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TWO NEW SPECIES OF CHORANTHUS (HESPERIIDAE) FROM HISPANIOLA, WEST INDIES

Frank Gali

156 S. Melrose Dr., Miami Springs, FL 33166

The endemic Antillean genus *Choranthus* Scudder 1872 is represented by one species on the island of Hispaniola. Riley (1975:188) stated that the species *haitensis* Skinner is "known only from Haiti where it clearly replaces *C. vitellius.*" Specimens of *Ch. haitensis* have been secured abundantly on the entire island of Hispaniola; thus, the species is obviously not restricted to Haiti but also occurs in the República Dominicana. Cuba has a single species (*radians* Lucas) and Jamaica one (*lilliae* Bell). On Puerto Rico occur *borinconus* Watson and *vitellius* Fabricius (the latter also on the Virgin Islands). In the Bahamas occurs *richmondi* Miller, which is known from Andros Island and the Exuma Cays from only one ♂ and three ♀ (Clench, 1977:192). Brown and Heineman (1972:72), however, referred *batesi* Bell (now *Partrytone batesi*) and *magdalia* Herrich-Schäffer (now *Parachoranthus magdalia*) from Cuba to *Choranthus* (see Miller, 1966:260, 268, for generic reassignments). Scott (1972:39) noted only four species of *Choranthus* (in contrast to Miller's six) but did not give a rationale for the lesser number.

The Hispaniolan species are found widespread geographically and altitudinally; however, geographical data, as well as the characteristics of the skippers themselves, give evidence of undescribed populations of the genus. *Choranthus haitensis* occurs widespread on the so-called north island (see Schwartz, 1980); distinctive populations of *Choranthus* were encountered in the Dominican Cordillera Central. These latter occur with *Ch. haitensis* at elevations of 915 m and 1007 m. On the south island, specimens of *Ch. haitensis* have been collected in both Haiti and the República Dominicana. However, specimens of *Choranthus* secured from the Sierra de Baoruco are without question a distinct species.

TAXONOMIC ACCOUNTS

During the summer of 1981 and 1982, Albert Schwartz and I collected series of *Choranthus.* These include 35 males from the Sierra de Baoruco at elevations of 1129 m and 1220 m, and three males from the north slope of the Massif de la Selle from an elevation of 823 m. I have also available 11 males and eight females from the Cordillera

Central at elevations of 641 m, 915 m, and 1007 m. Recent records of *Ch. haitensis* are from sea level to 915 m; the species is uncommon above about 600 m, and most records are below 400 m. The material from the Cordillera Central on the north island is distinct from *Ch. haitensis;* these Cordillera Central specimens differ from syntopic *Ch. haitensis* at elevations of 641 m, 915 m, and 1007 m.

On the south island, *Ch. haitensis* has been recorded from Haiti and the República Dominicana. Specimens of a *Choranthus* were collected from the Sierra de Baoruco along with three specimens of *Ch. haitensis* at elevations of 274 m, 396 m, and 1128 m. The material was unequivocally distinct from *Ch. haitensis.* This suggests that the upland populations arose independently on each of the islands (north and south), and each remains distinct.

The most convenient way to discuss the new populations is first to redefine *Ch. haitensis,* stressing those characters that I find pertinent in defining the new species.

Choranthus haitensis Skinner, 1920

Figs. **2A, 3A** [♂]; **2B, 3B** [♀]

Males. Fw length 13 mm-15 mm (x = 14.1 mm); upfw and uphw light golden yellow (Pl. 11I10; all color designations from Maerz and Paul, 1950); upfw stigma bipartite, posterior member extending from about 2A to just below the origin of Cu_2, anterior member from just above the distal origin of Cu_2 to just below the distal origin of Cu_1; uphw with a dark band along the inner margin that is virtually interrupted at 3A-2A. The band extends from the middle of space 3A-2A along the submarginal area, around the apex, along the costa at Sc + R_1-Rs, and at Rs-M_1 the postdiscal portion is incomplete (in effect, an orange hw with a dark margin). Unfw bright golden yellow (Pl. 9L8) except for a light yellow inner margin. There is a dark patch in the lower basal and discal regions with a portion extending distad just below the origin of Cu_1. Unhw bright golden yellow (Pl. 9L8) except for a light yellow anal fold. A thin submarginal line extends, on the fw from Cu_1 to the apex of Sc + R_2. Apiculus tan; antennal club: distal one-half of lesser curvature black and proximal one-half orange, greater curvature orange with some black scaling.

