

# Caddis Flies (Trichoptera) from the Dominican Republic (West Indies). II. All families except Hydroptilidae; with general observations for Hispaniola

by Lazare BOTOSANEANU

## Abstract

This is the second part of the results of a travel (1995) to the Dominican Republic devoted to study of Trichoptera. All families except Hydroptilidae are dealt with; 30 taxa were recognized, several new for Hispaniola or for the Dominican Republic, 5 species and one subspecies being described as new for Science in the genera *Cariboptila*, *Chimarra*, *Antillopsyche*, *Hydropsyche*, and *Helicopsyche*. A final part of the paper deals with: diversity of the Caddis Fly fauna of Haiti, of the Dominican Republic, of Hispaniola as a whole; affinities and vicariance of the Hispaniolan fauna (some considerations on the origin of the Greater Antillean *Hydropsyche* and *Antillopsyche* are in the descriptive part); recognition in Hispaniola of two main zones with diverse, distinctive fauna and high level of endemism; the alarming problems concerning survival and protection of freshwater habitats and fauna in the two countries.

**Key words:** Trichoptera, taxonomy, faunistics, distribution, diversity, zones of endemism, fw fauna protection, Dominican Republic, Haiti, Hispaniola, Greater Antilles.

## Resumen

Segunda parte de los resultados de un viaje (1995) a la República Dominicana dedicado al estudio de los Tricópteros. Todas las familias, excepto los Hidroptílicos, son tratadas. Se reconocieron 30 taxones, algunos nuevos para La Española o la República Dominicana; cinco especies y una subespecie, pertenecientes a los géneros *Cariboptila*, *Chimarra*, *Antillopsyche*, *Hydropsyche* y *Helicopsyche*, son descritas como nuevas para la ciencia. En la parte final del artículo se abordan los siguientes aspectos: diversidad de la fauna de Tricópteros de Haití, de la República Dominicana, y de La Española en su conjunto; afinidades y vicarianza de la fauna de La Española (algunas consideraciones sobre el origen de los *Hydropsyche* y *Antillopsyche* de las Grandes Antillas se incluyen en la parte descriptiva); reconocimiento en La Española de dos zonas principales con una fauna diversa y peculiar, y un alto nivel de endemismo; los alarmantes problemas concernientes a la supervivencia y protección de los habitats y fauna de aguas dulces en ambos países.

**Palabras clave:** Trichoptera, taxonomía, faunística, distribución, diversidad, zonas de endemismo, protección de fauna de aguas dulces, República Dominicana, Haití, La Española, Grandes Antillas.

## Introduction

During April and May 1995 I made a trip to the Dominican Republic, devoted to intensive sampling of adult Caddis Flies. Sampling was performed with a portable UV-lamp in a significant number of carefully selected localities (springs, streams, upper reach of rivers) in the most promising mountainous or hilly zones of this beautiful country. In a previous paper (BOTOSANEANU, 1995) results of the study of the family Hydroptilidae are published. The present paper contains the results of the study of all remaining families, together with an account on the diversity and distribution of the Caddis Fly fauna of Hispaniola (Haiti and the Dominican Republic being compared) and on the serious problems concerning survival and protection of the freshwater habitats and fauna of the island. 30 different taxa were recognized during this study, several new for Hispaniola or for the Dominican Republic, 5 species and one subspecies being described as new for Science; the names given to these 6 new taxa are names of "non-hopeful monsters" in Aristoteles, Plinius, or Solinus (apud Petrus Candidus: De animantium naturis; Codex Urb. lat. 276, Bibliotheca Vaticana). The material (about 2,800 specimens) is entirely preserved in alcohol; holotypes and allotypes of the new taxa are kept, like most other specimens, in the Zoological Museum of the University of Amsterdam; a number of specimens (27 species) were placed in the Institut Royal des Sciences Naturelles, Brussels. Specimens of the new taxa here described, independently caught in the Dominican Republic by Dr. O.S. FLINT, jr., and kept in the NMNH (Smithsonian Institution, Washington) were labelled as paratypes.

### List of sampling localities

#### CORDILLERA CENTRAL

I. Arroyo Los Dajaos, in Sección Manavao-Los Dajaos of Jarabacoa. A tributary of Rio Yaque del Norte in its upper reach, at ca. 1000-1100m. a.s.l. This is a large stream (metarhithral, ca. 5 m. broad) flowing here through a forested valley (*Pinus occidentalis*). 24.04.1995.

II. Arroyo El Dulce, in sección Manavao-Los Dajaos of Jarabacoa (hamlet Arroyo El Dulce). A tributary of Arroyo Los Dajaos, being a very small streamlet (epirhithral?) flowing on a bed chaotically filled with enormous blocks, through rainforest. 26.04.1995.

III. Jarabacoa-Los Dajaos. Insects sampled in house. 24.04.1995.

IV. Rio Yaque del Norte, the most important water course draining Cordillera Central, and one of the largest of the country, at La Ciénaga, a short distance W from Jarabacoa-Manavao. The beautiful river is here clearly in its hyporhithral zone. 25.04.1995.

V. Arroyo Manuel Estrella, at the eastern limits of Parque Nacional Armando Bermudez. This tributary of Rio Los Guanos (which is in its turn tributary of R. Yaque del Norte) was sampled near the main entrance to the Parque (Ciénaga entrance), at ca. 1200 m. a.s.l. Metarhithral. 25.04.1995.

VI. Salto de agua Bayguate, a fine waterfall about 15 m. high, on Rio Bayguate, in Jarabacoa - Sección Pedernales, at some 550-600 m. a.s.l. This small river - which joins Rio Jimenoa before reaching R. Yaque del Norte - flows through a secondarily forested, rocky valley. 10.05.1995.

VII. Small madicolous habitat on road between Jarabacoa and Constanza, not far from "El Salto" (Salto Jimenoa). 11.05.1995.

VIII. Salto Agua Blanca, a magnificent double waterfall with a very large pool at its base, ca. 3 km from the pueblo Convento, accessible on a difficult road from Constanza. The waterfall is in rainforest, on the course of Rio Grande (Rio del Medio). About 1500 m. a.s.l. 11.05.1995.

IX. Springbrook with aquatic vegetation some 150 m. from Salto Agua Blanca, on the road to pueblo Convento. 11.05.1995.

#### CORDILLERA SEPTENTRIONAL

X. Arroyo Los Guineos, a tributary of Rio Nagua. Flowing from the southern slopes of Loma Quita Espuela - a mountain about 930 m. high - this large stream (metarhithral) with warm water rapidly flowing under forest cover on a bed filled with large boulders, is accessible on the road from San Francisco de Macoris towards the Loma. Ca. 250 m. a.s.l. 27.04.1995.

#### SIERRA DE AGUA

XI. Arroyo Los Verros, a tributary of Rio Comatillo

which joins Rio Comate. This locality is situated S from Parque Nacional Los Haitises, in the NE part of the country, and is accessible from Bayguana - Comatillo - Sierra de Agua. It is one of the strong resurgences fed by water infiltrating the karst of Los Haitises; the manantial, in fine primary forest, immediately takes the shape of a stream 3-6 m. broad, slowly flowing on sand with limestone blocks. The altitude is probably about 200 m. a.s.l. Sampled at the point of resurgence. 29.04.1995.

#### SIERRA DE NEIBA and SIERRA DE BAORUCO

XII. An important complex of springs and springbrooks ("cachónes") in the small town La Descubierta, on the northern shores of Lago Enriquillo, and S from Sierra de Neiba. These are, like several others along the northern shores of Lago Enriquillo, resurgences of subterranean water stored in Sierra de Neiba, the complex in La Descubierta being possibly the most important one (and one not yet completely destroyed by man's activities!). The water of relatively low temperature flows rapidly on limestone boulders and pebbles, the well shaded streamlets collecting spring water being 2-6 m. broad. The locality is below sea level. 6.05.1995.

XIII. Rio Mulito, which is, after joining Rio Bonito, a tributary of Rio Pedernales in Sierra de Baoruco, at ca. 2 km from the village Mencia de Pedernales and about 6-7 km from its springs. This beautiful small river of karst zone in the extreme SW of the country flows through rainforest; it is about 5-10 m. broad, with alternating turbulent and laminar stretches, with boulders and respectively sand and gravel. Ca. 250 m. a.s.l. 5.05.1995.

XIV. "La Aguita", strong reocene spring flowing on steep limestone slope in Sierra de Baoruco near road from Pedernales to loc. XIII (ca. 1.5 km before reaching Rio Mulito).

XV. Arroyo San Rafael. Short (ca. 1.5 km), strong and swift stream fed by a strong spring in Sierra de Baoruco. The stream flows through dense forest, on a bed filled with sand, large stones and boulders, and ends in the Caribbean Sea at Playa San Rafael (between Baoruco and Paraiso, S from Barahona). Sampled at ca. 20 m. a.s.l. 4.05.1995.

Only the numbers of the sampling localities will be further mentioned under "Material".

#### Systematic part

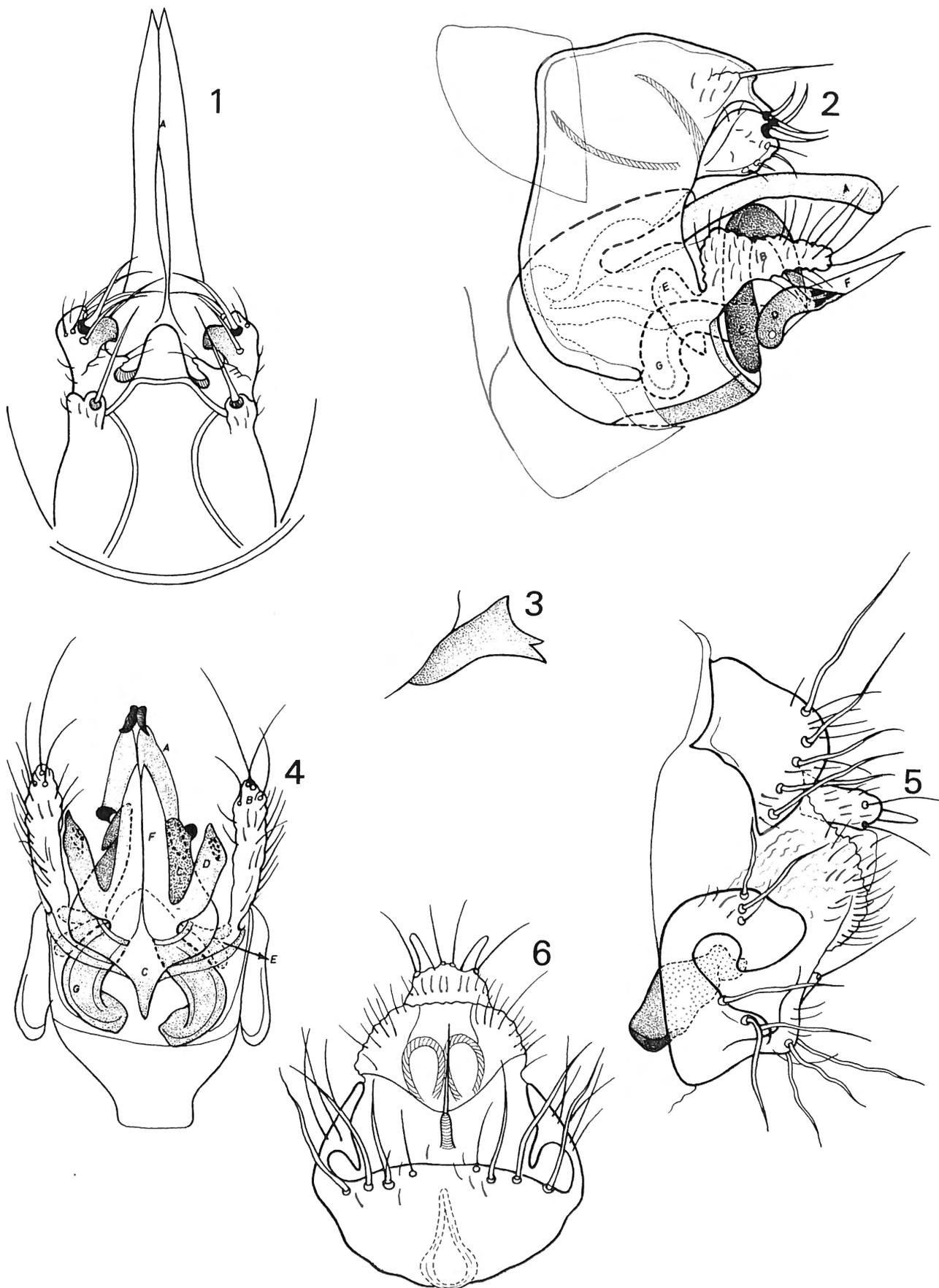
#### GLOSSOSOMATIDAE PROTOPTILINAE

#### *Campsiophora pedophila* FLINT, 1964

*Material:*

VI: 3 ♂.

Described from Puerto Rico and sampled also from Haiti (BOTOSANEANU, 1991).



