

Neotropical Pterophoridae 9: *Chocophorus*, a new neotropical genus (Lepidoptera)

C. GIELIS & D.L. MATTHEWS

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Abstract: A new, neotropical, genus in the Pterophoridae is described: *Chocophorus*. The differences with related genera are discussed. A checklist of the species in the genus is given, with an identification key to the species. Two new species are described: *C. venedictoffi* and *C. solisi*.

Keywords: Lepidoptera, Pterophoridae, neotropics, new genus, new species.

C. Gielis, Mr. Haafkensstraat 36, 4128 CJ Lexmond, The Netherlands.

D.L. Matthews, Dept. of Entomology and Nematology, IFAS, University of Florida, Gainesville, FL 32611, U.S.A.

Introduction

In the neotropical region three species were described, which had rather similar appearances, in the genus *Pterophorus* Schaffer, 1766, or the synonymous genera *Aciptilia* Hübner, (1825) and *Alucita* auct., (non Linnaeus, 1758): dark brown with a blocked pattern on the fore wings and in the fringes. Of these species, *Aciptilia alternaria* Zeller, 1874 was placed in the genus *Pselnophorus* Wallengren, 1881 by Meyrick in 1908. Nevertheless, Bourquin (1949) replaced it in the genus *Aciptilia*; his view was not supported and Meyrick's opinion was still followed. The two other species, *Alucita leptochorda* Meyrick, 1913 and *Alucita trichogramma* Walsingham, 1915, were synonymized by Arenberger (1990), who placed the species into the palae-arctic genus *Pterophorus*, which in recent years has been split into numerous genera. In the same publication Arenberger described *P. carabayus*.

Recently the authors had the opportunity to study the collections of the Smithsonian Institute/National Museum of Natural History (USNM), Washington D.C., the University of California (UC), Berkeley, California and the Allyn Museum of Entomology (AME), Sarasota, Florida. With the material present in these collections it was possible to revise the group. In this way the unknown male of *lepto-*

chorda and two new species, *venedictoffi* and *solisi*, could be described. The generic position could be established. The characters of the present group of species did not fit in any of the presently known genera, which are mainly palae-arctic, urging us to describe a new genus:

Chocophorus genus nov.

(figs 1, 2)

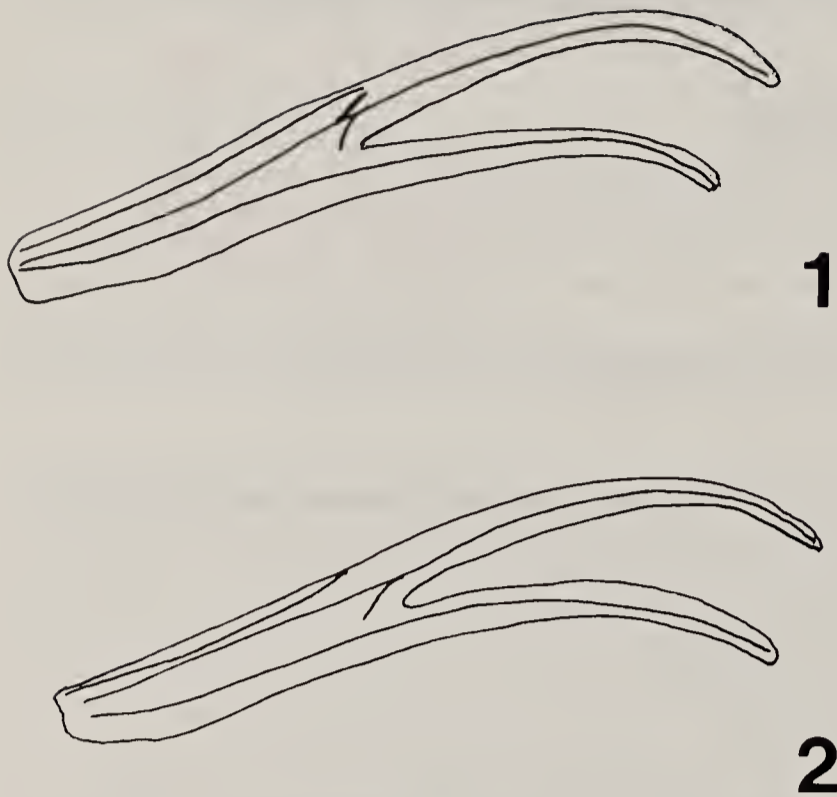
Type-species: *Alucita leptochorda* Meyrick, 1913.

Diagnosis

The genus is characterized by the dark brown colour of the fore wings and the blocked white markings on the wings and in the fringes. The fore wing venation (figs 1-2) is extremely reduced to Sc, a short R2 (present in *leptochorda*, not in *alternaria*), R4, M3 and a faint indication of An. This pattern is not met in any other genus. The related genus *Singularia* Arenberger still has the Cu2 and two An veins. In *Patagonophorus* Gielis both a R2 and Cu2 vein are present.

Description

Head appressedly scaled. Frons smooth, rounded. Palpi length just over eye-diameter. Antennae filiform, shortly ciliated. Fore wings cleft from 2/3; dark brown with white mar-



Figs 1-2. Wing venation of *Chocophorus*. 1, *Chocophorus leptochorda*. Venezuela, Aragua, Rancho Grande, 1100 m, 24-31.x.1966 (S.S. & W.D. Duckworth), wing venation CG 3370 (USNM); 2, *Chocophorus alternaria*. Chile, Huasco, Carrila Bajo, 30.xi.1987 (J.E. Barriga), wing venation CG 2478 (CG).

kings on the wing and in the fringes. Wing venation: Sc, R2 (not in all species), R4, M3 and a reduced An. Hind wings deeply cleft, with a single row of venous scales.