Females. Fw length 14 mm-16 mm (x = 15.5 mm); up coloration and pattern basically like male except for black V in position of anterior portion of male stigma at the apex of cell, a black line at mid-cell, and at the basal portion of cell at Cu_1-Cu_2. Unfw orange-yellow (Pl. 9L7) with light fulvous outer and submarginal borders, and a dark brown patch covering the basal portion of the cell. Unhw pale olivaceous (Pl. 12K7) except for orange-yellow anal fold and some orange yellow scaling.

Choranthus melissa, new species

Figs. **2C, 3C** [♂] **4A** [♂ genitalia]

Diagnosis. Males: Fw length 13 mm-15 mm (x = 13.9 mm). Upfw and uphw dark golden yellow (Pl. 9L9); upfw stigma single, extending from the middle of 2A across Cu_2 and along the lower edge of the cell to just below the origin of Cu_1. Also, along the lower edge of the cell crosses a dark band which joins with the stigma at the proximal portion of Cu_2. The subcellular band continues past Cu_1 along the postdiscal margin of the cell and at M_2-M_3 there is a dark band that blends with the dark submarginal band. The former continues along the upper edge of the cell to R_1. The uphw has a heavy dark band along the costal margin of the hw with a central interruption at M_1-M_2, M_2-M_3, M_3-Cu_1, and at Cu_2-2A, it interrupts the submarginal band. Unhw olivaceous (Pl. 13I5) except orange-yellow scales on anal fold, as well as some on outer edge itself. Unfw golden yellow (Pl. 11J7) with a heavy band along the costal margin. There is a dark tawny submarginal band with an extension at M_2-M_3 to the cell, and a darker band along the inner margin. The latter band extends distad from 2A in the lower basal and

discal regions to the subcellular line at the origin of Cu_2. Apiculus completely black, antennal club: distal one-third of greater curvature black, proximal two-thirds orange and lesser curvature almost entirely black with some orange scaling.

Females. Not known.

♂ genitalia as illustrated (compare with Miller, 1966:265, Fig. 14).

HOLOTYPE ♂: REPUBLICA DOMINICANA: PROVINCIA DE PEDERNALES: Las Abejas, 11 km NW Aceitillar, 1220 m, 18.vii.1981 (F. Gali), *ex colln.* A. Schwartz, now in the Allyn Museum of Entomology.

PARATYPES (all from República Dominicana, Prov. de Pedernales except as indicated): AS (Albert Schwartz collection) 6164(♂), Las Abejas, 11 km NW Aceitillar, 1220 m, 14.vii.1981, F. Gali; AS 6291, 6296, 6298-99, 6304, 6325, 6327 (7 ♂), Las Abejas, 12 km NW Aceitillar, 1129 m, 19.vii.1981, F. Gali, A. Schwartz; AS 8050, 8052-53 (3 ♂), FG (Frank Gali collection) 360, 362 (2 ♂), Las Abejas, 12 km NW Aceitillar, 1129 m, 16.vii.1982, F. Gali, A. Schwartz; AS 8085 (♂), 8086 (♂), FG 413 (♂), 414 (♂), same locality as holotype, 18.vii.1982, F. Gali, A. Schwartz; AS 8146, 8148, 8152-53 (4 ♂), 8151 (♂), FG 520-21 (2 ♂), 509, 512-14, 517-18, 522 (7 ♂), RWW (Randolph W. Wisor collection) 396, 398 (2 ♂), Las Abejas, 12 km NW Aceitillar, 1129 m, 20.vii.1982, F. Gali, A. Schwartz; AS 8445, 8450 (2 ♂), FG 763 (♂), 4-7 km NE El Aguacate, 732 m, Prov. de Independencia, 30.vii.1982, F. Gali, A. Schwartz.