Figs 1-6. – *Cariboptila caab* BOTOSANEANU, n. sp. (1-4: male genitalia, dorsal - including appendages "A" from ventral complex -; lateral; appendage "D" in lateral view but under different angle; and ventral complex in ventral view; 5-6: female genitalia, lateral and ventral).

**Cariboptila hispaniolica** FLINT, 1974*Material:*

I: 253 ♂; II: 3 ♂, 1 ♀; IV: 111 ♂ + ♀; V: 11 ♂.

Described (FLINT, 1974) from the Dominican Republic and not (yet) found outside this country; all known localities are in Cordillera Central. Females were considered as belonging to this species only when there were no males of other Protoptilines in the sample (see below).

**Cariboptila aurulenta** FLINT, 1974*Material:*

I: 11 ♂; V: 11 ♂.

Observations on the known distribution of this species perfectly coincide with those made (above) for *C. hispaniolica*. Both species can coexist, *aurulenta* being less frequent and abundant.

**Cariboptila caab** BOTOSANEANU, n. sp.  
(figs. 1-6)*Material:*

XII: 62 ♂ (holotype and paratypes), 54 ♀ (allotype and paratypes); XIII: 6 ♂ paratypes, 171 ♀ (not designated as paratypes, because I am not quite sure that all females in this sample belong to this species). Moreover, in the NMNH: 98 ♂, 110 ♀ paratypes from "Rio Mulito, 14 May 1995, O.S. FLINT".

*Description:*

Length of forewing: 2.2 - 2.7 mm in the ♂, 2.6 - 3.1 mm in the ♀. Hindwings with costal margin strongly depressed in its distal 2/3, and basad from this depression with two rows of rather long, stiff bristles. Scapus of male antenna laterally concave. Both sexes with a "tooth" on sternite VI (longer in the ♂, very short in the ♀) with thickened base.

*Male genitalia.*

Segment VIII not modified. Segment IX laterally well developed but not protruding proximad, its upper parts strongly protruding above the "genital capsule"; dorsum IX on each side with nipple offering insertion to a strong seta, medio - apically with an ogival lobe - rather short but relatively broad. The limit between segment IX and dorsum X is clearly distinct, this dorsum represented on both sides of the medio - apical lobe of segment IX by an appendage with complex structure, consisting of several small, setose lobes (setae smaller or stronger), and medio-apically with a dark, smooth prong with minute point directed proximad. The "ventral complex" is of an extremely complicated structure, the ventral parts of segments IX and X, the gonopods, and the phallic apparatus being probably all involved in its formation; its appendages are mainly strongly sclerotized and dark or very dark.

In order to facilitate recognition of the various appendages, these have been marked with letters in the figures 1, 2 and 4. The dorsalmost appendage is "A", not connected to the remaining appendages; in lateral view this looks like a strong rod slightly curved ventrad and with blunt apex, but we have here in fact a pair (fig. 1) of long, contiguous blade-like appendages. Also the laterally placed and low-lying flaps "B" are not connected to the remaining appendages; they are small, narrow, with short handle, very setose, and their position suggests (more than in other *Cariboptila*) that they may belong to segment IX. All other parts of the complex are interconnected and very dark (excepting the paler "F"). "C" is a pair of very strong roots from a common root, with vertical basal part, strongly downward curved distal part, each hook finishing in two points (fig. 4); they may be quite tentatively assimilated to the gonopods. "D" is a pair of ventrally placed, strong, divergent appendages with apices split into several points (fig. 3); these appendages originate from the basal part of "F", and they are possibly the most conspicuous part of the genitalia when these are observed on non-prepared specimens. Turning now to "F", we have here a pair of paler blades with sharp tips, more ventrally and medially placed than "D". Appendages "C", "D", and "F" lean basally on "G", a pair of strong, strongly curved roots (figs 2, 4). And, apparently connected with "G", on each side is a small, twisted, sclerotized appendage ("E").

*Female genitalia.*

See figures 5 and 6.

*Notes*

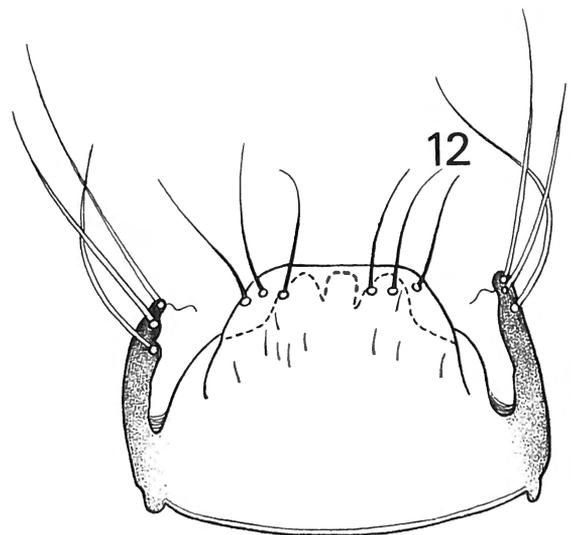
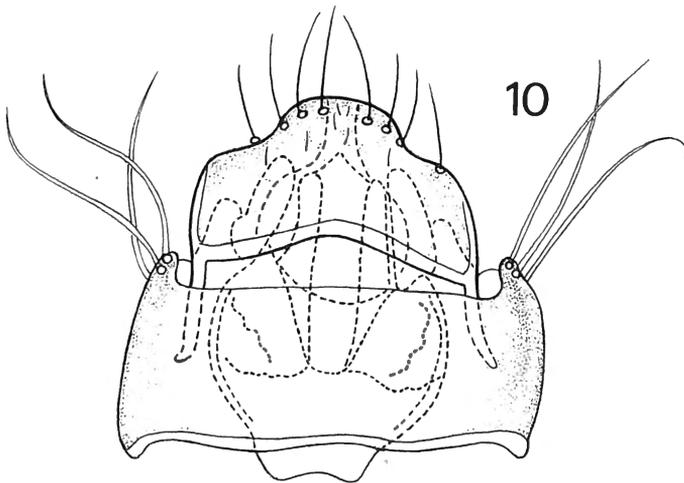
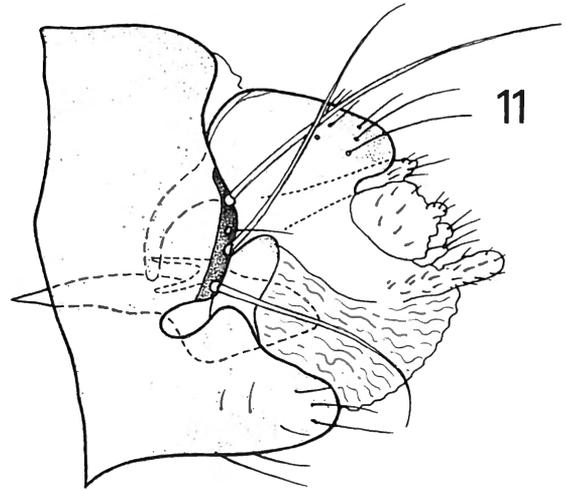
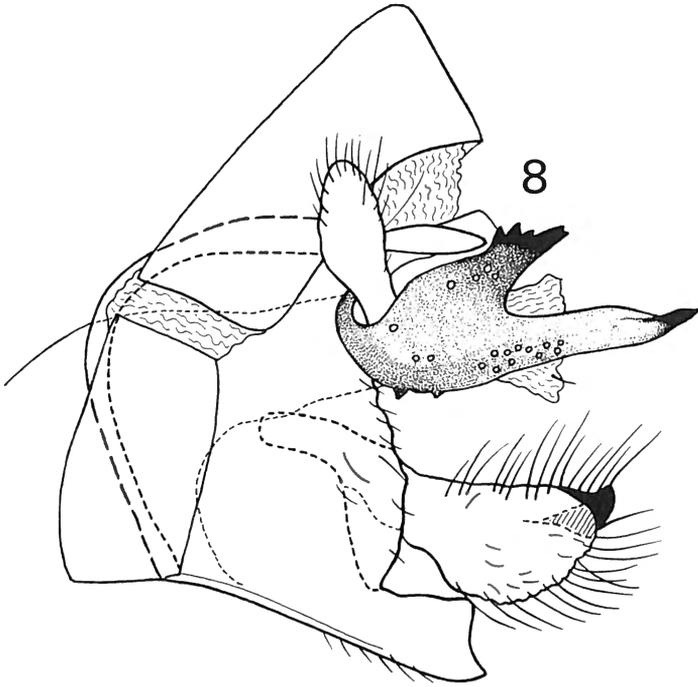
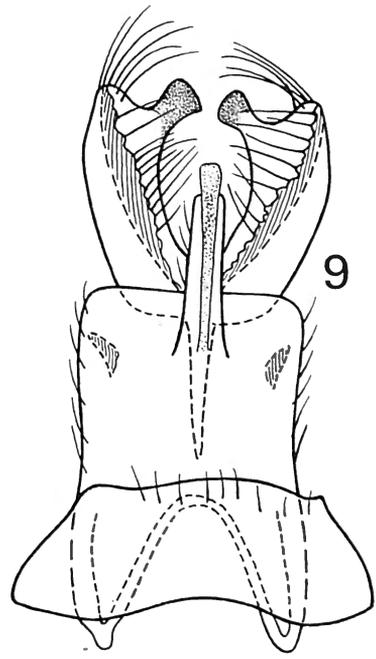
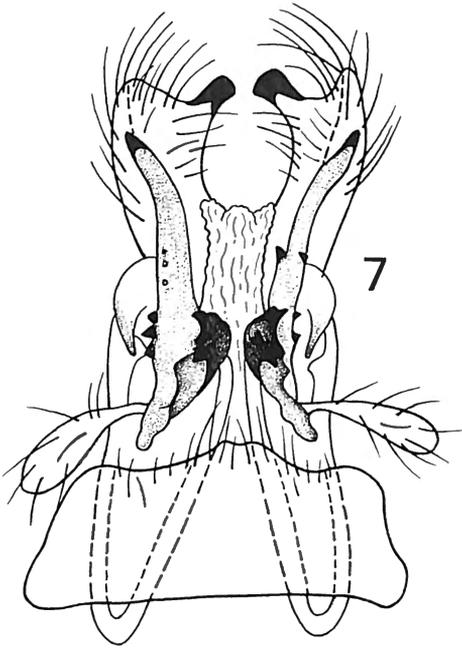
I am unable to say anything about the affinities of this very distinctive species. *Cariboptila caab* n. sp. was caught only in the mountains in the SW corner of the Dominican Republic; I strongly suspect that it inhabits also at least the mountains of SE Haiti. This species apparently does not coexist with the other three representatives of the genus in the Dominican Republic, all with known distribution in the Cordillera Central.

