

NEW SPECIES OF HESPERIIDAE FROM COSTA RICA

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ABSTRACT.— Four new species of HesperIIDae are described from Costa Rica: *Staphylus unicornis* n. sp., *Staphylus parvus* n. sp., *Artines rica* n. sp., *Phemiades rufescens* n. sp.

KEY WORDS: *Artines*, *Artines rica* n. sp., *Bolla*, Costa Rica, HesperIIDae, Neotropical, Panama, *Phemiades*, *Phemiades rufescens* n. sp., *Propertius*, *Staphylus*, *Staphylus parvus* n. sp., *Staphylus unicornis* n. sp..

Recent collections of HesperIIDae in Costa Rica have produced numerous taxa not previously recorded from the country including two undescribed species each of Pyrginae and HesperIIDae. These are named and described herein. Terminology for the posterior cells on both wings follows Steinhauser (1991) where the upper and lower portions of cell CuA_2-2A are distinguished by the ancestral position of vein 1A.

Staphylus unicornis Steinhauser & Austin, new sp.

Figs. 1, 2 (♂); 3, 4 (♀); 15 (♂ genitalia); 16 (♀ genitalia)

DESCRIPTION.— **MALE:** Forewing length: 12.7mm (12.1-13.6, N = 15; HT = 12.4). *Dorsum:* forewing dark brown (nearly black); paler brown distally, especially in submargin, appearing as a vague, narrow postdiscal band; small subapical hyaline white spots in R_3-R_4 and R_4-R_5 (some, including holotype, with third subapical spot in R_5-M_1 , offset slightly distad); minute to small (occasionally absent) hyaline white spot near base of CuA_2-1A behind fork of CuA_2 from cubitus; larger and rectangular (rarely absent) postdiscal hyaline white spot in CuA_1-CuA_2 ; another of variable size but smaller and occasionally absent in M_3-CuA_1 ; one at upper distal end of discal cell (some specimens, including holotype, with lower spot as well); costal fold prominent, internal scales white to very pale yellow; termen distinctly angled at M_3 and slightly excavate in CuA_1-2A ; fringe dark gray. *Hindwing* dark brown as forewing with indistinct, slightly paler postdiscal band and very faint, narrow paler central band, these paler areas vaguely setting off dark postmedian band; wing basally with long, somewhat shiny hair-like scales; termen distinctly undulate; fringe dark gray. *Venter:* forewing brown paler than on dorsum; submargin slightly paler than rest of wing and with a few scattered whitish scales; white spots of dorsum repeated. *Hindwing* color as forewing becoming paler brown posteriorly; vague pale areas as on dorsum; scattered whitish scales over entire wing, densest along anal margin. *Head:* Palpi black with numerous scattered white scales especially ventrally. Antennae about half costa; blackish above, shaft checkered with yellowish white beneath; yellowish white beneath club; club broad and flat as normal for the genus, curved to abruptly narrower apiculus beyond thickest part; nudum 10.8 (10-12, N = 13; HT = 11). Head black with scattered white scales. Thorax and abdomen blackish with a few scattered white scales above and numerous grayish scales beneath. Legs brown with grayish scales especially

proximally; tibiae smooth, mid tibiae with a single pair of spurs, hind tibiae with two. *Genitalia:* uncus with prominent fan-shaped dorsal hair tuft anteriorly at junction with tegumen, caudad of which it is angled ventrocaudad, then caudad with a slight downward curve, slight ventral hook at distal end; gnathos bilobed; tegumen broad, relatively short, constricted caudad to vinculum juncture; valvae symmetrical although bristles may vary left to right; ampulla prominently projecting dorsad at junction with harpe, as a broad, bluntly pointed isosceles triangle, usually curving somewhat forward; harpe rather short, caudally rounded, slightly overlapping ampulla, covered on outer and inner surfaces by many fine setae. The outer surface of the valva bears varying numbers of stout, dorsally directed, socketed bristles, the largest of which (often the only one) arises from the exterior surface of either the harpe at its junction with the ampulla, or of the ampulla process, which may bear up to three of these bristles on its outer surface; ampulla and costa not clearly separable. Penis slender, slightly shorter than valva, without teeth or cornutus; juxta a simple band, transtilla with two lateral clusters of long, slender, posteriorly directed bristles (Evans' vinculum brushes); saccus very short. Eighth tergite when flattened and viewed dorsally, centrally constricted, its outer caudal corners bearing two or more caudally directed, long, slender bristles similar to other species of the *S. ascalaphus* group.