Comparisons. Choranthus melissa, by virtue of its dark golden yellow up and its border that is broadly black, along with a bold black sex brand, is easily separable from *Ch. haitensis.* The up of *Ch. haitensis* is light golden yellow with dark borders and a thin black sex brand. In *Ch. melissa,* the upfw stigma is single and extends from the middle of 2A across Cu_1 and along the lower edge of the cell to just below the origin of Cu_1; but in *Ch. haitensis,* the upfw stigma is bipartite, the posterior member extending from abut 2A to just below the origin of Cu_2, the anterior member extending from just above the distal origin of Cu_2 to just below the distal origin of Cu_1.

Choranthus melissa also shows upfw black bands that distinguish it from *Ch. haitensis.* A subcellular band continues past Cu_2 along the postdiscal margin of the cell, and at M_2-M_3 there is a band that blends with the submarginal band. *Choranthus haitensis* lacks both bands. In *Ch. melissa,* the upfw marginal band is broad and black, and thus gives an overall appearance of a dark skipper. However, in *Ch. haitensis* the narrow black margin gives an overall light golden yellow aspect. The latter species has a thin black band along the costa and margins of the uphw, that is virtually interrupted at 3A-2A along the inner margin. On the other hand, *Ch. melissa* is darker along the costal margin with a central orange interruption at Cu_1-Cu_2. In *Ch. melissa,* the unfw is golden yellow with dark tawny bands along the inner margin and the submargin. The unhw is olivaceous except for orange yellow scales on the anal fold, as well as some on the outer margin itself. This dark appearance of the ventral ground color further distinguishes the two species. *Choranthus haitensis* has the ventral ground color light fulvous with a thin submarginal line extending from Cu_1 to the apex of Sc + R_1. This characteristic is absent in *Ch. melissa;* both have a black patch at the base of the fw.

In *Ch. melissa* males, the antennal club has the distal one-third of the greater curvature black and the lesser curvature is almost entirely black with some orange scaling. However, in *Ch. haitensis* the greater curvature is orange with some black scaling, and the distal one-half of the lesser curvature is black with the proximal one-half orange. Both species have a dark apiculus.

Remarks. The series of *Ch. melissa* consists of nine ♂ ♂ from the southern front of the Sierra de Baoruco. Gali and Schwartz (MSa) gave details of the ecology of the former area. Two specimens were collected at a ravine, one on 14.vii.1981, 30° C, between 0930-1300 h, 1220 m, day bright and warm in morning, overcast at ± 1200 h, the second specimen (holotype) on 18.vii.1981, 23° C, between 0920-1115 h, alternately sunny in morning, generally overcast in afternoon. The other specimens were collected in an upland mesic deciduous forest on 19.vii.1982, (7 specimens), 16.vii.1982 (5 specimens), 20.vii.1982 (18 specimens); 28° C, 27° C, 27° C; 0900-1415 h, 0905-1330 h,

1000-1115 h, elevation 1129 m; again, alternately sunny in morning, generally overcast in afternoon.

These skippers are apparently woodland-edge inhabitants. On the northern slope of the Massif de la Selle (El Aguacate), there is mesic deciduous forest. The specimens collected were along the roadside on low shrubs (*Bryophyllum*), particularly in the morning on 30.vii.1982, 28° C, 0945-1130 h, elevation 732 m, day overcast and occasionally sunny. The situation agrees with that of the Sierra de Baoruco; these skippers are typically woodland-edge inhabitants. It is pertinent to emphasize the morning incidence of *Ch. melissa*. Observations indicate that *Ch. melissa* is predominantly a morning insect; in both the Sierra de Baoruco and Massif de la Selle, *Ch. melissa* has been taken only in the morning.

Schwartz (MSa) stated that in Haiti *Ch. haitensis* "is most often associated with mesic or shaded situations such as the borders or within *cafeières* and hardwoods stands, wherever there are *open areas with grasses*" (italics mine). My own observations indicate that *Ch. haitensis* is an open area insect, most often associated with grasslands and the edges of *cafetales*.