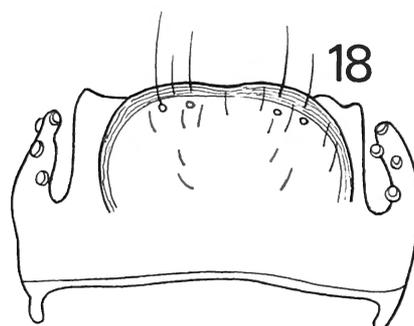
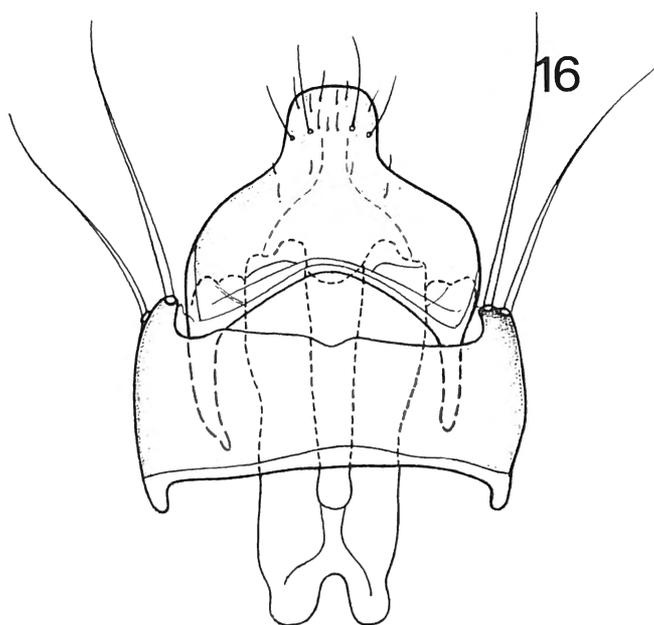
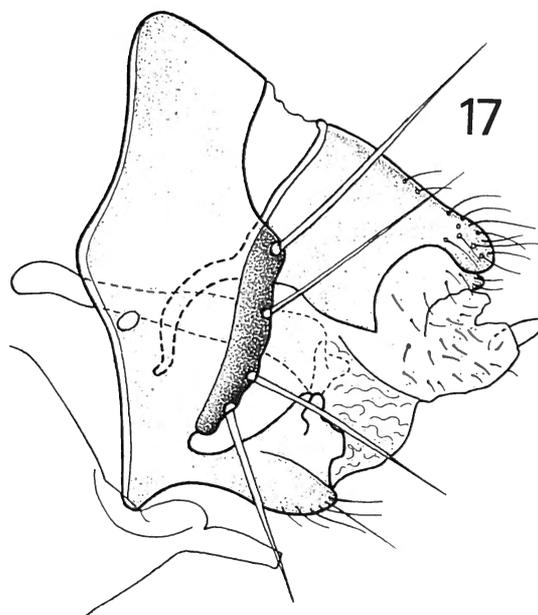
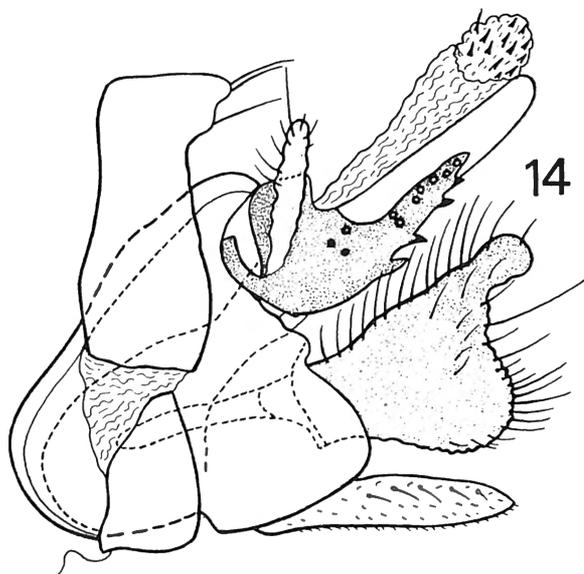
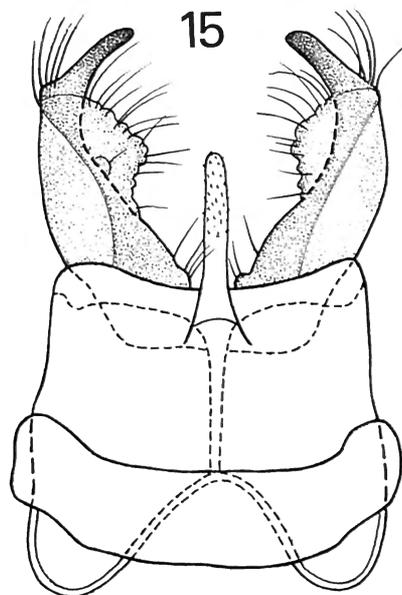
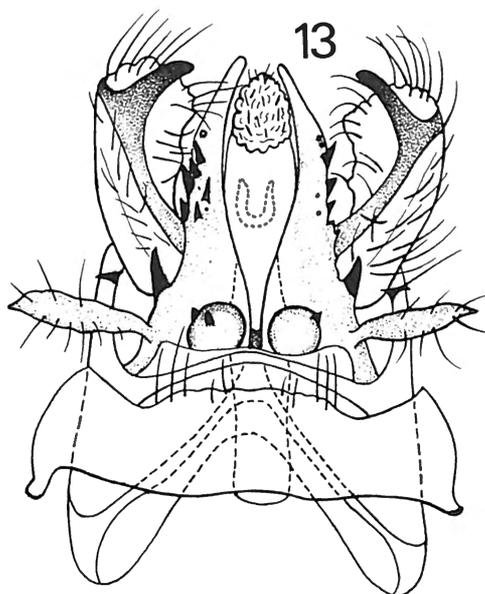
**Protoptilinae** (♀♀) indet.

It was impossible - or it would have asked too much time - to correctly associate female specimens from several samples. I: 332 ♀, certainly mixture of *Cariboptila hispaniolica* and *C. aurulenta*; V: 110 ♀, same situation; VI: 120 ♀, very probably mixture of *Campsiphora pedophila* and *Cariboptila* sp. or spp. ; X: 1 ♀.



Figs 7-12. - *Chimarra koki* BOTOSANEANU, n. sp. (7-9: male genitalia, dorsal, lateral, ventral; 10-12: female genitalia, dorsal, lateral, and sternite VIII).





## PHILOPOTAMIDAE

*Chimarra redonda* BLAHLNIK, i. l.*Material:*

V: 10 ♂, 2 ♀ paratypes.

This species, belonging like the two which will be here described, to the *patosa* species-group, will be described from the Dominican Republic.

*Chimarra koki* BOTOSANEANU, n. sp.  
(figs 7-12)

*Material:*

V: 19 ♂ (holotype and paratypes), 7 ♀ (allotype and paratypes). Moreover, in the NMNH: 3 ♂, 1 ♀ paratypes from "Monseñor Novel, nr. Jima [Rio Juma? note L.B.], 670 m., 6 May 1995, O.S. FLINT".

*Description.*

Length of forewing: 4-5 mm in the ♂, 4.8-5 mm in the ♀. A light brown species. No abdominal sternal tooth in the ♂; a tooth on sternum VII in the ♀.

*Male genitalia.*

Tergite VIII posteriorly modified, with rather slightly developed median projection flanked by shallow sinuses. Segment IX dorsally reduced to a narrow bridge, normally developed laterally, not strongly protruding posteriorly in lateral view, in ventral view elongate, rectangular; sternal appendage short but very strong, in lateral view apically truncate and slightly bilobed, in ventral view showing a relatively complex structure (in two levels). Cerci rather broad, rooted on segment X. Segment X strongly sclerotized, in lateral view divided by a deep sinus in a stout upper branch distally split in several points, and a much longer and somehow more slender lower branch ending in a sharp point (both branches with a number of irregularly placed minute points on their surface); in dorsal view both upper and lower branches apically diverging. Inferior appendages in dorsal and ventral view apically very distinctly bilobed, outer lobe of simple shape, inner lobe developed as strong, dark, angular prong (in lateral view this prong looks like a strong, dark point placed in the dorso-distal angle of the stout, roughly rounded gonopod). Apparently nothing particular in the structure of the phallic apparatus.

*Female genitalia.*

Correct association of the ♀ was a problem, because in the type locality *C. koki* n. sp. coexists with the related *C.*

*redonda* BLAHLNIK. I could associate it in the following manner: the head and thorax of males of the two species from the same locality were compared, with the result that a subtle difference was found in the pattern of the mesonotum; the same subtle difference was subsequently found between the females; examination of genitalia of female specimens belonging to the two species enabled me to find small, but consistent, differences in segment IX in lateral view. The genitalia of *C. koki* n. sp. are here illustrated (figs 10-12), and Dr. R. BLAHLNIK informs me that he describes the female of *C. redonda*.

*Notes.*

Like two other *Chimarra* species recorded in the present paper, this new species belongs to the *patosa* species-group, rather well represented in the Greater Antilles. It may be distinguished from all already described species by numerous characters of the male genitalia (especially segment X, inferior appendages, sternal process on segment IX ...); in my opinion, there is no really close relationship with any described species, although some characters are shared with the eastern Cuban *C. garciai* BOTOSANEANU, 1980. *C. koki* is presently known only from Cordillera Central.

*Chimarra spinulifera* FLINT, 1968*galalcha* BOTOSANEANU, n. ssp.

(figs 13-18, prepared from holo- and allotype)

*Material:*

II: 9 ♂, 2 ♀ paratypes; X: 42 ♂ (holotype and paratypes), 80 ♀ (allotype and paratypes). Moreover, in the NMNH: 41 ♂, 56 ♀ paratypes from "La Vega Prov., Rio Baiguate, 520 m., 1-2 km S Jarabacoa, 8-9 and 19-21 May 1995, O.S. FLINT"; 14 ♂, 2 ♀ paratypes from "La Vega Prov., Arroyo Guasara, 680 m., 9.5 km W Jarabacoa, 19 May 1995, O.S. FLINT"; 1 ♂, 1 ♀ paratypes from "Small streamlet at Pedregal Arriba, 5 km S of Jarabacoa on road to El Rio, 8-20 May 1995, O.S. FLINT".

*Description.*

Length of forewing: 3.35-3.9 mm in the ♂, 3.6-4.3 mm in the ♀. A light brown species, but ♂ and ♀ genitalia mainly dark brown. Pilosity of the wings rather caducous in alcohol. No abdominal sternal tooth in the ♂; a strongly developed tooth on sternum VII in the ♀.

*Male genitalia.*

Tergite VIII modified, posteriorly with transversally very well developed but also very short median projection flanked by distinct sinuses. Segment IX dorsally reduced to a narrow bridge, normally developed laterally, in lateral view with very obtuse posterior projection; in ventral view stout, roughly square; sternal appendage well developed but not very strong, apex ogival. Cerci narrow, firmly rooted on segment X. Segment X entirely split in two long appendages which are rather broad basally and tapering to the almost pointed, convergent apices; they



Figs 13-18. — *Chimarra spinulifera galalcha* BOTOSANEANU, n. ssp. (13-15: male genitalia, dorsal, lateral, ventral; 16-18: female genitalia, dorsal, lateral, and sternite VIII).

are entirely sclerotized, although their lateral parts are distinctly darker than the rest (this being better seen in fig. 14 than in fig. 13); medio-proximally a pair of large, strongly sclerotized, round "warts", each with a small number of minute points (in lateral view these warts have an angular shape); slightly more distally on each side a strong spine quite laterally placed; and distally on the darker parts of the segment X halves, a variable number of shorter, dark spines. Inferior appendages in lateral view strongly bilobed, the two lobes quite dissimilar: shorter lower lobe very broad (rounded), more strongly projecting upper lobe much narrower, dark, bluntly ending; in ventral and dorsal view lower lobe strongly projecting mediad and with irregular margins, upper lobes slender, strongly convergent. The most distinctive feature of the phallic apparatus is the membranous apical part with numerous minute spines (nothing like a pair of apicolateral plates could be seen); only a very indistinct and simple, horseshoe-shaped internal structure could be observed.

#### *Female genitalia.*

Segment VIII devoid of apodemes, with strongly thickened, dark, latero-distal zone with 4 very long setae; this zone separated by a deep, narrow sinus from the sternite represented mainly by a broad, dark plate with rounded margins. Segment IX well developed, with very strong, rather broad, medio-distal projection and short, curved apodemes. Internal sclerites of characteristic shape (fig. 16), their apical part intimately connected with segment VIII.

#### *Notes.*

The correct systematic ranging of this *Chimarra*, obviously belonging to the *patosa* species-group, is not an easy problem. It is clearly very close to *C. spinulifera* FLINT (FLINT, 1968) described from a unique male specimen from "Haiti, Roche Croix, Mt. La Hotte, 4000 ft.", collected in 1934 by P.J. DARLINGTON and kept in the M.C.Z.; the La Hotte mountains are in the easternmost part of the Péninsule du Sud of Haiti. To a slightly lesser degree it also resembles *C. cubanorum* BOTOSANEANU (BOTOSANEANU, 1980) from eastern Cuba. By examining my drawings (figs 13-15) Dr. R. BLAHNIK reached the conclusion that they represent *C. spinulifera*, be it with one difference concerning the medio-basal "spines" on segment X; whereas Dr. O.S. FLINT found, like me, that they represent a new species. I finally decided to describe the taxon from Cordillera Central and Cordillera Septentrional of the Dominican Republic as new subspecies of *C. spinulifera*, to be distinguished, in the male, from *C. spinulifera spinulifera* by a modified tergite VIII, more slender appendages in which segment X is split, wart-like medio-proximal thickenings on segment X with only minute points, maybe a broader lower lobe of the gonopod, and apparently (?) a distinct structure of the phallus. The variability in this species seems to be worth further sampling and research: vide infra!

***Chimarra spinulifera spinulifera* FLINT, 1968**  
- or intermediate between *C. spinulifera spinulifera*  
and *C. spinulifera galalcha* BOTOSANEANU, n. ssp

#### *Material:*

XV: 1 ♂.

#### *Notes*

The genitalia of this unique male caught in a locality in Sierra de Baoruco, distant from all those where *galalcha* n. ssp. was sampled, and at short distance from the border with Haiti (Péninsule du Sud), have several characters either well corresponding to those described in *spinulifera* from Massif de la Hotte (halves of segment X with well developed membranous median zone, and with apex exactly like in fig. 7 in FLINT, 1968), or intermediate between it and the newly described subspecies (tergite VIII only very slightly modified; wart-like medio-proximal thickenings on segment X conical in lateral view, one of them with rather long spine).

#### ***Chimarra gilvamacula* FLINT (i.l.)**

#### *Material:*

XI: 10 ♂ paratypes (and 9 ♀); XIII: 9 ♂ paratypes (and 43 ♀).

I had identified these specimens as *C. braconoides* WALKER, 1860 (type species of sg. *Curgia*, described from the Dominican Republic), despite slight differences distinguishing them from the illustration in BETTEN & MOSELY (1940). But Dr. O.S. FLINT has pointed my attention to the fact that two very closely related species are present, one of them being *braconoides*, and has sent me his drawings of one new species he describes in a revision of the subgenus. New examination of my male specimens has shown that they all belong to *gilvamacula* FLINT (i.l.); I designate them as paratypes; the females in the same samples are doubtless the same species.