Male genitalia: asymmetrical with a tendency to symmetry.

Female genitalia: ostium with sclerotized lamina antevaginalis. Ductus bursae slender. Ductus seminalis originates from the junction between the ductus bursae and the bursa copulatrix. Bursa copulatrix vesicular, with a single, almost linear signum.

Ecology: a host plant record for *C. alternaria* (Zeller) is *Echium plantagineum* Linnaeus.

Distribution: South America, as far north as Guatemala and El Salvador.

Checklist of species of *Chocophorus*

leptochorda (Meyrick, 1913) (*Alucita*) Ecuador comb. nov.

syn.: *trichogramma* (Walsingham, 1915) (*Alucita*) Costa Rica

carabayus (Arenberger, 1990) (*Pterophorus*) Peru comb. nov.

venedictoffi spec. nov. Ecuador

solisi spec. nov. El Salvador

alternaria (Zeller, 1874) (*Aciptilia*) Chile comb. nov.

Key to the species of *Chocophorus*

- 1 Size over 30 mm..... *C. solisi* spec. nov.
- Size less than 30 mm.....2
- 2 First lobe of fore wing with broad complete white transverse band.
- *C. carabayus* (Arenberger)
- Transverse band incomplete, very narrow or absent.....3
- 3 Fore wing at 1/3 with white transverse spot
- *C. leptochorda* (Meyrick)
- Fore wings without a transverse spot at 1/3
-4
- 4 Fore wings with white markings on the wing and in the fringes
- *C. venedictoffi* spec. nov.
- Fore wings with only a white blocked pattern in the fringes *C. alternaria* (Zeller)

Chocophorus leptochorda (Meyrick, 1913) comb. nov.

(figs 3, 4)

Alucita leptochorda Meyrick, 1913: 111.

Syn.: *Alucita trichogramma* Walsingham, 1915: 439.

Material

Holotype of *Alucita leptochorda* Meyrick: 1 ♀, Ecuador, Quevado, (19)11 (R.), gent. BM 17995 (BMNH) [examined]. Holotype of *Alucita trichogramma* Walsingham: 1 ♀: Costa Rica, Juan Viñas, 2500-3500 ft., v.1906 (Schaus), gent. BM 17989 (BMNH) [examined]. Costa Rica: 1 ♀, Cartago Prov., Catie, 3 km SE Turrialba, 600 m, 13.v.1985 (J. Powell, P. Opler, J.A. Chemsak), gent. CG 3368 (UC); 2 ♀, Juan Viñas, vi, gent. CG 3355, 3359 (USNM). Ecuador: 1 ♀, Pichincha prov., Tinalandia, 980 m, 18-22.iv.1990 (J. Brown), MV & UV light, gent. CG 3369 (UC). Venezuela: 5 ♂, 3 ♀, Aragua, Rancho Grande, 1100 m, 21.ii.1972, 15-21.vi.1966, 15-21.vi.ii.1967, 16-23.x.1966, 24-31.x.1966, 1-5.xi.1966 (E. & J. Munroe; R.W. Poole; S.S. & W.D. Duckworth), gent. CG 6047(♂), 3354(♂), 3353(♀) (CNC, USNM, CG).

Diagnosis

This species is characterized by the brown and white pattern on the fore wings, in which the band at 1/3 of the wing and the spot in the first



Fig. 3. *Chocophorus leptochorda*. Male genitalia. Venezuela, Aragua, Rancho Grande, 1100 m, 21.iii.1972 (E. & J. Munroe), gent. CG 6047 (CNC).

lobe is incomplete.

This species is closely related to the recently described *carabayus* Arenberger, differing in the weaker expressed white field in the first lobe of the fore wing and the genital structure. It differs from *venedictoffi* by the presence of the white marking in the first lobe of the fore wing, and from *solisi* by its size (though there is considerable variation in this character, the biggest *leptochorda* specimen is 7 mm smaller than the only known *solisi* specimen).

Redescription

Male, female. Wingspan 12-25 mm.

Head appressedly scaled. Vertex, collar and face mixed grey-white and dark brown scales. Palpi grey-white, just over eye-diameter. Antennae grey-brown, shortly ciliated.

Thorax, tegulae and mesothorax olive-brown and grey-white mixed; with a double whitish line at the dorsum and laterally a single longitudinal line. These lines continue on the mesothorax and abdomen. Hind legs ringed grey-white and dark brown. Proximal pair of spurs of unequal length, distal pair of spurs of equal length. Fore wings cleft from 1/2, colour dark brown. Basal 1/4 with six small longitudinal white lines, followed by a white transver-

se band. This band followed by a dark brown segment reaching up to 1/3 of the first lobe and toward apex of second lobe. Apex of first lobe brown again. Fringes blocked brown and white. Underside chocolate-brown turning pale in both lobes toward apex. Hind wings and fringes brown-grey. At the dorsum of the first and second lobe and at the apex of the third lobe a subterminal white dash. Underside dark brown, paler toward apex of all lobes. Some black scales in fringes at the base of the cleft between the first and second lobe. Venous scales black, in a single row. The specimens show considerable variety in wingspan.