FEMALE: Forewing length: 12.7mm (12.0-13.9, N = 12). *Dorsum:* forewing gray-brown, blackish in mid discal cell, this color sometimes vaguely extending to anal margin; somewhat macular postmedian and marginal blackish bands; hyaline spots as on male, generally larger and more persistent; a few scattered whitish scales over wing surface; termen as on male, somewhat more excavate in CuA_2-2A ; fringe as on male. *Hindwing* ground color as forewing with blackish submedian, postmedian and marginal bands; scattered whitish scales especially along anal margin; termen undulate as on male; fringe dark gray. *Venter:* as on male, but ground color paler, dark areas thus more contrasting. *Head,* thorax and abdomen as male. Antennal nudum 10.9 (10-11, N=9). *Genitalia:* lamellae postvaginalis and antevaginalis as described by Steinhauser (1989:39) for *S. ascalaphus*. We have been unable to find any solid, consistent differences to distinguish between the two species; they are best differentiated on superficial characters, as discussed below. The point of attachment for the ductus seminalis to the ductus bursae is well cephalad of the antrum, a character shared by many *Staphylus* species.

TYPES.— *Holotype* ♂: COSTA RICA.— Limon Province; Puerto

Viejo, 13 Sep 1986, *leg.* G. & A. Austin with the following labels: printed white label - COSTA RICA / Limon Province / Puerto Viejo / 13 Sept. 1986 / leg G&A Austin; printed and hand printed white label - Genit. Vial / SRS - 4075; printed red label - HOLOTYPE / (male symbol hand printed) / *Staphylus unicornis* / S. R. Steinhauser / & G. T. Austin; printed and hand printed white label - SRS Database / No. 597; printed and hand printed white label - Allyn Museum Photo / No. 920319; 19A - / 17, 18; 16, 17.

Paratypes (66 ♂, 24 ♀; all COSTA RICA (*leg.* G. & A. Austin unless otherwise noted).— *Cartago*: Ruta 10, Rio Chitaria, 8 Mar 1986 (3 ♂), 11 Mar 1986 (1 ♂, 1 ♀). Ruta 10, Rio Reventazon, 8 Mar 1986 (3 ♂), 1 Sep 1987 (2 ♂). Tuis-Moravia Road, 2-4km E Bajo Pacuare, 7 Oct 1987 (1 ♀). Ruta 10, 15km E Turrialba, 11 Mar 1986 (1 ♂). *Heredia*: Ruta 9, Chilamate, Finca Selva Verde, 24 Sep 1986 (1 ♂). Puerto Viejo area, near Finca La Selva, 14 Mar 1986 (1 ♂). 3.8km N Santa Clara, 5 Sep 1987 (3 ♀), 5 Oct 1987 (2 ♂). *Limon*: Puerto Viejo, 13 Sep 1986 (12 ♂, 3 ♀). Ruta 36, Playa Bananito, 9 Mar 1986 (4 ♂), 11 Apr 1989 (3 ♂, 1 ♀), 2 Sep 1987 (1 ♀), 13 Sep 1986 (3 ♂, 1 ♀). NW of Guapiles, 8.3km NW Rio Blanco, 11 Mar 1986 (1 ♂). Germania, 12 Sep 1986 (1 ♂, 1 ♀). Road to Guapiles, Germania, 10 Mar 1986 (5 ♂), 15 Apr 1989 (2 ♀), 12 Sep 1986 (1 ♂, 3 ♀), 5 Oct 1987 (1 ♂, 2 ♀). Rio Blanco Road, Rio Victoria, 12 Apr 1989 (2 ♂), 6 Oct 1987 (1 ♂). Rio Blanco Road, 3.7km S Rio Blanco, Rio Victoria, 4 Sep 1987 (2 ♂). Ruta 36, 10km NW Puerto Viejo, 13 Sep 1986 (1 ♂). Road to Bananito Sur, 5.4km SW Ruta 36, 1 Sep 1987 (2 ♂, 1 ♀), La Bomba, 2 Sep 1987 (3 ♂). Rio Blanco-Petroleo Road, 2.7km S Ruta 32, 4 Sep 1987 (1 ♂). Sixaola Road, 10km N Sixaola, 3 Sep 1987 (1 ♂). Perla de Siquirres, 4-5 Apr 1985, *leg.* Miguel (5 ♂, 3 ♀). Ruta 36, 15.1km SE Playa Bananito, 9 Mar 1986 (1 ♂). Freehold, east of Siquirres, 8 Mar 1986 (1 ♂). Road to Guapiles, Herediana, 10 Mar 1986 (1 ♂, 1 ♀).