#### *Additional note.*

In 3 samples ♀♀ of *C. (Curgia)* were caught unaccompanied by ♂♂: VI: 1 ♀; X: 1 ♀; XIV: 3 ♀. They may belong either to *braconoides* or to *gilvamacula*.

#### XIPHOCENTRONIDAE

***Xiphocentron (Antillotrichia) cubanum* (Banks, 1941)**  
ssp. : probably ***haitiense*** (Banks, 1941)  
(figs 19-21)

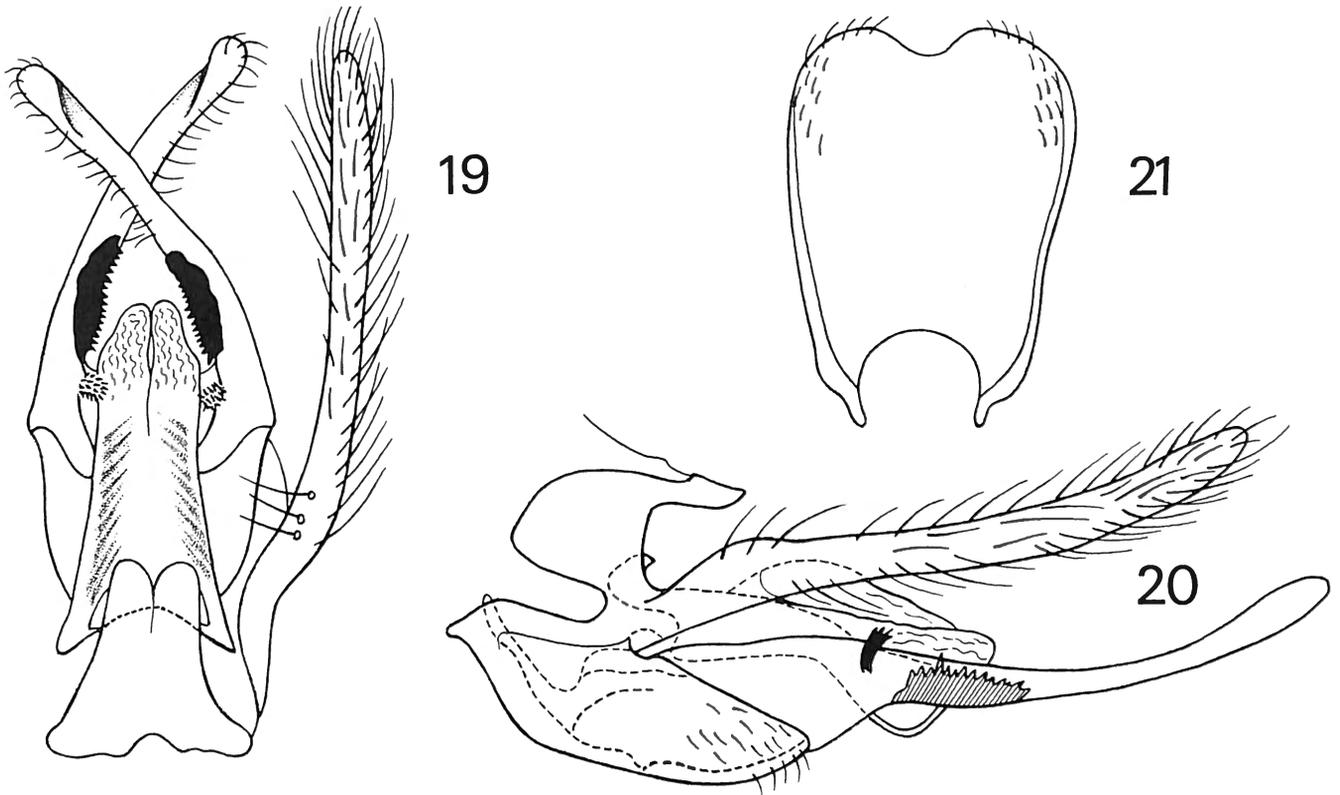
#### *Material:*

XIII: 1 ♂.

#### *Description of ♂.*

Distal spur of hindleg normal, slightly longer than 1/2 of length of basal tarsal article.

Distal limit of sternite IX with rather deep sinus in its middle; in lateral view this sternite with proximal end



Figs 19-21. – *Xiphocentron cubanum* probably ssp. *haitiense* (BANKS), male genitalia, dorsal, lateral, and sternite IX.

rather stout and only very slightly protruding proximad beyond the tergite. Tergite IX with distal lobes short, not deeply separated medially, not laterally turned; proximal limit of tergite IX medially with very small sinus. Ratio length / width of superior appendages: ca. 16.3/1, these appendages thus relatively very long. Segment X in its proximal strongly sclerotized parts showing numerous dark wrinkles superficially looking like “spines”.

#### Notes

I was pleased to have finally caught one ♂ *Xiphocentron* from Hispaniola. The only one previously recorded was the type specimen of *X. haitiensis* (BANKS, 1941) from Haiti, Département du Sud: Camp Perrin. Dr. O.S. FLINT had prepared long ago the first detailed genitalia drawings from this specimen (lateral and dorsal view) but these were not published; I have received a photocopy of these drawings, which correspond reasonably well with those here published, although some details (sternite IX, segment X) of the Haitian specimen remain unknown.

When describing the interesting geographic variability of *X. cubanum* (BANKS, 1941) from Cuba (BOTOSANEANU, 1993) I wrote “It is possible that *cubanum* is represented on Hispaniola and Puerto Rico by slightly distinct subspecies”; it appears now that, although the specimens from Haiti and from the Dominican Republic (Sierra de Baoruco) clearly belong to *X. cubanum* (vide BOTOSANEANU, 1993: 296) they represent a very distinctive sub-

species for which tentatively the name *haitiense* could be used.

Together with the male here described 1 ♀ of *Xiphocentron* was caught which is not certainly con(sub)specific, being much larger and with different antennae and thoracic pattern.

#### POLYCENTROPODIDAE PSEUDONEURECLIPSINAE

#### *Antillopsyche demma* BOTOSANEANU, n. sp. (figs 22-26)

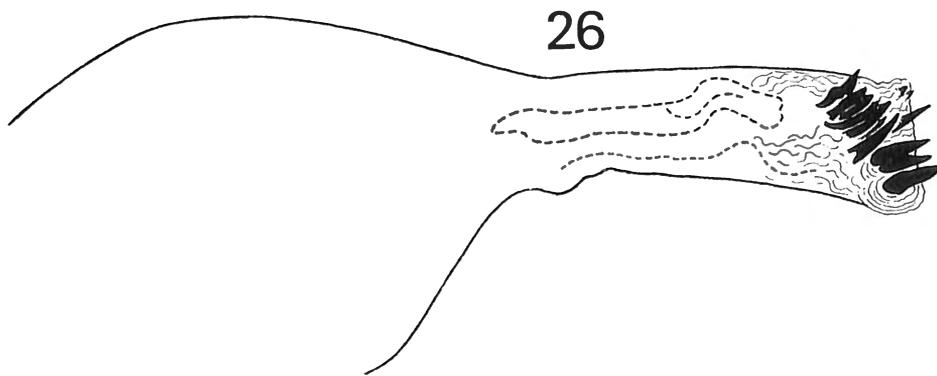
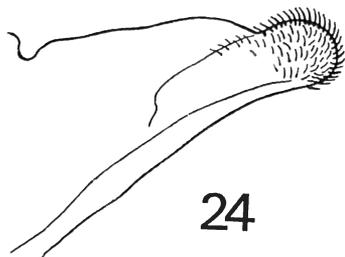
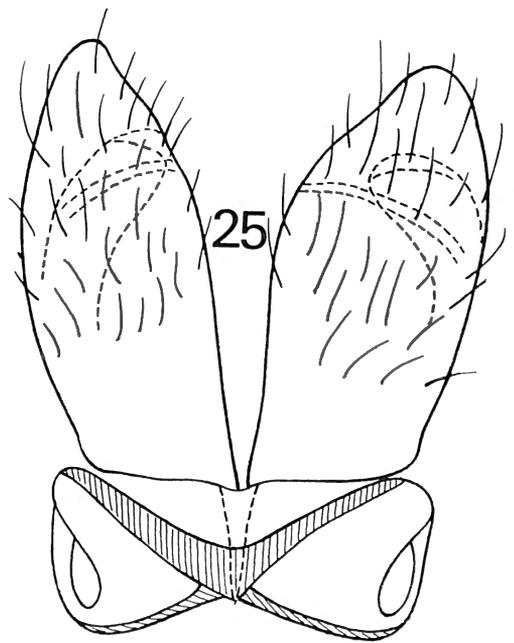
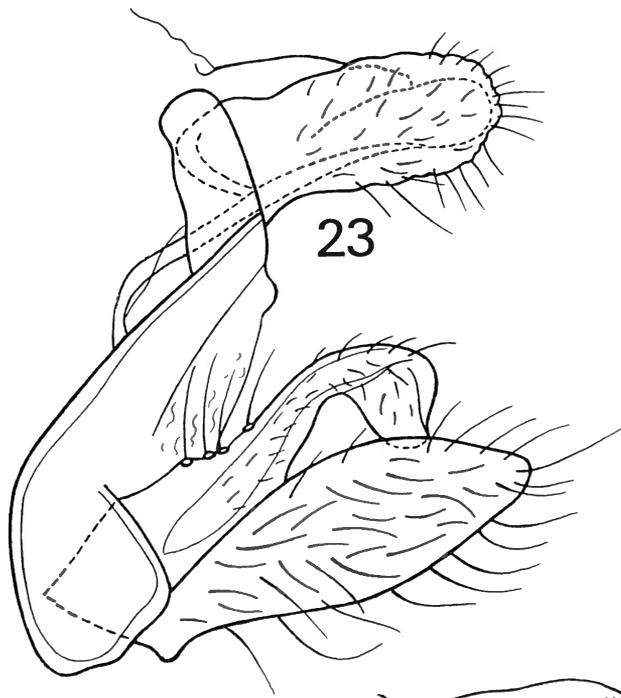
#### Material:

XIII: 2 ♂ (holotype and paratype). Moreover, in the NMNH: 3 ♂ paratypes from “San Francisco mountains, Sept. 1905, A. BUSCK” (I guess that this could be Cordillera Septentrional); and female specimens from the same locality, as well as from Rio Mulito and from Jarabacoa.

#### Description of male.

Length of forewing: 4.8-4.9 mm. A very light brown insect with variegate antennae. It is a well known fact that species of *Antillopsyche* differ only slightly in the structure of their male genitalia. Rather than giving a general description of these genitalia in the new species it seems more reasonable to compare them with those of all known species.

Differences from *A. wrighti* BANKS, 1941 (western and



central Cuba; FLINT, 1967): much longer superior appendages; segment IX in lateral view much stronger; segment X in lateral view more elongate, its dorsal limit with a notch (fig. 24) which is certainly more attenuate than the deep sinus found in *wrighti*.

From *A. aycara* BOTOSANEANU, 1980 (central Cuba; BOTOSANEANU, 1980): larger size (forewing length in *aycara*: 4 mm); tergite IX in lateral view less elongate; segment X with completely different shape.

From *A. tubicola* FLINT, 1964 (Puerto Rico; FLINT, 1964): smaller size (forewing length in *tubicola*: 6 mm; segment X in lateral view distinctly more elongate, with dorsal limit having a distinct notch.

From + *A. oliveri* WICHARD, 1985 (fossil in amber of the Dominican Republic; WICHARD, 1985): slightly larger size (forewing length in holotype of *oliveri*: 4.3 mm); baso-dorsal appendage of the gonopod capitate - like in all recent species (more simple in *oliveri*); apex of phallus with very well developed armature of black spines (apparently devoid of spines in *oliveri*).

It is possible that there are differences in the phallic armature of spines between the different species, but careful direct comparison would be necessary in order to ascertain this.

#### Notes

The small genus *Antillopsyche* BANKS, 1941 is endemic to the Greater Antilles and probably the most venerable element in their fauna. Having nothing in common with the Nearctic or with the Neotropical fauna, and being possibly the sister-group of *Pseudoneureclipsis* ULMER, 1913 (with Afrotropical, Western Palaearctic, and Oriental species), *Antillopsyche* is certainly a relict descending from an old Mesozoic lineage having colonized the Antillean realm ("Proto-Antilles"?; landmass of oceanic origin?) prior to the complete opening of the Atlantic Ocean. Evidence accumulates presently on other insects with similar affinities (see, for instance: SMITH, MILLER & MILLER, 1994; BARONI URBANI, 1995).

#### POLYCENTROPODIDAE

#### POLYCENTROPODINAE

#### *Polycentropus vanderpooli* FLINT, 1976

(figs 27-28)

#### Material:

II: 9 ♂, 1 ♀.

Although 4 species of *Polycentropus* are recorded from

the Dominican Republic, the material sampled by me enabled only this specific identification. The male specimens correspond very well with the illustration in Hamilton (1988). The female of *P. vanderpooli* not having been described, I illustrate here its characteristic sternite IX.