Male genitalia (fig. 3): valvae asymmetrical. Right valve in basal 1/3 rectangular, indented and widened again; gradually narrowing distad. Right sacculus with a small thorn-like process. Left valve with two asymmetrical processes distad, the ventral larger than the dorsal process. Tegumen vesicular, wide. Uncus stout, bent ventrally with a large dorsal process. Vinculum wide, arched. Juxta asymmetrical, large, with a slender long arm and a stout, almost triangular arm. Aedeagus curved, small, conical.

Female genitalia (fig. 4): antrum curved, narrow with excavated ostium. Ductus bursae narrow, slender. Bursa copulatrix vesicular.



Fig. 4. *Chocophorus leptochorda*. Female genitalia, holotype (BMNH).

Signum in shape of a sclerotized ridge, longitudinally positioned in the bursa. Ductus seminalis originating near the junction between the ductus bursae and the bursa copulatrix. Lamina antevaginalis as an asymmetrical ridge along the ostium. Apophyses anteriores absent. Apophyses posteriores twice the papillae anales.

Ecology: the host plant is unknown. Moths were collected in February, April, May, June, August, October and November.

Distribution: Costa Rica (Juan Viñas, Palo Verde), Ecuador (Pichincha, Quevado) and Venezuela (Aragua).

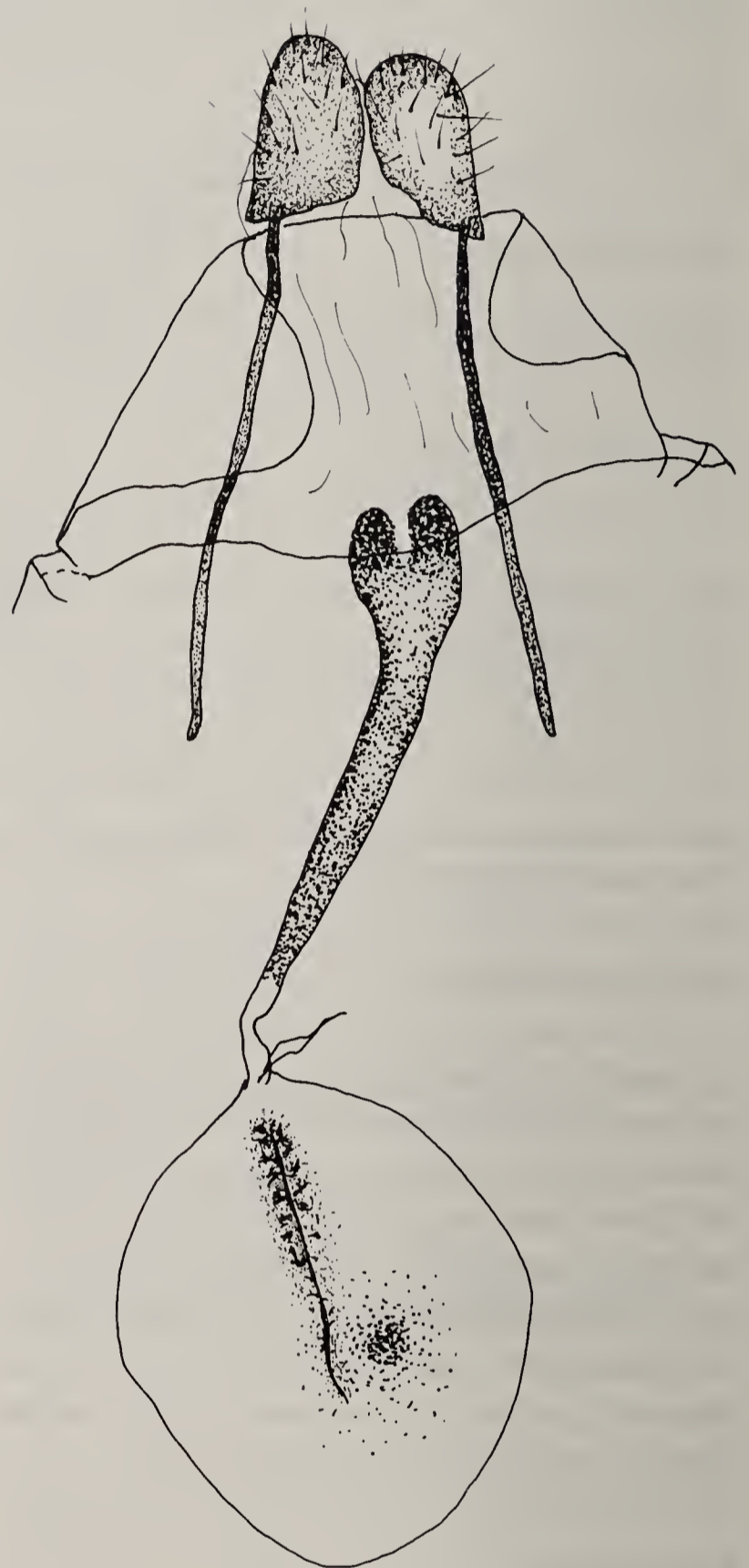


Fig. 5. *Chocophorus solisi* spec. nov. Female genitalia, holotype (USNM).

***Chocophorus solisi* spec. nov.**
(fig. 5)

Material

Holotype ♀: El Salvador, Cerro Verde, 6.viii.1967 (O.S. Flint Jr.), gent. CG 3356 (USNM).