Etymology. The name *melissa* is Greek for "bee," in allusion to Las Abejas, the type-locality.

Choranthus schwartzi, new species

Figs. **2D, 3D** [♀], **4B** [♂ genitalia], **4C** [♀ genitalia]

Diagnosis. Males. Fw 14 mm-15 mm (x = 14.3 mm); upfw and uphw light orange-yellow (Pl. 10J6). On the up, males of this species resemble *Ch. haitensis*; however, the unfw is tawny (Pl. 12L6) along the submarginal and outer margins, and light orange-yellow on the discal-postdiscal portions. Basal region with a dark patch covering the cell. The unhw is tawny (Pl. 12L6) with a central discal interruption of yellow-orange scales.

♂ genitalia destroyed, except valva which is not similar to *Ch. haitensis* nor to *Ch. melissa*. The superficial characters are sufficient to distinguish the species.

Females. Fw length 16 mm-17 mm (x = 16.3 mm). On the upper surface, dark golden yellow (Pl. 11L9), all veins black. Upfw black band on the border continuing broadly, the discal and postdiscal portions of the cell black with some yellow scaling; black patch from the basal region at Cu_1-Cu_2. Uphw outer edge black border with an interruption at 3A-2A. Unfw orange-yellow (Pl. 11J7) with a dark basal cell patch; outer margin and submargin light fulvous gray. Unhw olivaceous (close to Pl. 13H6) except for light fulvous anal fold.

♀ genitalia as illustrated with a less deeply cleft lamella antevaginalis than in *Ch. haitensis*.

HOLOTYPE ♀: REPUBLICA DOMINICANA: PROVINCIA DE LA VEGA: 10 km W Jayaco, 915 m, 9.viii.1982 (A. Schwartz), *ex colln.* A. Schwartz, now in the Allyn Museum of Entomology, Florida State Museum.

PARATYPES (all from Prov. La Vega, Rep. Dom.): AS 3168 (♀), same locality as holotype, 21.vi.1980, A. A. Gineika; AS 3268-9 (♂), same locality as holotype, 23.vi. 1980, A. A. Gineika; AS 3661 (♂), same locality as holotype, 3.vii.1980, A. A. Gineika; AS 5447 (♂), La Palma, 19 km W Jayaco, 1007 m, 30.xii.1980, J. C. Lucio; AS 8716-19 (♂), 8733-34 (♂), FG 994-96 (♀), 998-99, 1003 (♂), La Palma, 19 km W Jayaco, 1007 m, 9.viii.1982, F. Gali, A. Schwartz; AS 5984 (♀), Buena Vista, 11 km NE Jarabacoa, 641 m, 1.vii.1981, A. Schwartz.

Comparisons. In males, *Ch. schwartzi* differs from *Ch. haitensis* on the un in having greenish brown (Pl. 12L6) along the submargin and outer margin. On the other hand, *Ch. haitensis* is yellow-orange (Pl. 9L8) on the un and has a thin submarginal dark line. In females, the un coloration and pattern are similar in both species. However, on the up, in *Ch. schwartzi* the discal and postdiscal portions of the cell are black with some yellow scaling, but in *Ch. haitensis* the basal portion of the cell is dark and has a black V

in the position of the anterior portion of the male stigma. Male up coloration and pattern are similar in both species.