#### *Polycentropus* spp. indet. (♀♀)

Several female specimens not belonging to *P. vanderpooli* have been caught in absence of the males, which renders indubitable specific identification impossible. The shape of their sternite IX shows that at least two species are represented.

*Polycentropus* "sp. A" (figs 29-30). V: 1 ♀; VIII: 3 ♀. Sternite IX (fig. 30) matches reasonably well fig. 19 in FLINT (1976): "Polycentropus species 2, possibly *jeldesi* FLINT".

*Polycentropus* "sp. B" (figs 31-34). XIII: 2 ♀; XV: 1 ♀. I do not believe that the differences between figs 31-32 and 33-34 are evidence of the presence of two distinct species, but I may be wrong. Sternite IX (fig. 32!) matches reasonably well fig. 18 in FLINT (1976): *P. marcanoii* FLINT.

#### HYDROPSYCHIDAE

#### *Smicridea comma* BANKS, 1924

#### Material:

X: 118 ♂ + ♀; XI: 6 ♂, 1 ♀; XII: 1 ♂, 6 ♀; XIII: 66 ♂; XIV: 17 ♂.

No wonder that this species known from Cuba and Haiti is also present in the Dominican Republic (new record). It is rather surprising that no specimen was caught in the Cordillera Central.

One male from Arroyo Los Verros has strongly anomalous genitalia (figs 35-36). There are two pairs of large, feebly sclerotized intraabdominal sacks in segments V/VI and, respectively VII (not illustrated); a 3d pair, of heavily sclerotized and strongly wrinkled sacks is present in segment VIII. Segment IX and X are strongly deformed, asymmetrical. Gonopods absent. The very short, stout, strongly deformed phallus is entirely internal - in segment VIII - and seems to be intimately connected with the internal sacks in this segment.

#### *Smicridea banksi* FLINT, 1967

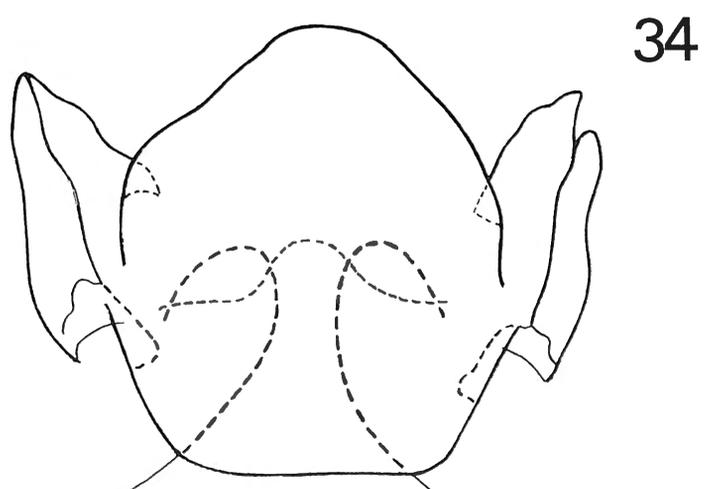
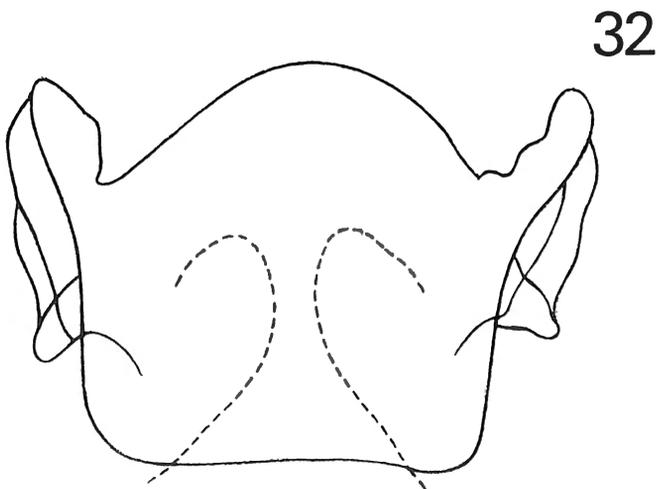
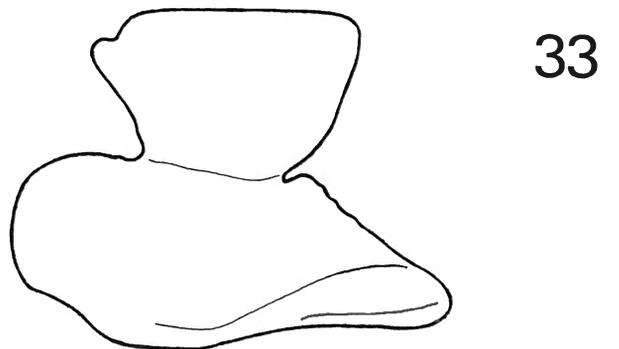
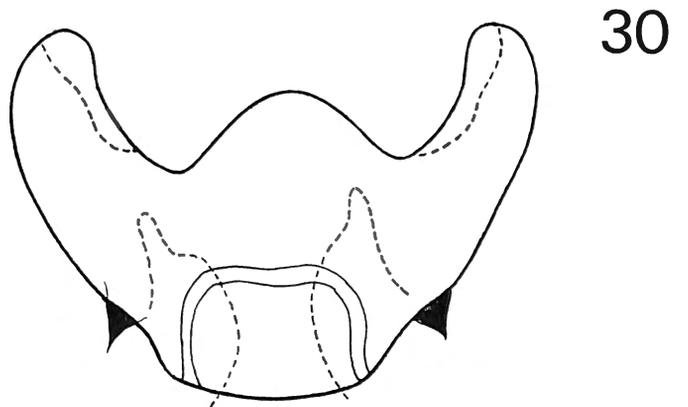
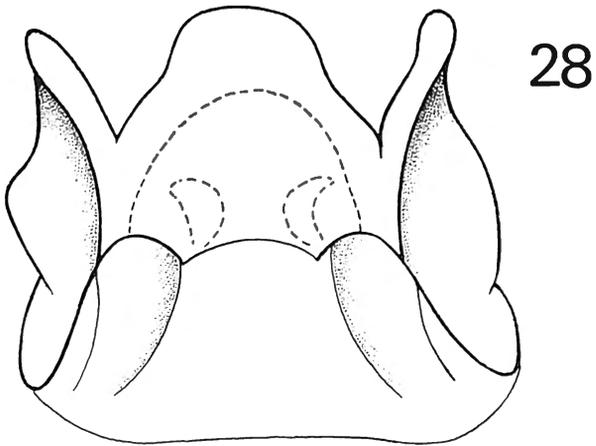
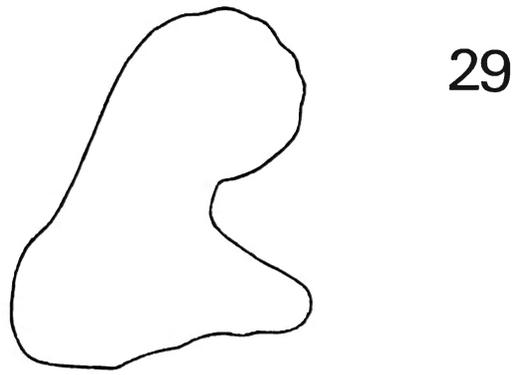
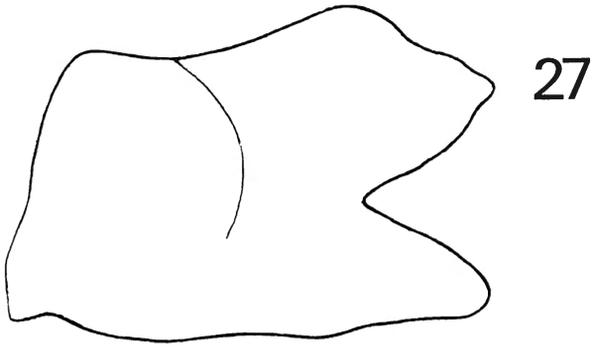
#### Material:

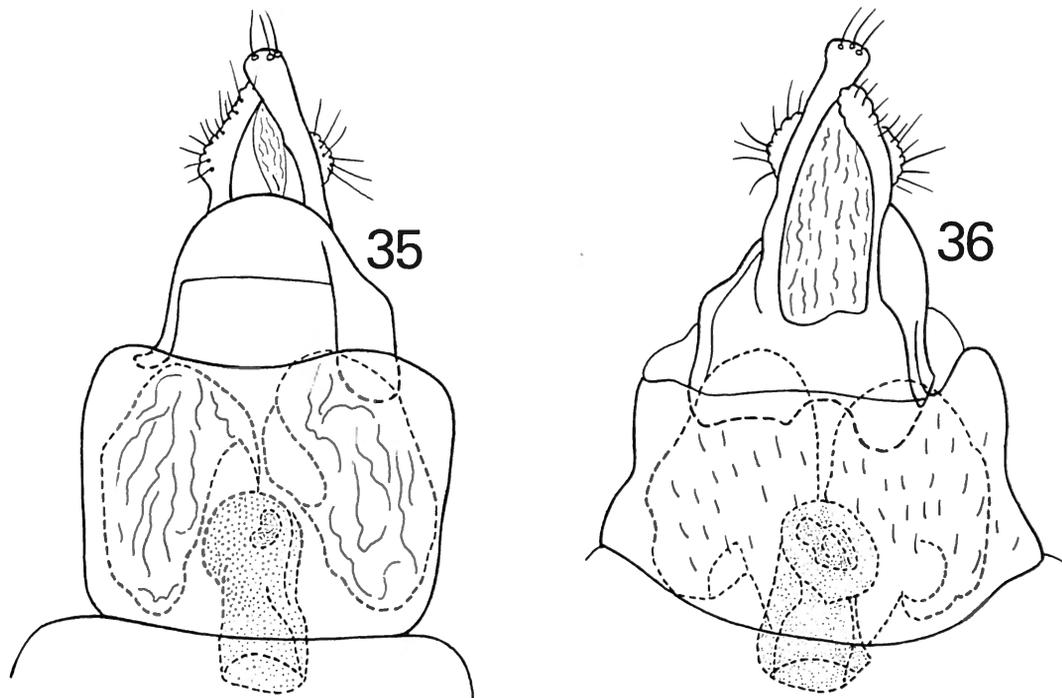
XIII: 50 ♂; XIV: 4 ♂.

Described from SE Haiti (FLINT, 1967) this species is new for the Dominican Republic; a possibly relevant fact is that it was caught only in the Sierra de Baoruco (SW corner of the country).

←

Figs 22-26. - *Antillopsyche demma* BOTOSANEANU, n. sp., male genitalia (22-23: dorsal and lateral; 24: segment X, lateral; 25: segment IX and gonopods, ventral; 26: phallic apparatus, lateral).





Figs 35-36. – *Smicridea comma* BANKS, segments VIII-X of anomalous ♂ specimen, dorsal and ventral.

***Smicridea comma* and *S. banksi*:**  
unassociate ♀♀

*Material:*

XIII: 85 ♀; XIV: 22 ♀.

Introductory notes about *Hydropsyche*

For various recent or fossil *Hydropsyche* from Hispaniola and Cuba several genera have been created. I do not agree with this taxinflation, considering that these do not deserve even the status of subgenera. I hope that as a result of thorough revision the genus will be finally divided into nothing more than species-groups, probably bundled in several “branches”. A distinctive trait of the Caddis Fly fauna of Cuba and Hispaniola (and - in the West Indies - only of these two islands) is the presence of this genus, relatively well represented: 11 species described (4 from Cuba, 7 from Hispaniola). These are doubtless offshoots of Nearctic lineages having colonized land to become later Cuba and Hispaniola (mid- or late Cretaceous “Proto-Antilles”); landmass of oceanic origin, forming in the eastern Pacific?) either through contacts with land in the position of present time northern parts of Central Ameri-

ca, or - in some cases - maybe by overseas dispersal (see, for evidence of such dispersal: Briggs, 1984; and for a general discussion: BANARESCU, 1995).

***Hydropsyche domingensis* BANKS, 1941**  
(figs 37-41)

*Material:*

I: 1 ♀; II: 2 ♂, 1 ♀; III: 5 ♂, 11 ♀; IV: 3 ♂, 106 ♀; V: 4 ♂, 20 ♀; VI: 5 ♂, 23 ♀; VIII: 1 ♂, 2 ♀; IX: 2 ♂.

*Notes*

This species, very common in the Cordillera Central but also recorded from Cordillera Septentrional, was described by BANKS (1941) who also gives a description and crude drawings of the male genitalia. FLINT (1962), who gives the first description of the female - based on the type series - writes that the male specimen described by BANKS could no longer be found, adding that that specimen “is probably to be associated with either *batesi* or *carinifera* rather than *domingensis*”.