Diagnosis

This species is characterized by its large size and chocolate brown colour of the markings.

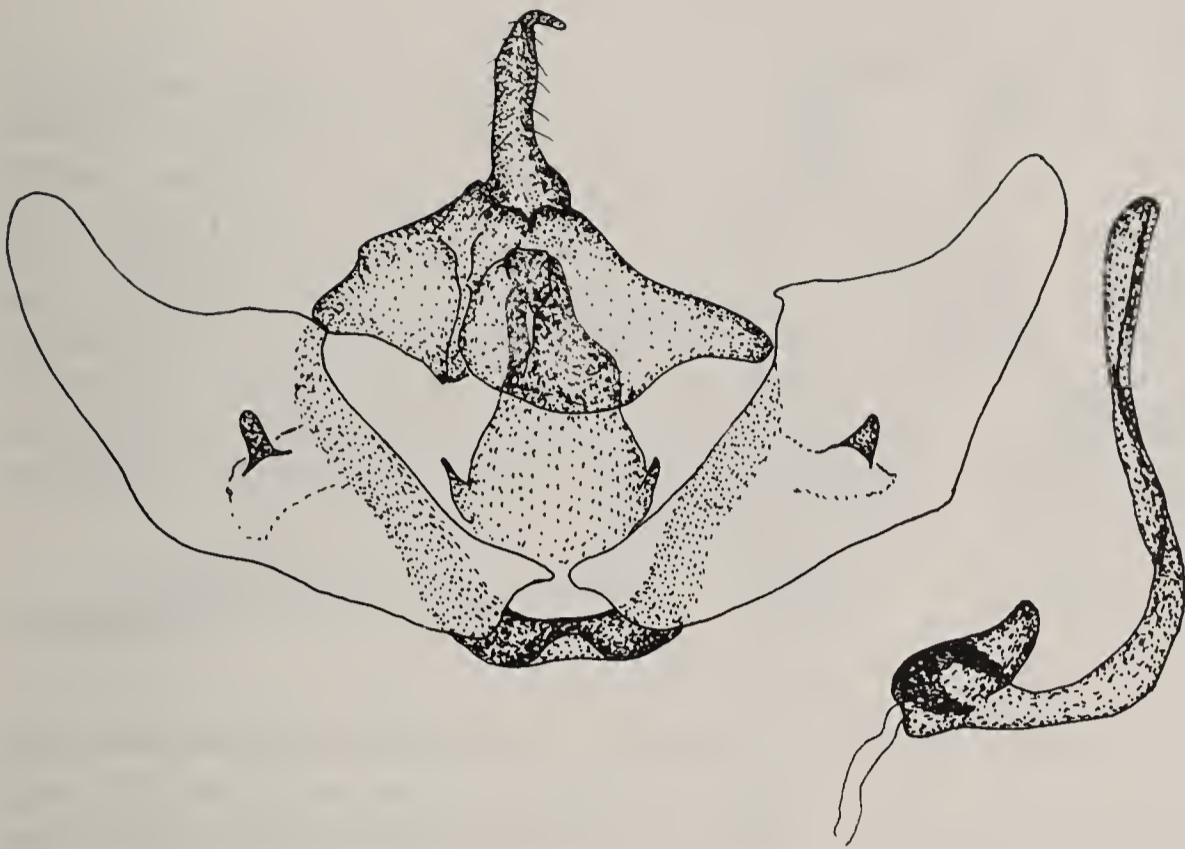


Fig. 6. *Chocophorus carabayus*. Male genitalia. Ecuador, Pichincha, Rd Quito/La Palma at km 79, 1650 m, 25.iii.1982 (N. Venedictoff), gent. CG 3358 (AME).

Description

Female. Wingspan 32 mm.

Head appressedly scaled. Head and collar with some erect filiform scales. Vertex pale brown. Face pale grey-brown. Between the basis of the antennae ferruginous-white. Palpi slender, curved up, as long as eye-diameter. The first segment ferruginous-white with drooping scales. Top of third segment brownish. Antennae dark brown with some pale brown scales, pectinate.

Thorax dark brown with a double central and a lateral white longitudinal line. Tegulae and centro-caudal part of thorax ferruginous pale brown. Mesothorax ferruginous pale brown with two dorsal lines centrally as on thorax. Legs pale ferruginous-brown, with longitudinal ochreous lines of scales. Hind legs with two pairs of spurs, both pairs of unequal length. Fore wings cleft from 2/3, pale to dark chocolate brown, interrupted by ferruginous parts. The paler parts are positioned as a baso-dorsal double line at the basal quarter of the wing; an incomplete transverse band at one third; and a transverse band at the center of the first lobe. A longitudinal pale line from the base of the wing up to the apex of the first lobe and a similar incomplete line in the second lobe. These lines are margined by dark brown scales, especially on the dorsal margin of this line. Pale scales around the base of the cleft as well as at the dor-

sum of the second lobe. Fringes dark brown with a ferruginous-white dash at the anal region of the first lobe, centrally at the dorsum of the first lobe and opposite at the costa of the second lobe, at the base of the cleft, at the anal region of the second lobe, and opposite the base of the cleft at the dorsum of the second lobe. Underside dark brown with pale markings as above in the first and second lobe. Hind wings ferruginous-brown. Fringes ferruginous dark brown, mixed with ferruginous white scales at the basal half of the dorsum of the third lobe. Underside dark brown, at the third lobe mixed with whitish scales. Venous scales dark brown, in a single row.