Remarks. The series of *Ch. schwartzi* consists of 11 males and eight females from the Cordillera Central. Gali and Schwartz (MSb) and Schwartz (1982) discussed the ecology of the locality west of Jayaco. Four specimens of *Ch. schwartzi* were collected there on 21.vii.1980, 23.vii.1980 (2 specimens), 3.vii.1980; 30° C, 31° C, 27° C; 1015-1200 h, 1145-1430 h, 1230-1300 h. Despite the fact that the area is a mesic wooded ravine, the skippers were collected in open grassy areas. Three ♂ *Ch. haitensis* were collected there as well; one on 11.vii.1980 and two on 17.viii.1981. Thus, the two species are syntopic at this locality. The Buena Vista locality is cut-over pinewoods; one specimen of *Ch. schwartzi* was collected on 1.vii.1981, 32° C, 1200-1415 h, day sunny, then overcast but hot. The skipper was secured in a grassy area at the end of a path in open pinewoods. One ♂ specimen of *Ch. haitensis* was taken on 1.viii.1981. Once again, the two species are syntopic. The La Palma locality is a mesic wooded river bottom with *cafetales.* One *Ch. schwartzi* was secured on 28.xii.1980, 20° C, 1200-1345 h, day bright and sunny. The specimen was taken along an open dirt road leading to the river and woods. Collecting dates of *Ch. schwartzi* at La Palma are: 13 collected on 9.viii.1982, 24. C, 27. C; 0915-1000 h, 1130-1400 h, day bright and sunny in morning, but sunny with occasional overcast in afternoon. In addition, 7 *Ch. haitensis* were collected along with *Ch. schwartzi.* Both species were collected on the roadside from low shrubs in the morning. However, skippers were very common in fields along the road in the afternoon.

Etymology. Choranthus schwartzi is named in honor of Albert Schwartz, whose leadership, encouragement, and friendship have greatly enhanced my work; it is with pleasure I name this species for him.

CONCLUSIONS

It is pertinent to comment on *Ch. melissa* and its local occurrence. *Choranthus melissa* is found along woodland edges or in mesic deciduous forest. However, *Ch. haitensis* and *Ch. schwartzi* are strictly open grassy area inhabitants. *Choranthus haitensis* have been collected throughout the island at elevations from sea level to 1229 m; its habitats are unquestionably open grassland. Thus, *Ch. melissa* is a very isolated insect at elevations of 732-1220 m and frequently occurs aloing woodland edges and within the woods themselves. However, one specimen of *Ch. haitensis* was secured at Las Abejas. This is not only a high elevational record, but one of three specimens of *Ch. haitensis* on the south island in the República Dominicana. It is not indicative of the situation in the Sierra de Baoruco. During the summers of 1981-82, many *Ch. melissa* were secured as compared with three *Ch. haitensis* on the south island. The Sierra de Baoruco in the República Dominicana and the Massif de la Selle in Haiti at higher elevations are invariably clothed in pinewoods. It is interesting that *Ch. melissa* occurs in mesic deciduous forest enclaves surrounded by pinewoods. Apparently, *Ch. melissa* and *Paratrytone batesi* are ecologically reciprocal; the latter is a high elevation pinewoods skipper. We did not encounter *Ch. melissa* in surrounding pinewoods.

Choranthus schwartzi and *Ch. haitensis* were collected in grassy areas, near either pine or deciduous forest, along the edges of the Cordillera Central at elevations up to 1007 m. Three *Ch. haitensis* were collected in the Sierra de Baoruco; one of these specimens sets the upper elevational limit for that species. *Choranthus haitensis* does not occur above this limit. Intensive collecting within the Cordillera Central at Constanza, for instance, yielded no *Choranthus* of any species, but in pinewoods above (higher than 1750 m) Constanza, occurs *P. batesi.* Thus it appears that *Ch. schwartzi* and *Ch. haitensis* occupy syntopically a relatively narrow elevational band along the northeastern edge of the Cordillera Central.

Specimens examined. Ch. haitensis: Haiti, Nord, Carrefour La Mort, (2 ♂, AS); 5.6 km SE Dondon, 336 m (1 ♂, AS); 1.8 km S Dondon, 366 m (1 ♂, AS); *l'Artibonite,* 1.6 km E Carrefour Marmelade, 854 m (2 ♂, AS); *l'Ouest,* 1.6 km N Saut d'Eau, 183 m (1 ♂, AS); Boutilliers Rd., 854 m (2 ♂, AS); 1.6 km N Découzé, 702 m (1 ♀, AS); 0.8 km S