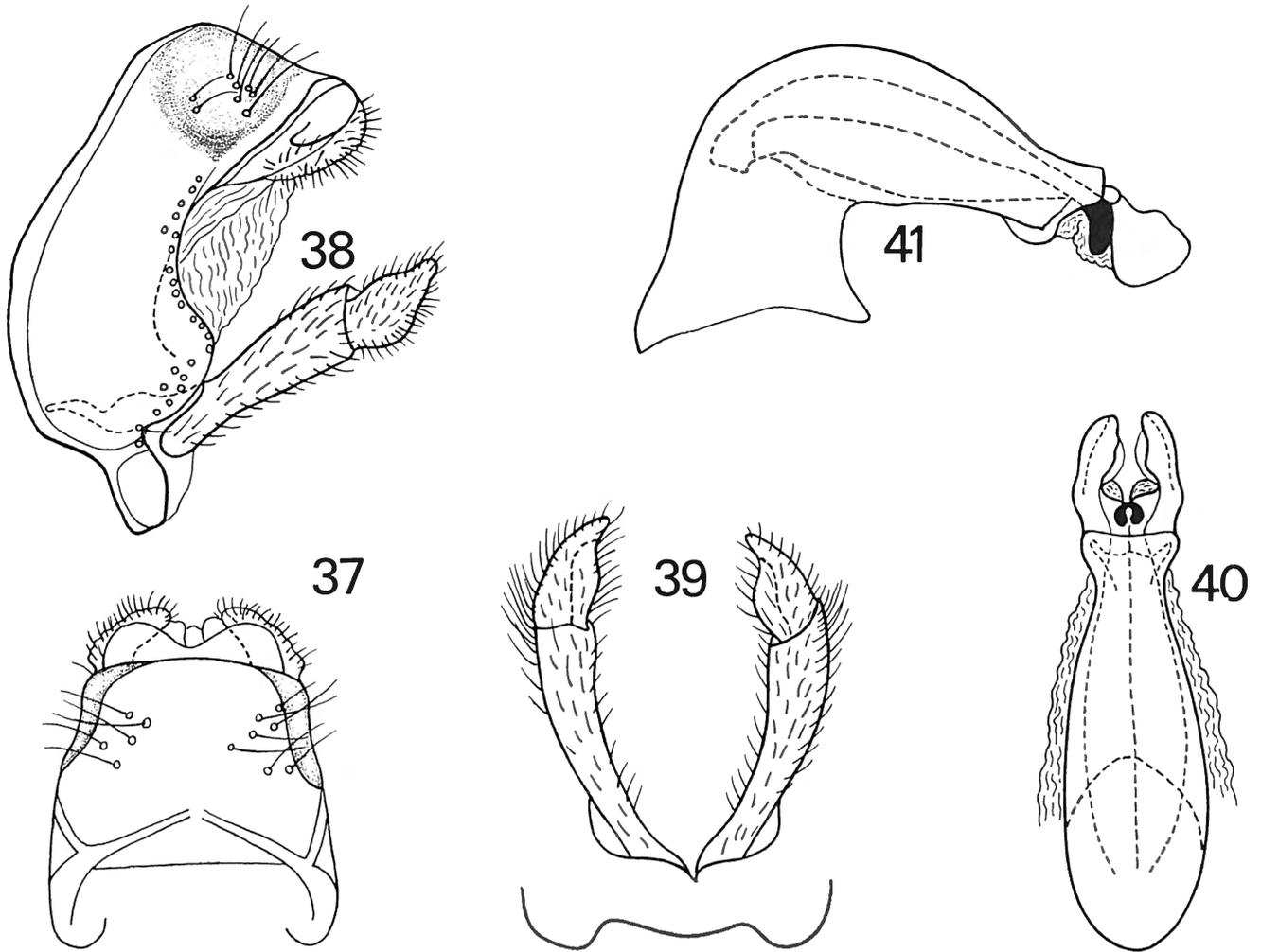
I give here the first detailed drawings of the characteristic male genitalia of *H. domingensis*. These will show that N. BANKS was probably right when considering his male specimen as belonging to this species.

***Hydropsyche carinifera* FLINT, 1962**

*Material:*

VIII: 1 ♂, 3 ♀; IX: 1 ♀.

←  
Figs 27-34. – ♀ sternite IX, lateral and ventral, of *Polycentropus vanderpooli* FLINT (27-28), *Polycentropus* sp. “A” (29-30), and *Polycentropus* sp. “B” (31-32 and 33-34: specimens from two different localities).



Figs 37-41. - *Hydropsyche domingensis* BANKS, male genitalia, dorsal, lateral, ventral, and phallic apparatus - dorsal and lateral.

#### Notes

The ♀ of this species was first described (FLINT, 1962), the male being described much later by FLINT & BUENO SORIA (1987).

Another endemic of Hispaniola, this species was recorded from several localities in the higher parts of Cordillera Central, but also from one apparently at lower altitude between Cordillera Central and Cordillera Septentrional.

#### *Hydropsyche davisorum* (ROSS & UNZICKER, 1977) (figs 42-47)

#### Material:

X: 1 ♂, 1 ♀; XII: 1 ♀.

Until present, only the ♂ of this species was described (ROSS & UNZICKER, 1977). I give here new drawings of the ♂ genitalia (length of forewing in this specimen: 9.2 mm).

#### Description of ♀

Length of forewing: 10.8 - 13 mm. Middle tibia and tarsus

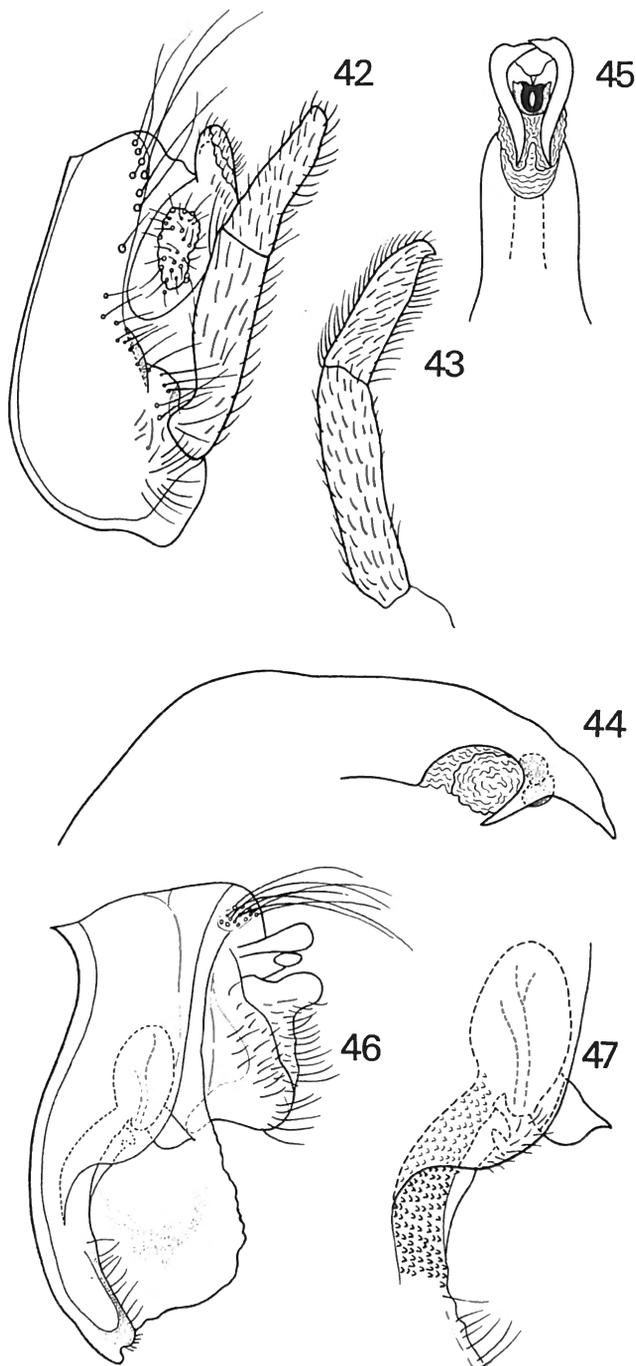
only relatively slightly widened.

Ventral lobe of segment IX very strongly developed, for a good deal very shallowly depressed. Recept. harp. large, distinctly oval, having (lateral view) a central position in segment IX; a very characteristic, although not large, sclerotized flap with pointed dorso-distal angle projects distad from the recept. harp. No foramen could be seen. Groove very distinct but relatively narrow, in its upper part only very slightly narrower (not finishing in an acute angle), entirely lined with minute tubercles.

#### Notes

Although related to *H. antilles* ROSS & PALMER, 1946, *H. davisorum* certainly shows in the genitalia of both sexes more similarity with *H. parander* n. sp. (vide infra), these two being probably sister-species.

The species is apparently widespread on Hispaniola, having been recorded from the eastern part of the Péninsule du Sud of Haiti, and from several widely distant localities in the Dominican Republic (Sierra de Neiba, Cordillera Central, Cordillera Septentrional).



Rio Mulito, 14 May 1995, and 5 ♂, 3 ♀ from "San Rafael, 8.3 km S. Baoruco, 15 May 1995" (all: O.S. FLINT).

*Description.*

Length of forewing: 8 - 8.8 mm in the ♂, 8.3 - 11 mm in the ♀.

*Male genitalia.*

In the following description some terminology in ROSS & UNZICKER (1977) is used.

Segment IX: tergite slightly extending anteriorly (seen as minute lobe in lateral view); sternite projecting posteriorly over base of coxopodite as broad, obtuse lobe. Segment X stout, with broad, obtuse lateral lobes with regularly rounded, not sinuous posterior margin; setose warts not very large (i.e. not occupying most of segment X sides). The most characteristic feature of the inferior appendages is the ventral shape of the harpago (whose apex is obtuse in lateral view): median margin strongly sinuate, with proximal sinus followed by rather strongly widened lobe, the small apex being somehow truncate and with minute point directed mediad. Phallic apparatus extremely wide basally but rapidly tapering to a much narrower distal part; the "endothelial processes" are not bifid, but represented only by one pair of slightly sinuate, sharply ending appendages which are neither upraised nor downwards projecting; in ventral view, their pointed tips are strongly converging; large "phallotremal sclerites", in lateral view basally quadrangular and apically conical.

*Female genitalia.*

These being very similar to those of *H. davisorum* described above, I shall mention only the clear differences enabling distinction of the new species: ventral margin of ventral lobe of segment IX with a deep sinus; the groove is not only entirely lined with microtubercles, but these are present also further ventrad along the strongly sclerotized proximal "ridge" of segment IX, and they also penetrate in parts of recept. harp.

*Notes.*

From *H. antilles* ROSS & PALMER, 1946 and *H. davisorum* (ROSS & UNZICKER, 1977) the closely related new species differs: in the male by the shape of segment X, of the harpago, and especially of the strongly different phallic endothelial processes; and in the female especially by peculiarities of sternite IX and of the groove.

To this day *H. parander* is uniquely known from Sierra de Baoruco of the Dominican Republic; but I suspect that it inhabits also Sierra de Neiba as well as, at least, the easternmost parts of the Péninsule du Sud of Haiti.

Figs 42-47. - *Hydropsyche davisorum* Ross & Unzicker (42-45: male genitalia, lateral, left gonopod in ventral view, and phallic apparatus, lateral and ventral; 46-47: female genitalia, lateral and more strongly magnified detail).