Male genitalia: unknown.

Female genitalia (fig. 5): antrum centrally positioned. Ostium with a slightly irregular shape, indented centrally. Antrum gradually progressing into the narrowing ductus bursae. Ductus seminalis originates near the bursa copulatrix. Bursa copulatrix vesicular, some spiculae present on the surface. Signum single, in shape of a longitudinal sclerotized ridge, with delicate lateral projections. Apophyses anteriores absent. Lamina ante-vaginalis well developed, slightly excavated. Apophyses posteriores well developed, three times papillae anales.

Ecology: host plants unknown. The moth was collected in August.

Distribution: El Salvador.

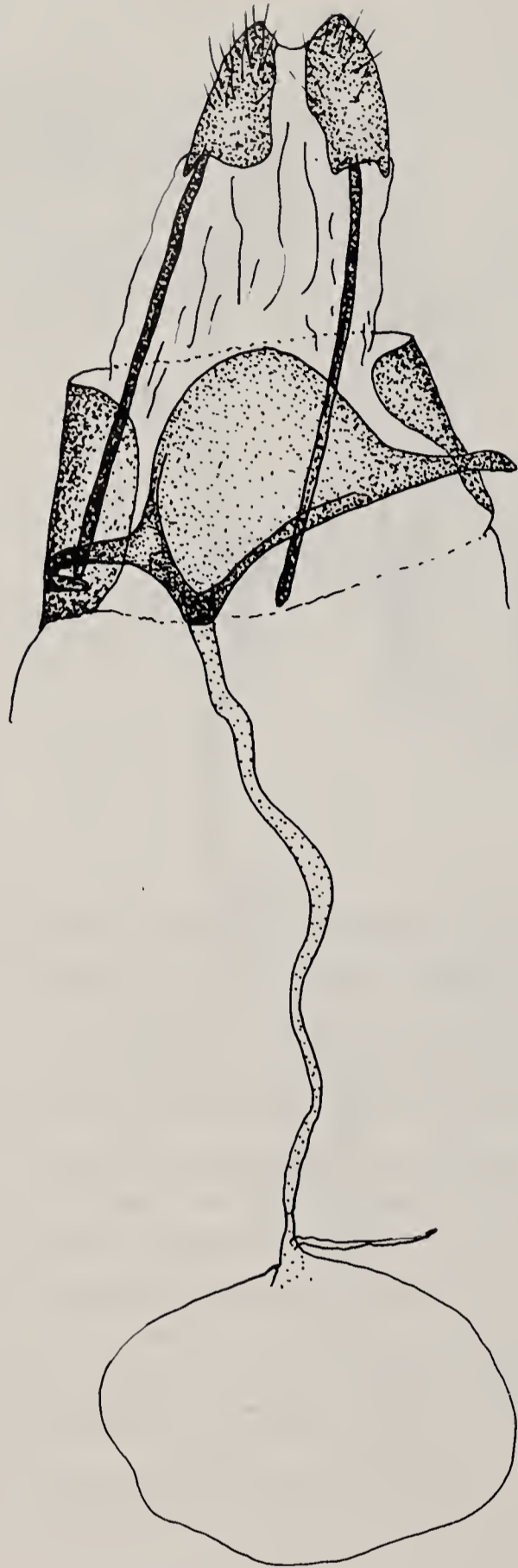


Fig. 7. *Chocophorus carabayus*. Female genitalia. Same data as fig. 6, gent. CG 3357 (AME).

Etymology: the species is named after Mrs. Alma Solis of the USNM, Department of Entomology.

Remarks: the species closely resembles *Chocophorus leptochorda*, differing by its considerable size and the chocolate brown instead of dark brown colour.

***Chocophorus carabayus* (Arenberger 1990)
comb. nov.
(figs 6-7)**

Pterophorus carabayus Arenberger 1990: 128.

Material

Holotype ♂: Peru, Carabaya, Oconegue, 7000 ft, dry season, vii.1904 (G. Ockenden), gent. BM 18613 (BMNH) [examined]. Paratype: 1 ♀, Peru, Carabaya, Agualani, 9000 ft, dry season, i.x.1905 (Ockenden), gent. Ar 3567 (BMNH) [examined]. Argentina: 1 ♀, Tuc, Taffi d. Valle, 2500 m, 6-8.1.1970 (Vardey & Arguindeguy) at light, gent. CG. 5030 (BMNH). Ecuador: 3 ♂, 1 ♀, Pichincha, Road Quito/La Palma at km 79, 1650 m, 25.iii.1982 (N. Venedictoff), gent. CG 3358 (♂), 3357 (♀) (AME; CG); 1 ♂, Pichincha, Road Quito/Chiriboga at km 40, 2480 m, 22.iii.1982 (N. Venedictoff) (AME).

Diagnosis

This species is characterized by the dark chocolate to grey-brown colour of the fore wing, alternated with bright white transverse patches and by the wide white transverse field in the first lobe of the fore wing.

Redescription

Male, female. Wingspan 15-19 mm.

Head appressedly scaled, grey-white mixed pale ferruginous. Some erect scales at the collar. Face grey-brown. Area between the base of the palpa bright white. Palpi protruding grey-brown. Antennae grey-brown, shortly ciliated.