Découzé, 702 m (1 ♂, AS); 2.1 km S Découzé, 641 m (1 ♂, AS); 13.6 km E Jacmel (1 ♂, AS); 21.4 km E Jacmel (1 ♂, AS); *República Dominicana, Dajabón,* Los Cerezos, 12 km NW Río Limpio, 580 m (2 ♂, AS); *La Estrelleta,* 10 km S. Elías Piña, 732 m (1 ♂, AS); *Santiago,* La Cumbre, 610 m (1 ♂, AS); 2 km E Pedro García, 425 m (1 ♂, AS); *Puerto Plata,* 8 km E Puerto Plata, ± 15 m (1 ♂, 2 ♀, AS); 11 km SE Sosúa, 45 m (1 ♂, AS); *Espaillat,* 2 km N Puesto Grande, 580 m (4 ♂, AS); *La Vega,* 10 km W Jayaco, 915 m (3 ♂, AS); 19 km W Jayaco, 1006 m (2 ♂, 3 ♀, AS; 2 ♂, 2 ♀, FG); Buena Vista, 11 km NE Jarabacoa, 641 m (1 ♂, AS); *San Cristóbal,* 7 km SE Yamasá, 31 m (1 ♂, AS); 2 km W Esperalvillo, 92 m (1 ♂, AS); *Samaná,* 6.9 km NE Sánchez, 336 m (5 ♂, 2 ♀, AS); 13.2 km NE Sánchez, 92 m (5 ♂, AS); *La Altagracia,* 16 km NE La Romana, 61 m (2 ♂, AS; 1 ♂, RWW); *Distrito Nacional,* 30 km NW Santo Domingo, 122 m (2 ♂, FG; 2 ♂, RWW); *Pedernales,* 1 km N Cabeza de Agua, 274 m (1 ♂, AS); Mencía, 396 m (1 ♀, AS); Las Abejas, 12 km NW Aceitillar, 1128 m (1 ♀, AS).

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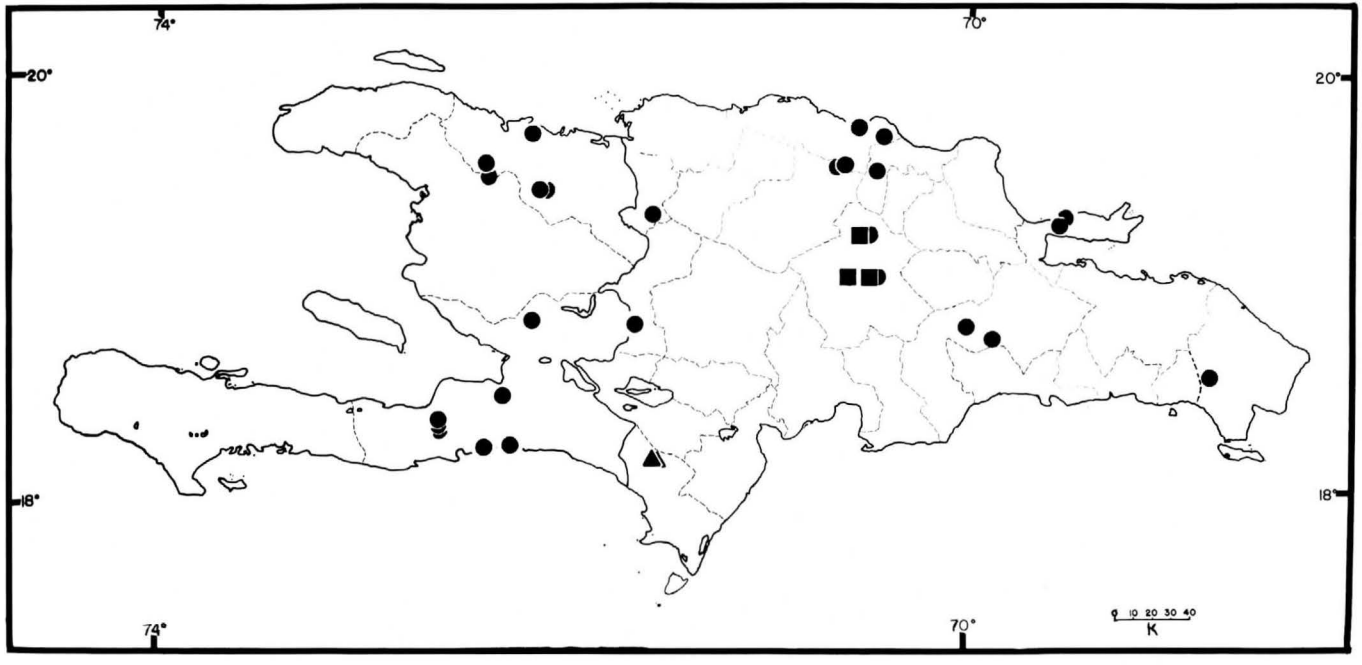

