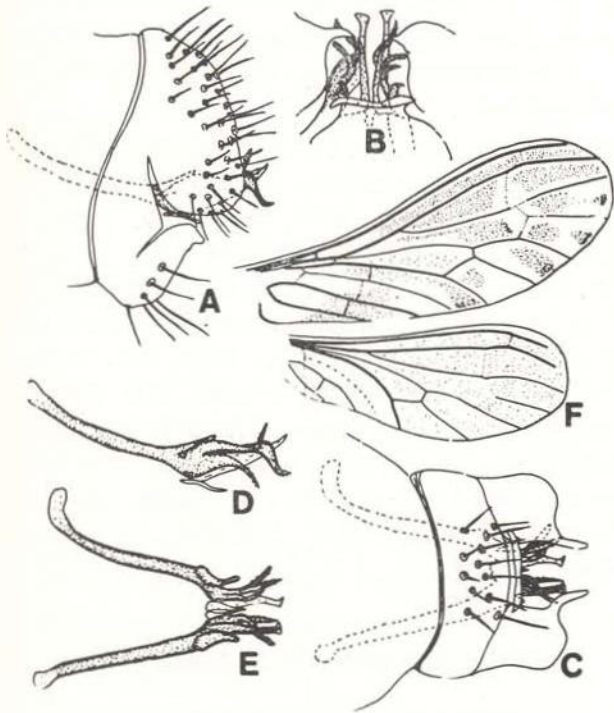


Fig. 22 — *Semidalis manausensis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Ditto, ventral view. D. Internal genitalia, lateral view. E. Ditto, ventral view. F. Wings. (from Meinander, 1980).

Scape and pedicel whitish; flagellum except last five segments almost blackish; tip greyish. Scape and pedicel about as long as broad; flagellar segments slightly broader than long. *Thorax*. Sclerotized parts of thorax brown with dark brown sutures. Legs light greyish brown; with whitish tarsi.

*Wings*. Membrane of fore wing very light greyish, with hyaline fasciae between *Rs* and *M*, as well as between *Sc*<sub>2</sub> and *A*<sub>1</sub>. Membrane of hind wing hyaline. Length of fore wing, 2.0 mm; of hind wing, 1.5 mm.

*Genitalia* (Figs. 23 A-E). Segment 9 synscleritous. Ectoprocts without processes. Hypandrium deeply bifurcate, both lateral plates in caudal view broader basally and tapering towards tip; in lateral view sinuous. Parameres fairly slender; apically with dorsal projection, which is about as long as 3/5 of basal part of paramere. Uncinus long and slender; twice bent in right angle.

***Semidalis rondoniensis* Meinander, sp. n.**

Type material: holotype, male, Brazil, Rondônia, BR 364, km 50, 1979-10-09, S.U.C.A.M.,