Thorax and tegulae pale ferruginous-white with dorsal and lateral pale ferruginous longitudinal lines. These lines continue on the mesothorax and abdomen. Hind legs grey-white with a dark brown ring just before the first spur pair and terminally on the tibia. Tarsal segments basally white, distally dark brown. Both spur pairs of unequal length. The spurs of the first pair slightly longer than the distal pair. Fore wings cleft from half the wing, dark chocolate grey-brown. Wing base with numerous longitudinal white lines converging into a single spot. The transverse band at one third of the wing, complete. The dark brown spot before the base of the cleft continues into both lobes as a single grey-brown line to both apices. These grey-brown lines are margined white costally and dorsally. The central half of the first lobe shining white. Fringes grey-brown, interrupted, white at the region of the



Fig. 8. *Chocophorus venedictoffi* spec. nov. Male genitalia, holotype (AME).

anal angle of both lobes, at the costa of the first lobe and the opposite dorsum and costa of the second lobe; some white fringe hairs at the base of the cleft and at the dorsum of the second lobe opposite the base of the cleft. Underside dark brown with white scales, centrally at the costa of the first and isolated in the second lobe. Hind wings dark ferruginous-brown, slightly mixed ochreous-brown in first lobe basal half. Fringes grey-brown; white dashes at the anal regions of the first and second lobe and at the apex of the third lobe. Underside dark brown, slightly paler in the third lobe. Venous scales black, in a single row.

Male genitalia (fig. 6): valvae symmetrical. In the valvae a asymmetrical small saccular process, slightly larger in the right valve than in the left valve. Tegumen moderately arched, with a short, stout uncus. Vinculum arched, without a pronounced saccus. Juxta asymmetrical, moderately developed. Aedeagus slightly curved, without cornutus.

Female genitalia (fig. 7): antrum slightly asymmetrical, left laterally positioned. Ostium funnel-shaped. Ductus bursae slender, progressing in the vesicular bursa copulatrix. Ductus seminalis originates at the junction of the ductus bursae and bursa copulatrix. Lamina ante-vaginalis poorly developed. Lamina post-vaginalis as a well developed, arch-like, sclerotized process. Apophyses anteriores slender, as long as papillae anales.

Apophyses posteriores well developed, twice the papillae anales.

Ecology: host plant unknown. Moths were collected in January, March, July and September.

Distribution: Argentina, Ecuador (Pichincha) and Peru (Carabaya).

Remarks: this species shows a slight variation in the development of the genitalia. In the male genitalia the small saccular processes are better developed in the specimens from Ecuador than in those from Peru. In the female genitalia the lamina post-vaginalis plate is slightly bigger and more sclerotized in the specimens from Ecuador than in those from Peru and Argentina.

***Chocophorus venedictoffi* spec. nov.**
(figs 8-9)

Material

Holotype ♂: Ecuador, Pichincha, Road Quito/Chiriboga at km 40, 2480 m, 22.iii.1982 (N. Venedictoff), gent. CG 3361 (AME). Paratype: 1 ♀, Ecuador, Pichincha, Road Quito/La Palma at km 79, 1650 m, 25.iii.1982 (N. Venedictoff), gent. CG 3360 (AME).

Diagnosis

This species is characterized by the dark brown colour and the almost complete absence of white markings in the first lobe of the fore wing.