***Hydropsyche parander* BOTOSANEANU, n. sp.**  
(figs 48-53)

*Material:*

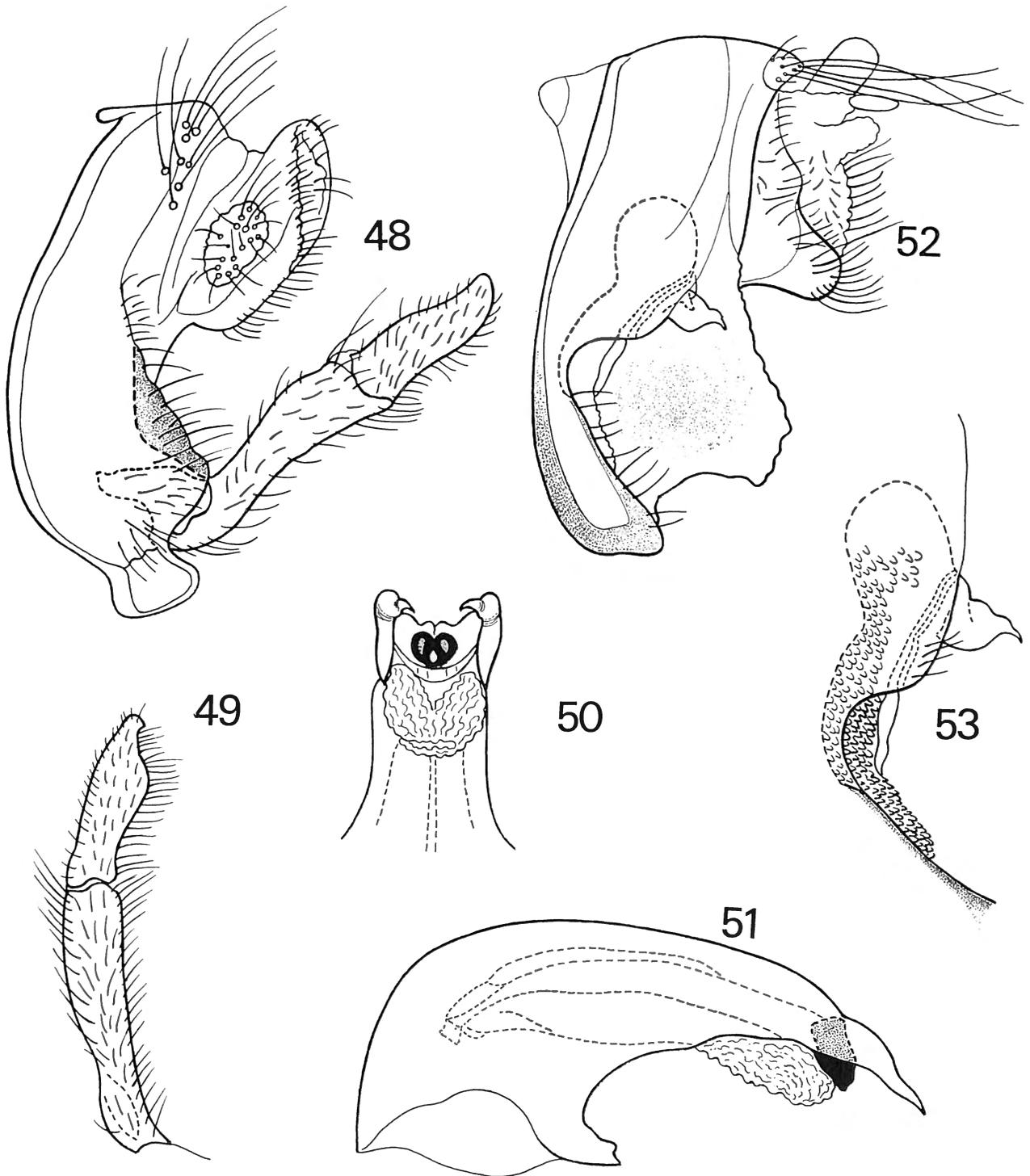
XIII: 1 ♀ paratype; XV: 6 ♂ (holotype and paratypes), 24 ♀ (allotype and paratypes). Moreover, in the NMNH, paratypes from the same two localities: 1 ♂, 1 ♀ from

LEPTOCERIDAE

***Nectopsyche cubana* (BANKS, 1938)**

*Material:*

I: 276 ♂ + ♀; II: 2 ♂, 15 ♀; III: 6 ♂, 4 ♀; IV: 6 ♂, 4 ♀;



Figs 48-53. – *Hydropsyche parander* BOTOSANEANU, n. sp. (48-51: male genitalia, lateral, left gonopod in ventral view, and phallic apparatus, lateral and ventral; 52-53: female genitalia, lateral and more strongly magnified detail).

V: 10 ♂, 24 ♀; VI: 37 ♂ + ♀; XI: 99 ♂ + ♀; XIII: 4 ♂, 5 ♀.

I am rather surprised not to have seen any specimen from Haiti of this species quite commonly found in the Dominican Republic (see also: FLINT, 1992). In specimens from this country tergite IX of the ♂ is apically clearly bilobed in lateral view.

CALAMOCERATIDAE  
*Phylloicus iridescens* BANKS, 1941

*Material:*

II: 1 ♂; V: 3 ♂, 2 ♀.

*P. iridescens* was already recorded from the Dominican Republic.

*Phylloicus* ? *superbus* BANKS, 1938  
(fig. 54)

*Material:*

II: 1 ♀; XI: 2 ♀; XII: 1 ♂.

*Notes.*

I am, unfortunately, unable to identify these specimens in an indubitable manner. It is probable that the association of male and female is correct. The wing pattern is that found both in *P. cubanus* BANKS, 1924 and in *P. superbus* - both from Cuba - very slight details in the neuration pointing to *cubanus*. The yellow body colour is like that described in *superbus*. The female genitalia cannot tell anything. The male genitalia in lateral view agree with the illustration published for *superbus* (BANKS, 1938: fig. 15 - in which, unfortunately, the inferior appendage is not illustrated in ventral view; FLINT, 1967:

figs 87-88, in this last one the inferior appendage illustrated in ventral view looking different from what I can see in my unique specimen).

HELICOPSYCHIDAE

*Helicopsyche hageni* BANKS, 1938  
(fig. 55)

*Material:*

XIII: 1 ♂, 6 ♀; XV: 1 ♂, 1 ♀.

*Description of ♀.*

The female of *H. hageni* remained undescribed. Length of forewing in my specimens: 3.7 - 4.4 mm. Abdominal sternites III-IV with belt of only one row of meshes; distally on sternites III-VI darker zones on which long setae are inserted; on proximal zone of

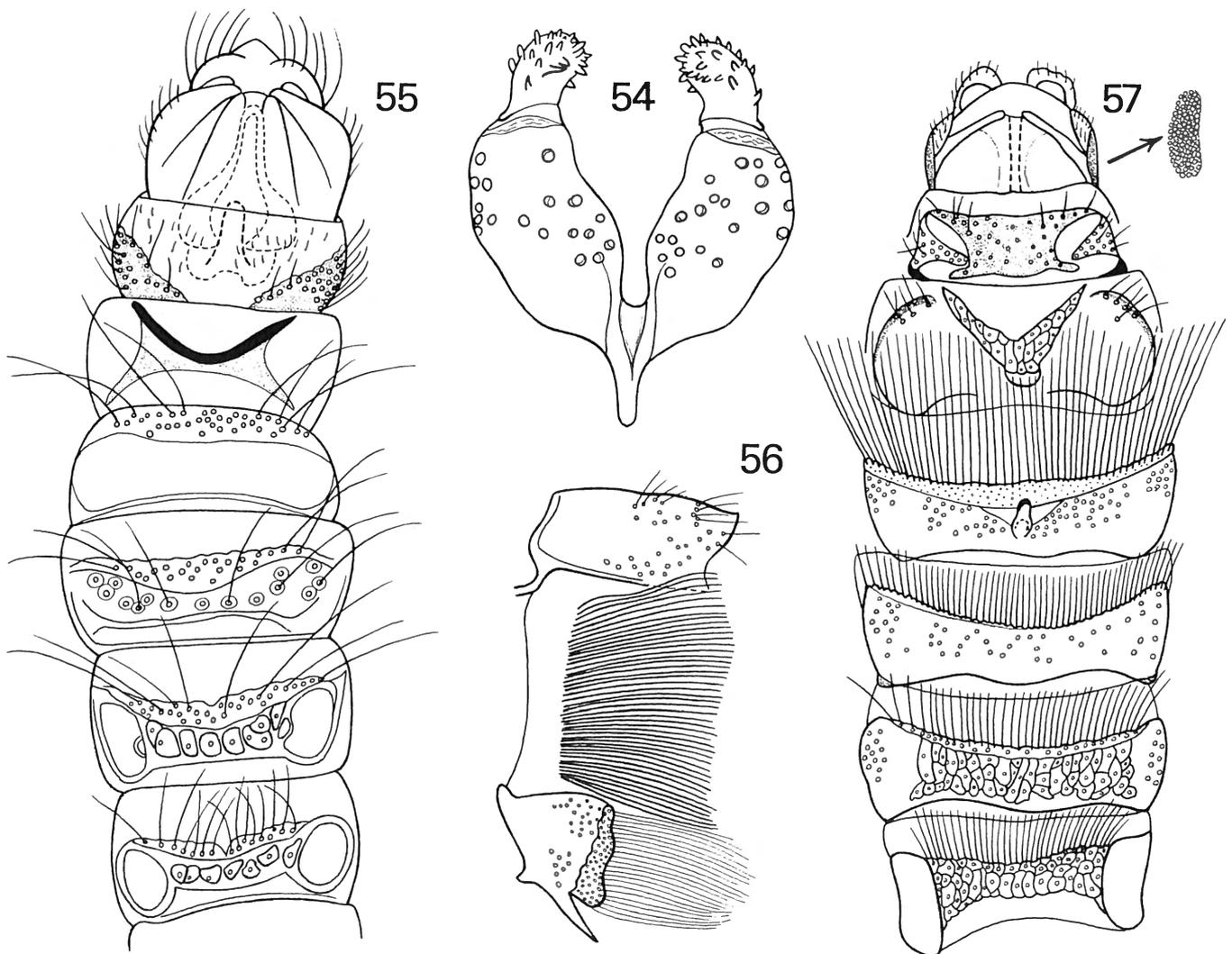


Fig. 54. - *Phylloicus*? *superbus* BANKS, ♂ inferior appendages.

Fig. 55. - *Helicopsyche hageni* BANKS, ♀, abdominal segments III and beyond, ventral.

Figs 56-57. - *Helicopsyche* sp. indet. ex gr. *comosa*, ♀, abdominal segment VI in lateral view, and segment III and beyond, ventral (arrow pointing to lateral view of sensillar area of segment IX).

sternite V the alveolae of setae are placed in middle of pale spots; on sternite VII a strongly marked dark patch having roughly the shape of an X, posterior margin more strongly darkened; on sternite VIII, quite laterally, important dark zones, broad basally and tapering distad.

I am presently convinced that the "pattern" of abdominal sternites III-VIII is much more useful in discriminating females of *Helicopsyche* than the shape of the last segments.

*Notes.*

This is an interesting new record, until present only the male type specimen of *H. hageni* (from eastern Cuba: Pico Turquino; see BOTOSANEANU & FLINT, 1991 a) being known. It is almost beyond doubt that the species will be found also in Haiti; and it is possible that its distribution in the Dominican Republic is rather restricted.

***Helicopsyche dominicana***  
BOTOSANEANU & FLINT, 1991

*Material:*

I: 40♂, 38 ♀; II: 1 ♂, 2 ♀; V: 9 ♂, 5 ♀; VI: 1 ♂, 2 ♀; VIII: 1 ♀.

This is a widespread species in the Dominican Republic; most of the numerous specimens sampled are from Cordillera Central, but (BOTOSANEANU & FLINT, 1991a) one specimen was caught from Banano, in the Pedernales Province.

***Helicopsyche nigrisensilla***  
BOTOSANEANU & FLINT, 1991

*Material:*

II: 1 ♀; VI: 1 ♀.

*Notes.*

Described from Cordillera Central, these two specimens being from the same mountains.

In the original description of the female (BOTOSANEANU & FLINT, 1991 a) abdominal sternite VII was not really well described; I shall add that in these two specimens sternite IX is almost entirely blackened.

***Helicopsyche* cf. *minima*** Von Siebold, 1856

*Material:*

XIII: 2 ♀

*Notes.*

Despite the fact that these specimens match well the description (BOTOSANEANU & FLINT, 1991 a) of the female of the Puertorican *H. minima*, I prefer to put an interrogation mark on this identification, pending discovery of males from the Dominican Republic.

***Helicopsyche altercoma***  
BOTOSANEANU & FLINT, 1991

*Material:*

I: 7 ♂, 37 ♀; II: 2 ♀; III: 2 ♀; VI: 1 ♂, 93 ♀.

A species frequent and abundant in the Cordillera Central, but sometimes taken also outside these mountains.

***Helicopsyche* sp. indet. ex "gr. comosa"**  
(figs 56-57)

*Material:*

XIII: 2 ♀

*Description of ♀.*

Length of forewing: 6.8 and respectively 8 mm (a large species!). Dark brown. Abdominal sternites: III with broad but short belt of reticulation; on IV reticulation belt better developed; on V no reticulation; median appendage on VI relatively short, in lateral view pointed, in ventral view blunt; posteriorly on VI a distinctly darkened zone on which extremely long, fine, caducous whitish setae are inserted (replaced on this segment's pleura - fig. 56 - by similar but *black* setae); VII in its middle with conspicuous Y-shaped formation, stem short, branches moderately broad, widely diverging, with alveolar structure, and flanked by well delineated brackets (no distinct sclerites anterior to the Y-shaped formation); VIII centrally with large dark patch with deep lateral sinuses, this patch flanked by triangular setose patches; IX with sensillar areas.

*Notes*

These two specimens do not belong to *H. altercoma*, but to a species close to it, one of the distinctive characters in its genitalia being the pattern of abdominal sternite VII. In several publications (see BOTOSANEANU & FLINT, 1991 b for a discussion) the presence in eastern Cuba of a species close to the Western Cuban *H. comosa* KINGSOLVER, 1964 (and, thus, close also to *H. altercoma*) was recorded, but this species could not be identified in the absence of males. It is possible that we have here the same species.