TYPE LOCALITY.— The type series is entirely from the Atlantic slope of Costa Rica, the holotype male being from near sea level, just north of the community of Puerto Viejo, 9°39'N, 82°46'W, 10m in elevation; the specimen was collected on the edge of disturbed forest.

DEPOSITION OF TYPES.— The holotype will be deposited at the Allyn Museum of Entomology. The paratypes will be distributed among various collections.

DISTRIBUTION.— This species is known at present only from the Atlantic slope of southeastern Costa Rica from the Chilamate-Puerto Viejo area in Heredia Province southward. It occurs mainly below 100m in elevation (but recorded to 1000m) and often on the immediate coast.

ETYMOLOGY.— On many of the males, including the holotype, there is only one very prominent single socketed bristle arising from near the base of the dorsal process of the ampulla. This reminded us of the fabled unicorn; thus the name.

DISCUSSION.— The male genitalia, especially the form of the uncus, place *S. unicornis* clearly in the *Staphylus mazans* (Reakirt, [1867]) group where it will key out in Evans (1953). Freeman (1969) considered the taxa included as subspecies of *S. mazans* by Evans to be valid species; this was reiterated by Steinhauser (1989). The male genitalia of *S. unicornis* are most similar to *Staphylus ascalaphus* (Staudinger, 1875), but the harpe is shorter and with fewer bristles, the dorsal process of the ampulla is much broader and has one or more bristles on its outer, posterior face (or from the outer surface of the harpe just below its juncture with the ampulla), not found on *S. ascalaphus*. Other taxa of the group are *Staphylus tierra* Evans, 1953,

Staphylus veytius Freeman, 1969 and *S. mazans* with no dorsal ampulla process, *Staphylus hayhurstii* (W. H. Edwards, 1870) with a long thin, curved dorsal ampulla process, *Staphylus perforata* (Möschler, 1878) with two bristles from the inner surface of the ampulla process and several smaller bristles on the harpe, and *Staphylus lenis* Steinhauser, 1989 with several stout bristles on the dorsal edge of the harpe, at least two of which arise from the inner surface of the blunt dorsal process of the ampulla, and with many long, slender bristles on the external surface of the harpe, directed caudo-dorsally rather than dorsally as on *S. unicornis* and *S. ascalaphus*.

Superficially, *S. unicornis* is similar to other members of the *S. mazans* group, but usually has more and larger hyaline spots. The species most easily confused with *S. unicornis* is the sympatric *S. ascalaphus*, which is generally larger in size, has more distinct and less macular dark bands on both sexes, almost always lacks the lower hyaline spot in the forewing discal cell, and the remaining discal spots are usually minute or absent on males. On the females, the forewing hyaline spot in M_3-CuA_1 is almost always present and prominent on *S. unicornis*, but usually absent on *S. ascalaphus*, or minute if present. The forewing of *S. unicornis* is also somewhat more excavate in CuA_2-2A .

Several other *Staphylus* and the related *Bolla* species have been taken at localities with *S. unicornis*: *Bolla phylo pullata* (Mabille, 1878), *Bolla brennus* (Godman & Salvin, [1896]), *Bolla zorilla* (Plötz, 1886), *Staphylus vulgata* (Möschler, 1878), *Staphylus caribbea* (Williams & Bell, 1940), *Staphylus azteca* (Scudder, 1872), *Staphylus vincula* (Plötz, 1886), *S. ascalaphus* and the species to be described next. Also, the type locality of *Staphylus esmeraldus* L. Miller, 1966 is very near collection sites for *S. unicornis*.