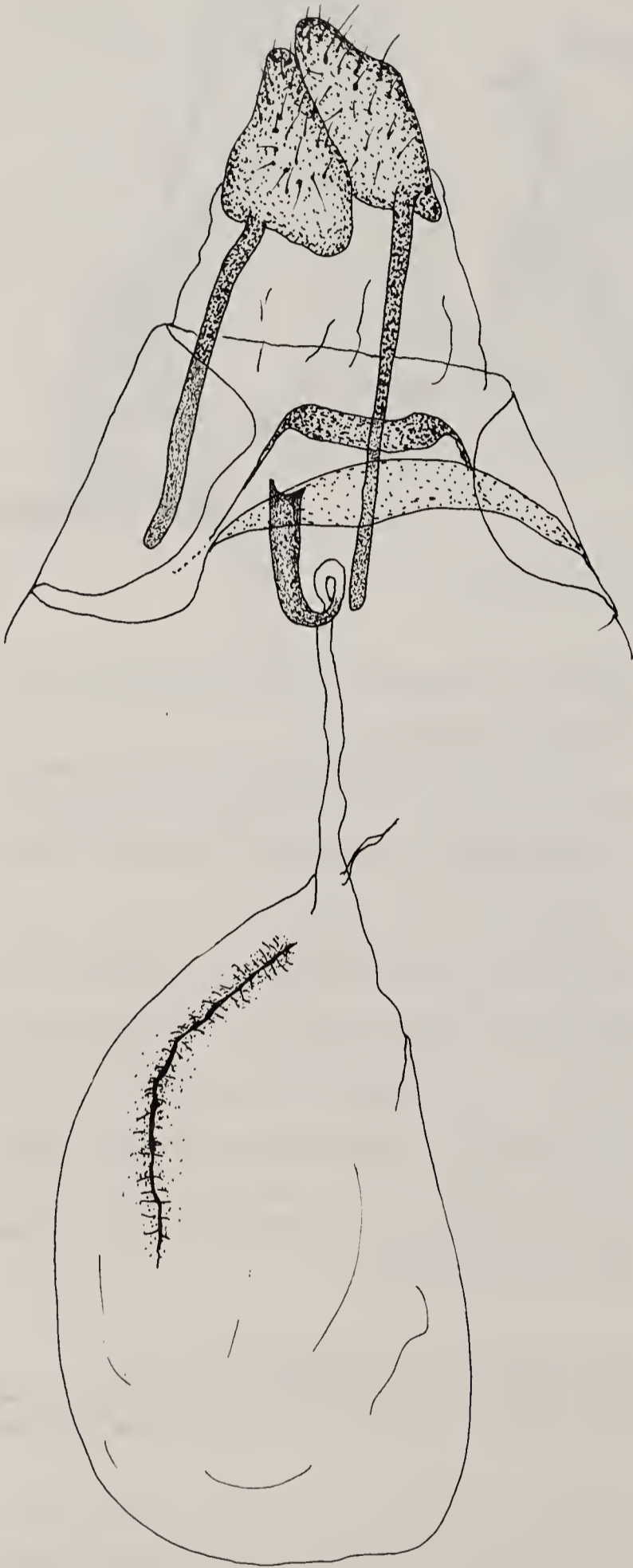


Fig. 9. *Chocophorus venedictoffi* spec. nov. Female genitalia, paratype (AME).

Description

Male, female. Wingspan 18-20 mm.

Head appressedly scaled, mixed grey-white and dark brown. Face dark brown, slightly paler between the antennae. Palpi slender, protruding slightly over eye-diameter; collar grey-brown. Antennae grey-brown, shortly ciliated.

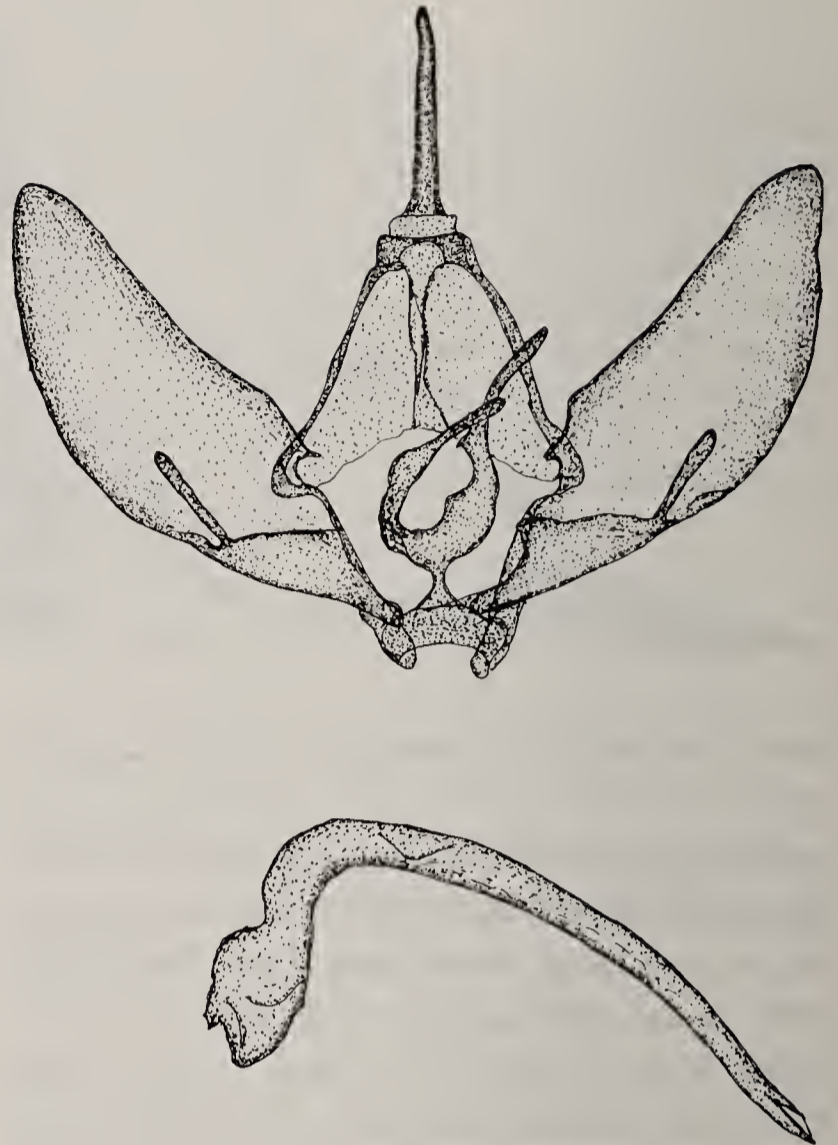


Fig. 10. *Chocophorus alternaria*. Male genitalia. Ecuador, Gauchayacu, ix-x.1926 (Vorbeck), gent. CG 4073 (ZMUC).

Thorax dark brown with faint white-brown longitudinal lines, two at the dorsum and one laterally. The thoracic lines continue along the mesothorax and the abdomen. Hind legs dark brown, slightly paler at the proximal parts of the tibiae and tarsal segments, as well as at the tibial segment directly beyond the base of the first spur pair. Hind legs with two spur pairs, both pairs of unequal length. Fore wings cleft from $2/3$, dark chocolate brown with ferruginous-white faint lines at the base of the wing. An indistinct, slightly oblique ferruginous-white transverse marking at one third of the wing length. This marking continues as a narrow white line in the first lobe. Scattered white scales at the costa and the dorsum of both lobes. Fringes dark brown, mixed with long white fringe scales at the anal region of both lobes, the center of the first lobe dorsum and the costa of the opposite part of the second lobe, at the base of the cleft, and just beyond the base of the cleft at the dorsum of the second

lobe. Underside dark brown with some isolated white scales near the apex of the first lobe. Hind wings dark brown, one third of the lobe slightly paler. Fringes dark brown with faint pale dashes at the center of the dorsum of the first and second lobe and at one third of the dorsum of the third lobe. Underside dark brown. Venous scales black, in a single row.