Fig. 1. Map of Hispaniola, showing localities for three species of *Choranthus*, as follow: *Ch. haitensis*, solid circles; *Ch. melissa*, solid triangles; *Ch. schwartzi*, solid squares. Squares-and-semicircles in Prov. de la Vega indicate localities of syntopy of *Ch. haitensis* and *Ch. schwartzi*.

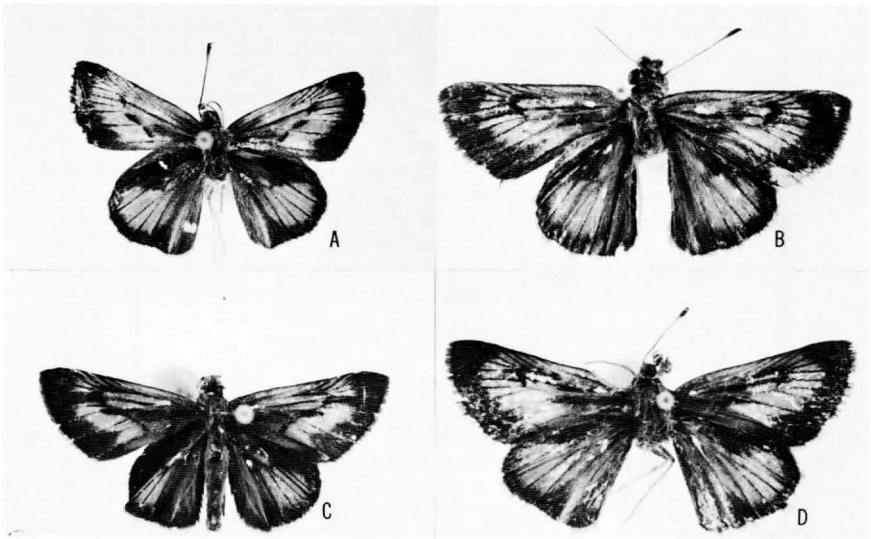

Fig. 2. Uppersides of three species of Hispaniolan *Choranthus*. **A**, Male *Ch. haitensis*; **B**, female *Ch. haitensis*1 mi. N Découzé, 2300: Dept. du Nord Haiti); **C**, *Ch. melissa* (male holotype); **D**, *Ch. schwartzi* (female holotype).