***Staphylus parvus* Steinhauser & Austin, new sp.**

Figs. 5, 6 (♂); 7, 8 (♀); 17 (♂ genitalia); 18 (♀ genitalia)

DESCRIPTION.— **MALE:** Forewing length: 10.3mm (holotype). *Dorsum*: forewing blackish-brown; indistinct grayish brown postmedian (relatively broad posteriorly) and submarginal areas; sparsely scattered pale yellow scales at wing base; termen smoothly curved, excavate in CuA_2-2A ; fringe same color as wing; no hyaline spots; no costal fold. *Hindwing*: color as forewing; very indistinct grayish brown submarginal band; sparsely scattered pale yellow scales basally; fringe as on forewing; termen slightly undulate; fringe as on forewing. *Venter*: uniform brown, paler than dorsum; sparse yellow scales on hindwing. *Palpi*: black with a few yellowish scales dorsally and whitish scales ventrally. *Antennae*: missing. Head and body badly rubbed. Legs brownish, middle pair missing; hind tibia smooth with two pairs of spurs, outer member of each pair tiny (much less than half length of inner member). *Genitalia*: uncus slender, tapering, slightly curved downward; gnathos bilobed, narrowly fused ventrally; tegumen short with pair of long, narrow, posteriorly directed lateral processes, these not reaching tip of uncus in any view; valvae symmetrical; harpe small, roughly triangular-shaped, posterior end narrowly rounded, dorso-anterior end slightly produced and finely dentate, this overlapped externally by rounded dorsal ampulla process; ampulla process dentate distally and curved inward over harpe, anterior portion of ampulla/costa broad, dorsally convex; penis slender, smooth, longer than valvae, phallobase long, prominently curved dorsad; juxta thin incomplete ring; saccus short, triangular.

FEMALE: Forewing length: 10.4mm. *Dorsum*: forewing as male;

grayish areas slightly more distinct with additional gray area beneath discal cell; pale yellow scales sparsely to outer margin. *Hindwing*: as on male; gray areas somewhat more distinct; additional narrow submedian gray band; pale yellow scales more dense than on male. *Venter*: as male but with scattered pale yellow scales at forewing base. *Palpi*: as on male. *Antennae*: black above, faintly checkered with white beneath, apiculus curved from beyond thickest part of relatively narrow flattened club; nudum 11. Head and body badly rubbed. Legs missing. *Genitalia*: typical *Staphylus* form with long, slender, membranous ductus bursae and small, spherical corpus bursae; ductus seminalis connected to ductus bursae well cephalad of antrum. Lamella postvaginalis broad, deeply excavate centrally on caudad margin, densely covered with fine microtrichia, prominently sutured on cephalad margin to well sclerotized, bilobed process shaped rather like two cupped hands with the ostium bursae between the wrists. This process is overlapped ventrally by the well sclerotized, bilobed lamella antevaginalis shaped somewhat like a pair of sharply pointed rabbit ears.

TYPES.— Holotype ♂: COSTA RICA: Limon Province; Puerto Viejo, 13 September 1986, leg. G. & A. Austin with the following labels: printed white label - COSTA RICA / Limon Province / Puerto Viejo / 13 Sept. 1986/ leg G&A Austin; printed and hand printed white label - Genit. Vial / SRS - 2963; printed and hand printed white label - *Staphylus parvus* ♂ / Det: S.R. Steinhauser; printed red label - HOLOTYPE / *Staphylus parvus* / S.R. Steinhauser / & G.T. Austin; and printed and hand printed white label - Allyn Museum Photo / No. 920319; 19A / 21, 22; 20, 21.

Paratypes: 1 ♀, same data as the holotype.

TYPE LOCALITY.— COSTA RICA: Limon Province; Puerto Viejo, 9°39'N, 82°46'W, 10m in elevation. The types were taken in an overgrown cacao plantation just west of the town.

DEPOSITION OF TYPES.— The holotype and paratype will be deposited at the Allyn Museum of Entomology.

DISTRIBUTION.— This species is known only from the type locality on the southeast coast of Costa Rica where the type specimens were taken in mid September.

ETYMOLOGY.— The species is named for its small size; although slightly smaller than its nearest relative *S. minor* Schaus, 1902, which is the comparative of "parvus." Schaus (1902) mentioned a wing expanse of 19mm for *S. minor* and Evans (1953) indicated a forewing length of 10mm, but a series at the Allyn Museum averages over 11mm.