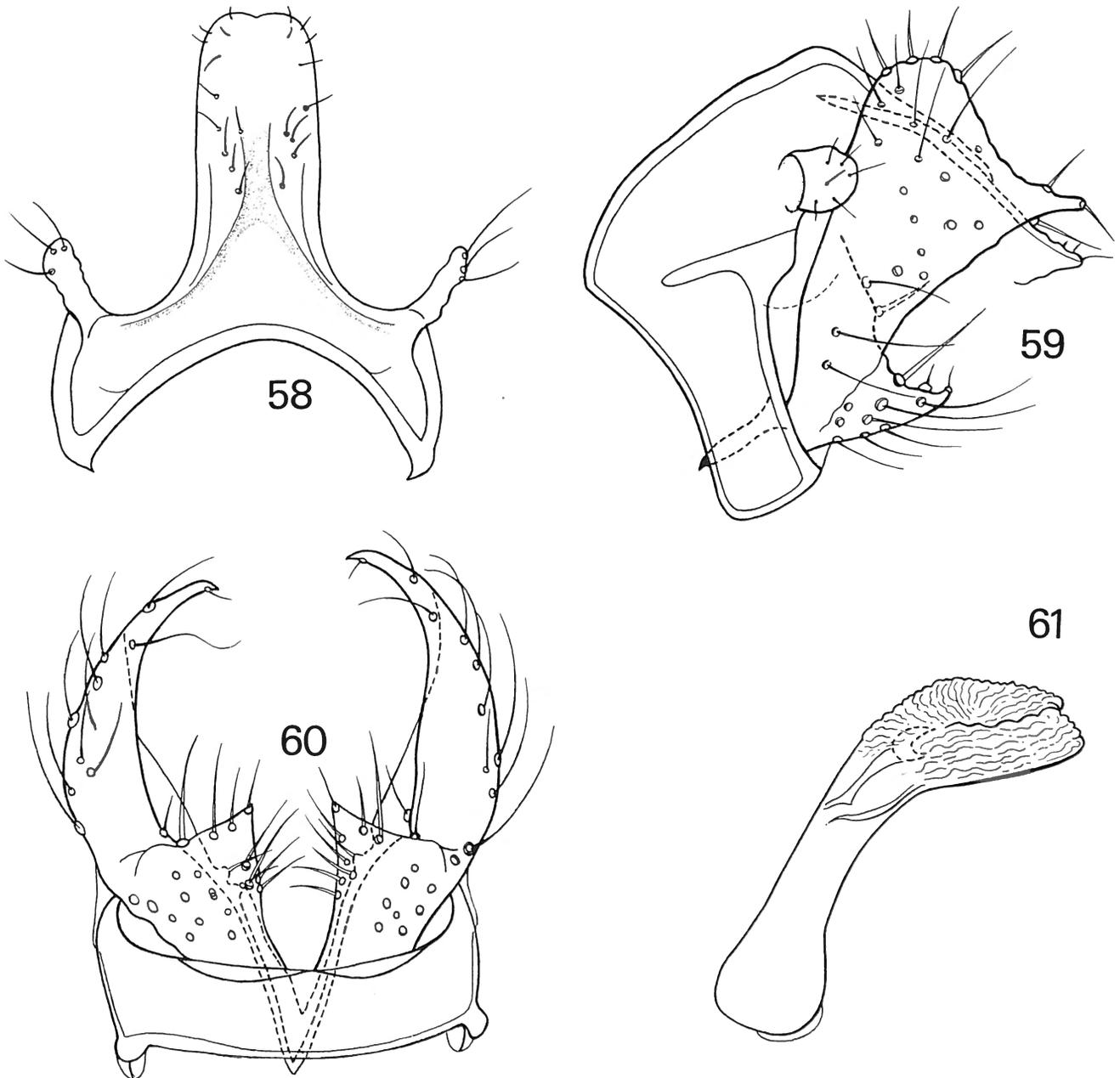
***Helicopsyche kalaom*** BOTOSANEANU, n. sp.  
(figs 58-61)

*Material:*

IX: 1 ♂ (holotype).

*Description of ♂.*

Length of forewing: 4.4 mm. A very pale species. Reticulation of abdominal sternites: on III and IV very strongly developed, with large meshes; on V replaced by



Figs 58-61. – *Helicopsyche kalaom* BOTOSANEANU, n. sp., male genitalia, dorsal, lateral, ventral, and lateral view of phallic apparatus.

numerous small, round, well delineated fields with seta in middle. Sternite VI lacking a median appendage (in contrast with the closely related *H. haitiense* BANKS, 1938).

In the description of genitalia only the differences from *H. haitiense* will be emphasized. In lateral and ventral view lower proximal angle of segment IX less protruding; sternite IX without small medio-distal triangular plate. Inferior appendages: strongly obtuse dorso-apical angle of lateral branch separated by a rather deep emargination from the long, slender tip; baso-median branch strongly developed (it is strongly developed also in *haitiense*) but perfectly triangular in ventral view; lateral margins in ventral view faint, difficult to make out. Segment X

slightly longer, with different equipment of setae and dark stripes.

#### Notes

As already said, the new species is closely related to *H. haitiense*, a species whose variability is very poorly understood (only 2 males known, from two localities in Haiti; structurally similar but of quite different size; see BOTOSANEANU & FLINT, 1991 a). Length and setation of segment X resemble those in *H. ramosi* FLINT, 1964, from Puerto Rico; but in many other respects the new species strongly differs from *ramosi* (absence of an appendage on sternite VI, lateral and ventral view of segment IX, and especially quite different inferior appendages).

### Helicopsyche sp.

#### Material:

VII: larvae.

If I make a separate mention of these larvae with heliciform cases, it is in order to point the attention to the possible presence of a distinct species of *Helicopsyche* in a quite distinct habitat: a madicolous biotope. No adults could be caught in this locality.

#### General observations on Hispaniola

(see also, in the present paper, remarks under *Antillopsyche* and *Hydropsyche*).

A). I intended to prepare a list of caddisfly taxa presently recorded from Haiti and, respectively, from the Dominican Republic, but gave up this project in the knowledge that these lists will, maybe soon, become obsolete owing to discovery of new taxa, new records, and clearing up of the status of imperfectly known taxa.

To the best of my knowledge 34 species and subspecies (including also *Leptonema* sp.) were recorded from Haiti. Whereas from the D.R. 58 recent species and subspecies are recorded (including *Austrotinodes* sp.), as well as 13 fossil species in amber of? late-Eocene /? Oligocene /? Miocene age (5 of them in 2 genera no more represented in the recent fauna of the island: *Cubanoptila* and *Setodes*). For Hispaniola as a whole, 78 recent species and subspecies were identified with accuracy - or at least making it clear that distinct taxa are represented (not included here are a few records with quite uncertain status).

B). For the time being, a few apparent distributional oddities could be mentioned. Well represented in Haiti, but apparently less well (or not yet recorded) in the D.R. are the genera *Alisotrichia* and *Neotrichia*, and the Lepocerid *Oecetis inconspicua*. For the D.R. the same may be said about *Cariboptila*, *Chimarra*, *Polycentropus*, *Helicopsyche*, and the Lepocerid *Nectopsyche cubana*. Some 14 species previously recorded from the D.R. were not caught by me in 1995; this is, of course, not strange, but I have reasons to ask myself why I could not catch any specimen of the 3 endemic species of *Atopsyche* known from Cordillera Central and adjacent zones.

C). It is presently clear that the Hispaniolan fauna of Caddis Flies has: very strong affinities with that of Cuba; clear affinities - in a more restricted number of cases - with that of Puerto Rico; and only very faint affinities with that of Jamaica (this last island - totally submerged during the Miocene - having obviously had a history different from that of the remaining Greater Antilles, its fauna originating from relatively recent invasions followed or not by speciation; this conflicts with a viewpoint sometimes expressed that, during the Eocene, southern Hispaniola was juxtaposed to Jamaica - and to Yucatan). The strong ties of the fauna of Hispaniola, Cuba, and Puerto Rico are the result of common origin; to quote MACPHEE & ITURRALDE-VINENT (1995): "Emergent parts

of the present-day Greater Antilles were in a close-packed array until the commencement of the Neogene. They formed part of a long-lasting positive topographic feature of the Caribbean Basin... Since latest Oligocene [this topographic feature] has undergone disruption and fragmentation into its modern insular components...". See also FLINT (1978) and HAMILTON (1988). Study of the Hispaniolan Trichoptera reveals, again, a number of fine cases of vicariance at specific or subspecific level between the Greater Antilles, as a result of their complex history of fragmentation and coalescence (I definitely prefer this term to the widely used "accretion"). It also shows that in the shaping of present-day Greater Antillean fauna dispersal and vicariance have both played important parts - despite assertions of fanatical unilateral advocates of only one of these models.

D). One regularity emerges from what we presently know, i.e., the existence on Hispaniola of two zones with particularly diverse, distinctive fauna and high level of endemism.

These are:

- I. S. Haiti (Péninsule du Sud from W to E ends + small adjacent zone) and Sierra de Baoruco and Sierra de Neiba in the Dominican Republic. Restricted to this zone seem to be: *Atopsyche lilicae*, *Cariboptila caab*, *Alisotrichia aquaecadentis*, *A. hispaniolina*, *A. aglae*, *A. euprosyne*, *A. thalia*, *A. arcana*, *Ochrotrichia serra*, *Metrichia kumanskii*, *Chimarra spinulifera spinulifera*, *Xiphocentron cubanum* cf. *haitiense*, *Smicridea banksi*, *Hydropsyche parander*, *H. bohio*, *Marilia gracilis gracilis*.
- II. Central and NW parts of the Dominican Republic, including Cordillera Central, Cordillera Septentrional, and adjacent zones. Seem to be restricted to this zone: *Atopsyche taina*, *A. conventica*, *A. davisorum*, *Cariboptila aurulenta*, *C. hispaniolica*, *C. calcigena*, *Leucotrichia gomezi*, *Alisotrichia hirudopsis aitija*, *Oxyethira ortizorum*, *O. albaeaequae*, *Chimarra koki*, *C. spinulifera galalcha*, *C. redonda*, *Polycentropus domingensis*, *P. vanderpooli*, *P. jeldesi*, *Hydropsyche domingensis*, *H. carinifera*, *Helicopsyche nigrisensilla*, *Helicopsyche altercoma*, *Marilia gracilis nigrescens*.

Only few - and seldom interesting - elements have been recorded from outside these two areas, the reason being not only insufficient sampling, but certainly also ecological and historical factors.

There is serious evidence that Hispaniola (like the other Greater Antilles; see, for an excellent discussion based on the existing evidence: SMITH, MILLER & MILLER, 1994) is a geological composite. To quote POINAR & CANNATELLA (1987) "... evidence indicates that Hispaniola is a composite landmass of two formerly widely separated paleoislands, corresponding to the North and South Island regions, which collided about 5 million to 9 million years ago". The two clearly distinct trichopteran assemblages mentioned above are strong biological evidence supporting this view.

E). When travelling through Haiti I was impressed - like every naturalist - by the catastrophic deforestation of that country, having of course a strong impact on running water habitats and life. In the Dominican Republic the situation in this respect is better - although "better than catastrophic" does not mean much better. Nevertheless, there are here other elements at work which render the situation probably worse than in Haiti. Middle and lower reaches of many streams/rivers are biologically devastated by drainage for irrigation and other purposes, building of water reservoirs, or inconsiderate use of enormous amounts of pesticides and chemical fertilizers, all this without any consideration for aquatic life. A water course crossing populated zones is simply considered as sewer, its banks as rubbish-dump. Only in upper reaches of streams in zones difficult of access can the situation be considered as really better.

I shall give three examples from my personal experience in 1995. When working on the Arroyo Los Verros (loc. XI). I was told by indignant farmers that in the fine karst springs/streams in Sierra de Agua a frequent practice is catching shrimp - for commercial purposes - by poisoning the water, the result being extermination of large shrimp populations in entire streams. It is quite possible that the entire fauna is affected, and this could explain the fact that only quite a few species were attracted by light at Arroyo Los Verros.

In the vast depression of Constanza (Cordillera Central) enormous amounts of pesticides are used in the vegetable crops; for kilometers through this zone the air smells the pesticides, and I was warned "never eat lettuce or other vegetables coming from Constanza!". No wonder that small water courses here are practically devoid of a fauna of any significance.

Along the northern shores of Lago Enriquillo there are numerous springs - resurgences of subterranean water stored in Sierra de Neiba, some sulphurous and some not. Most of these springs are completely modified by man, and apparently biologically destroyed. Has escaped devastation until present the large complex of springs and streamlets in La Descubierta, inhabited by a remarkable fauna (loc. XII); but even here the anthropic pressure is strong, the springs and streamlets being used as bathing pools, laundry, or even lavatory, without any concern for protection of at least a small part of the complex.

There is presently in the Dominican Republic and in Haiti a laudable concern with National Parcs; but I never have get the impression, from hearsay or from reading - that aquatic habitats and their biota are considered as valuable elements in these Parcs. As matters stand, reduction, alteration, and destruction of freshwater habitat will result in Hispaniola in impoverishment and extinction of a highly interesting, highly endemic fauna.

The following words, referring to Cuba (SILVA TABOADA, 1992) perfectly apply also to Hispaniola: "... when a nation has taken shape, generation after generation, amid the plundering of its natural resources ... the most deplorable result ... is the rooting out of respect and love for

the fauna as an eventual component of the cultural identity of any nation ...". We can only hope that the *next* future will bring a *radical* change in this situation.

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Zoologisch Museum  
University of Amsterdam  
Plantage Middenlaan 64  
1018 DH Amsterdam  
The Netherlands