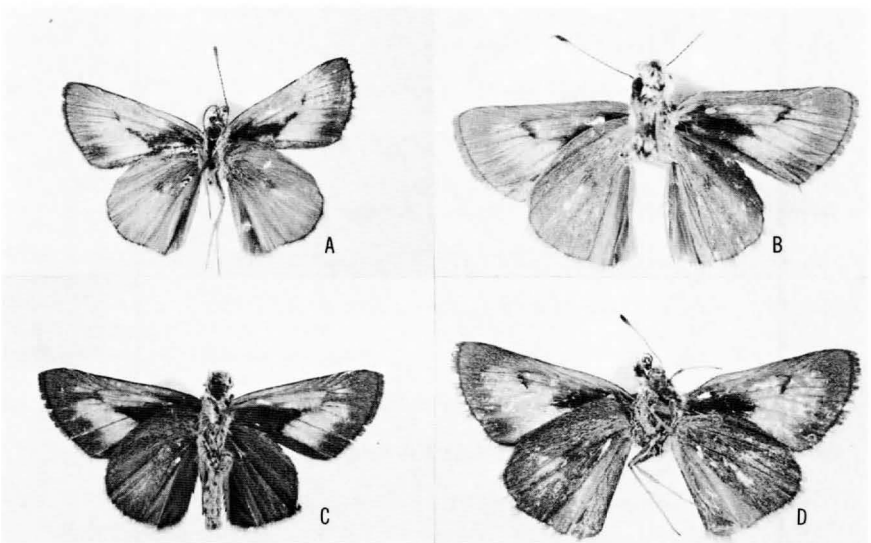

Fig. 3. Undersides of three species of Hispaniolan *Choranthus* (same specimens as in Fig. 2); **A**, *Ch. haitensis* (male); **B**, *Ch. haitensis* (female); **C**, *Ch. melissa* (male holotype); **D**, *Ch. schwartzi* (female holotype).

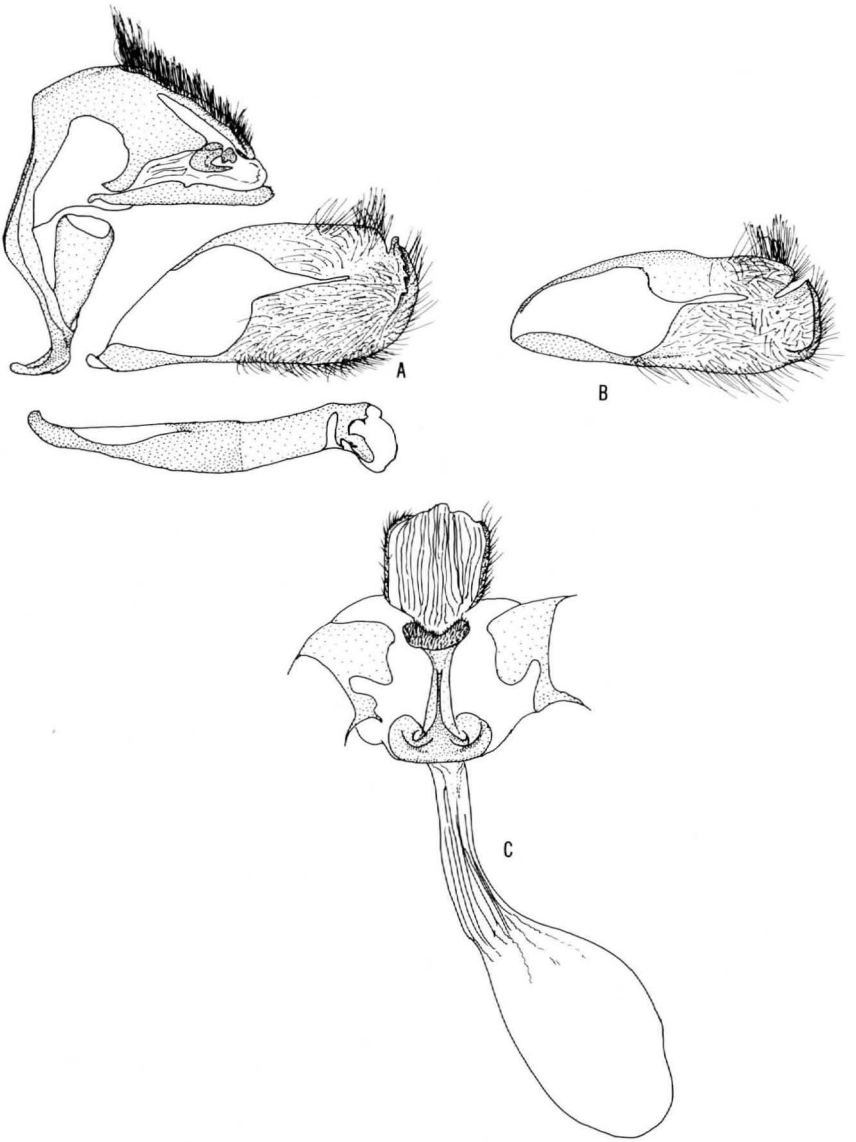

Fig. 4. Genitalia of species of *Choranthus;* **A,** *Ch. melissa* (male genitalia); **B,** *Ch. schwartzi* (male valva); **C,** *Ch. schwartzi* (female genitalia).

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