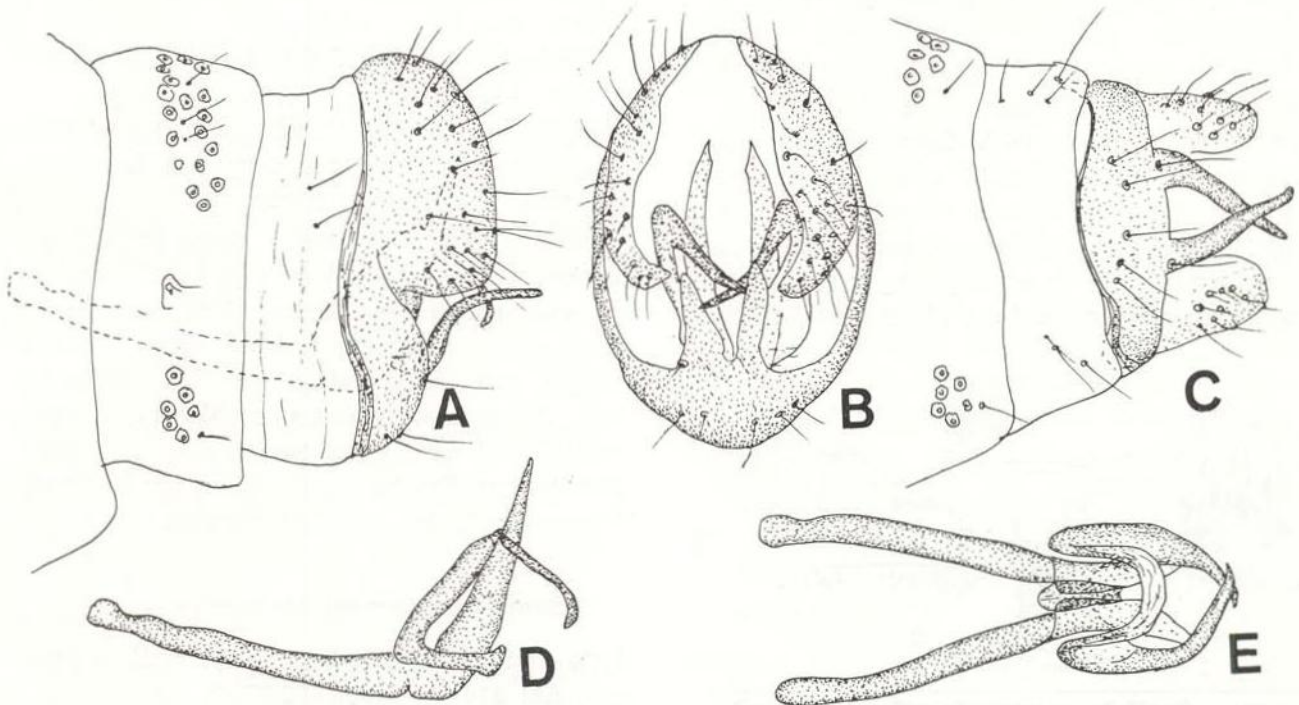


Fig. 23 — *Semidalis normani* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Ditto, ventral view. D. Internal genitalia, lateral view. E. Ditto, ventral view.



Maalise trap; paratype, Rondonia, BR 364, km 48, 1979-10-09, 1 male, S.U.C.A.M., light trap (MZH).

Description of male.

**Head:** capsule light greyish, except sutures, which are brown, and caudoventral part of genae and clypeus, which are greyish brown. Palpi light greyish brown. Antennae of both specimens broken. Scape and pedicel dark brown; flagellum greyish. Scape about as long as broad; pedicel slightly longer than broad; flagellar segments about as long as broad.

**Thorax:** Sclerotized parts light yellowish brown. Legs greyish; tibiae and tarsi whitish.

**Wings.** Membrane of fore wings light greyish brown in cells; hyaline along veins; of hind wing almost hyaline. Length of fore wing, 2.2 mm; of hind wing, 1.7 mm.

**Genitalia** (Figs: 24 A-E). Segment 9 syncscleritous. Ectoproct with an outer process which terminates in upwardly directed, distally serrate hook. No distinct process at inner ventral angle of ectoproct. Hypandrium laterally with well sclerotized knobs. Paramere fairly slender; apically terminating in two acute processes. Parameres and hypandrium probably connected by a sclerotized odd structure. No uncinus present.