Male genitalia (fig. 8): slightly asymmetrical. The left valve slightly wider than the right valve. The top of the valvae progressing into a spine-like process. Tegumen arched. Uncus short, broad and curved. Anellus arms with asymmetrical processes. Vinculum arched, progressing into a blunt saccus. Aedeagus slender, curved and long. No cornutus.

Female genitalia (fig. 9): antrum asymmetrical, left laterally positioned. Ostium slightly excavated. Antrum gradually narrowing, three times longer than wide. Ductus bursae slender. Bursa copulatrix vesicular with a longitudinal ridge-like signum with lateral projections. Ductus seminalis originating from the junction between the ductus bursae and the bursa copulatrix. Lamina ante-vaginalis curved, little pronounced. Lamina post-vaginalis as a poorly sclerotized trapezoid ridge. Apophyses anteriores absent. Apophyses posteriores twice the length of the papillae anales.

Ecology: the host plant is unknown. The moths fly in March.

Distribution: Ecuador (Pichincha).

Etymology: the species is named after Mr Nadian Venedictoff, who collected the two only specimens known to us.

Chocophorus alternaria (Zeller, 1874)

comb. nov.

(figs 10-11)

Aciptilia alternaria Zeller, 1874: 447.

Aciptilia alternarius; Bourquin, 1949: 415-417.

Pselnophorus alternarius; Meyrick, 1908: 14; 1913: 20.

Material

Holotype ♂: Chile, Valparaiso, xi (Mathew), (BMNH) [examined]. Paratype ♀: data as holotype, (BMNH) [examined]. 86 ♂, 76 ♀, 2 without abdomen, from: Argentina, Chile and Ecuador (Gielis, 1991).



Fig. 11. *Chocophorus alternaria*. Female genitalia. Argentina, Buenos Aires, Ramos Mejia, 5.xii.1961 (Topal), gent. CG 4085 (ZMUC).

Diagnosis

Chocophorus alternaria is a distinct South American plume moth, recognized by its characteristic fringe pattern in the fore wing.

Redescription

Male, female. Wingspan 13-21 mm. Head appressedly scaled, pale grey and brown-grey. Palpi short, curved along face. Second segment roughly scaled, third segment

small. Antennae pale grey to pale brown-grey; shortly ciliated.

Thorax pale brown-grey. Abdomen pale brown-grey, with three longitudinal brown lines on upperside. First segment brownish. Underside unicolorous pale brown-grey. Fore wing cleft from 1/2, pale grey. Indistinct pale brown-grey scaling with increasing intensity toward base of cleft. Dark brown spots at dorsum at 1/3 and 1/2, and at costa above the base of the cleft. The end of the cell with indistinct group of dark brown scales. Dark brown and white scales along the dorsal margin of the first lobe. The fringes along costal margin of first lobe alternating dark brown and pale grey, with the dark parts above the base of the cleft, centrally and near the apex. Dorsal fringes of first lobe grey-brown. Costal fringes of second lobe with two alternating dark brown and grey-white patches, dark at the anal region. Dark and light fringes along the dorsal margin in a pattern reversed to that of the costal margin; anal part narrow, dark. Underside dark brown, with distinct fringe pattern as above. Hind wing brown-grey on basal half, gradually more brown towards termen. Fringes in all lobes near base grey, towards termen brown. Underside brown-grey. Venous scales black, in a single row, extending into the second lobe from the base of the cleft between lobe one and two up to half the second lobe. The intensity of the brown scaling may give the specimens a unicolorous dark brown appearance. The poorly defined cellular spot sometimes pronounced.

Male genitalia (fig. 10): genitalia symmetrical. Valvae trapezoid. Sacculus small, progressing into a dorsal process as long as sacculus. Tegumen bilobate, triangular. Uncus slender, moderate. Vinculum curved, narrow. Juxta moderate. Aedeagus hooked at basal 1/3. No cornutus. No coecum.

Female genitalia (fig. 11): antrum funnel-like, progressing into a slender and almost straight ductus bursae. Bursa copulatrix vesicular. Signum simple, in shape of an extended "}" (brace). Apophyses posteriores two and a half times longer than papillae anales. Apophyses anteriores absent.

Ecology: the moths were collected from October to February. Host plants: *Echium plantagineum* Linnaeus. The larvae feed on shoots and flowers. The life cycle lasts approximately 60 days (surroundings of Buenos Aires, Argentina). All stages can be found on the foodplant: eggs, larvae of different maturity, pupae and resting moths (Bourquin, 1949).

Distribution: Argentina (Chubut, Neuquen, Rio Negro, Santa Cruz, Buenos Aires), Chile (Aconcague, Atacama, Bio Bio, Concepcion, Coquimbo, Curico, Nuble, Osorno, Valparaiso, Santiago) and Ecuador (Guachayacu).

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