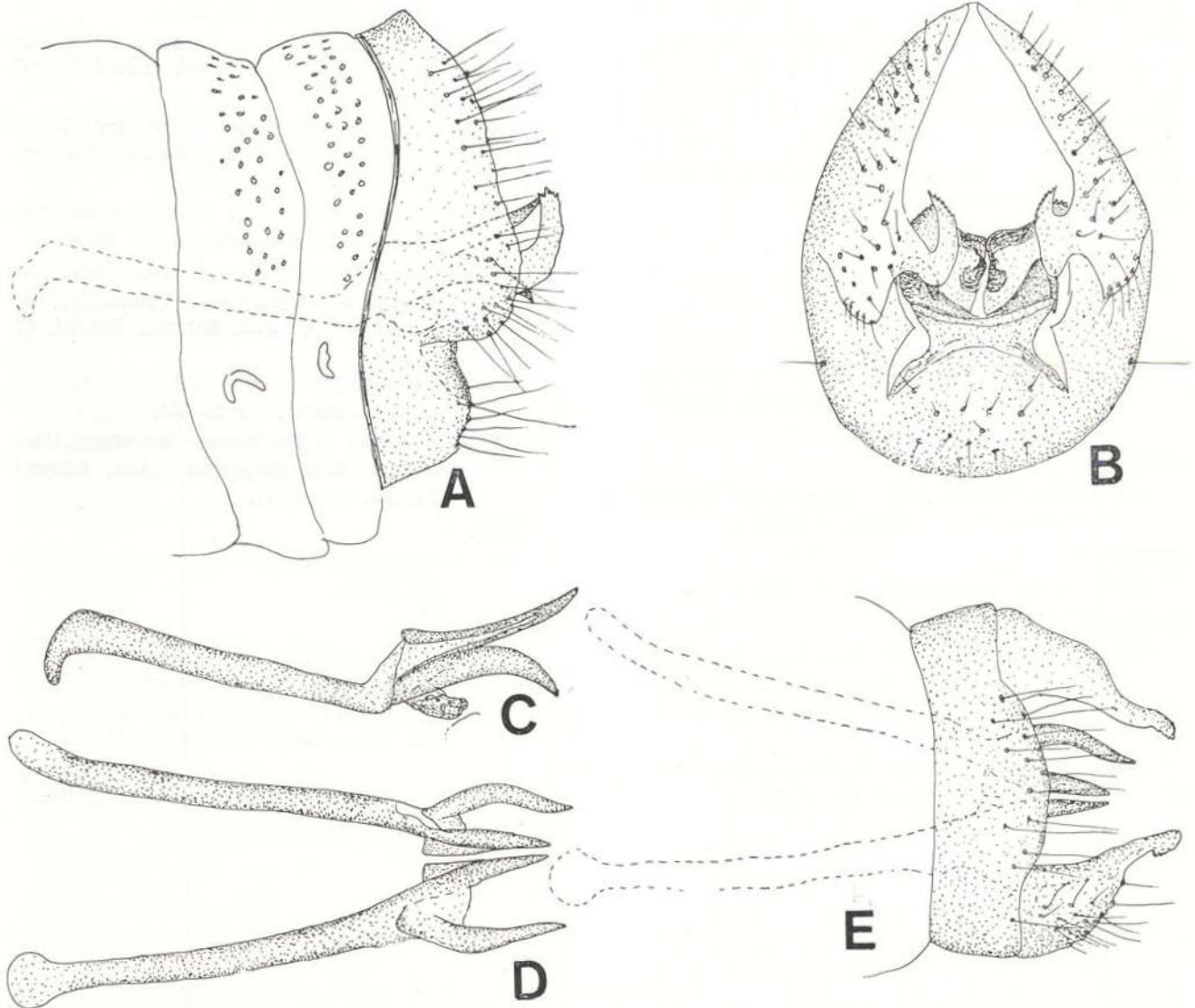


Fig. 24 — *Semidalis rondoniensis* male: A. Genitalia, lateral view. B. Ditto, caudal view. C. Internal genitalia, lateral view. D. Ditto, ventral view. E. Genitalia, ventral view.



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Dr. Jorge R. Arias has collected almost all of the material used in this study while doing field research on vectors of cutaneous leishmaniasis. Very small light traps were utilized in the forest canopy, and the resulting very interesting material is greatly acknowledged.

#### RESUMO

Três espécies de *Neoconis* Enderlein, quatro de *Semidalis* Enderlein, e 15 de *Coniopteryx* Curtis são assinaladas e redescritas para a Bacia Amazônica. A biogeografia dos Coniopterygidae na América do Sul é discutida. As novas espécies são *Semidalis normani* sp. n., *S. rondoniense* sp. n., *Coniopteryx (Scotoconiopteryx) bicornis* sp. n., *C. (S.) canopia* sp. n., *C. (S.) cucumicola* sp. n., *C. (S.) quadricornis* sp. n., *C. (S.) rondoniense* sp. n., *C. (S.) silvicola* sp. n., e *Coniopteryx (Coniopteryx) jorgei* sp. n. É apresentada uma chave para a separação de todas as espécies.

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