DIAGNOSIS AND DISCUSSION.— The male genitalia of *S. parvus* are most similar to those of *S. minor* on which the dorsal process of the ampulla is flattened dorso-ventrally so that it lies in a nearly horizontal plane and directed posteriorly, extending beyond the tip of the harpe; the ampulla/costa of *S. minor* is not dorsally convex but straight to slightly concave. The lateral processes of the tegumen of *S. minor* are considerably shorter than on *S. parvus*. The female genitalia are basically similar to *S. minor*, but the lamella postvaginalis of *S. minor* is not centrally excavate and its lamella antevaginalis has much thinner and longer arms than the "rabbit ears" of *S. parvus*. Superficially, *S. parvus*, lacking both costal fold and hyaline spots, is very similar to *S. minor* where it will key out in Evans (1953). *S. minor* despite its name, is somewhat larger as discussed above, has more pale scales on the ventral hindwing, a more undulate hindwing termen, and the spurs on the hind tibiae of males are more nearly equal in length, the outer spurs being somewhat greater than half the inner.

Artines rica Steinhauser & Austin, new sp.

Figs. 9, 10 (♂); 11, 12 (♀); 19 (♂ genitalia); 20 (♀ genitalia)

DESCRIPTION.— MALE: Forewing length: 14.5mm (13.7-15.4, N = 9; HT = 15.3). *Dorsum*: forewing dark brown; no brands or stigma; minute opaque white spots as follows: subapical in R₃-R₄, R₄-R₅ and R₅-M₁ in a line directed toward mid termen; discal in M₃-CuA₁ and CuA₁-CuA₂ (the largest) and sometimes a whitish spot in 1A-2A (any of these spots may be obsolete or be represented by as few as a single white scale); the spot in M₃-CuA₁ present on all nine males of type series; usually a few scattered whitish scales along costa; fringe gray-brown. *Hindwing*: same dark brown as forewing, unmarked, slightly paler in anal cell; prominent brown hair tuft arising from fold behind vein 2A, the hairs prominently darker brown terminally, nearly reaching tornus; fringe gray-brown. *Venter*: forewing slightly paler brown than dorsum, more so in anal cell; broadly violaceous anterior to discal cell with more or less dense whitish overscaling on basal half; opaque white spots of dorsum repeated somewhat more prominently; apical and preterminal area violet-gray crossed by prominent brown spot band from apex to CuA₁ and distally bordered by prominent brown terminal line; subapical white spots narrowly bordered brown distally before violet-gray area; very prominent whitish subterminal area in CuA₂-2A from midwing nearly to tornus; fringe violet-gray. *Hindwing*: paler brown than dorsum with violet sheen, lightly overscaled gray on basal half anterior to the position of vein 1A, densely overscaled with whitish in 1A-2A and 2A-3A, very sparse overscaling in anal cell; discal cell very weakly closed, with very small central blackish spot at distal end against discocellular veins; very prominent black spot ("peacock eye" of Evans, 1955) in M₁-M₃ beyond cell-end and separated from it by a narrow bluish white streak; curved postdiscal spot-band of shining blue-white, brown rimmed spots from Sc+R₁-Rs to CuA₂-1A, the spot in Sc+R₁-Rs completely detached; bases of Rs-M₁, M₃-CuA₁ and CuA₁-CuA₂ ochraceous, extending slightly into end of discal cell; the blue-white postdiscal spot-band distally bordered by a narrow, semicircular pale yellow band in turn distally bordered by a narrow brown band and then a 1-mm violet-gray band before brown terminal line; fringe violet-gray. *Palpi*: black, heavily scaled white in front and ventrally; third segment long, slender, erect. *Antennae*: greater than half costa, black above, faintly checkered whitish beneath, white at base of long club both above and below; apiculus obtuse from beyond thickest part of club; nudum entirely on apiculus, 11 segments on holotype and five paratypes with antennae. Head dark brown with a very few scattered white scales; thorax and abdomen dark brown above, whitish beneath with thin dark median line on abdomen. Legs brown above, white beneath; hind tibiae smooth with two pairs of spurs; mid tibiae spined with single pair of spurs; fore tibiae with prominent epiphyses reaching base of tarsus. *Genitalia*: uncus entire, broad, not tapered, bluntly rounded caudally; gnathos broad, twice as wide in ventral view as uncus, shallowly bifurcate; valvae long, narrow, symmetrical; harpe extended caudad as narrow finger-like process bearing several long, slender, socketed spine-like bristles; ampulla with a prominent broad, rounded, "knob"-like process densely covered with slender, dentate spines and microtrichia. Penis slender, somewhat broadened distally in dorsal view, strongly concave dorsally in lateral view, bearing a long, slender, "finger"-like caudal process on ventral side; no phallobase, ductus ejaculatorius at extreme cephalad end; cornutus an indistinctly formed feathery process; juxta prominent; saccus moderately long, more or less equal to length of combined tegumen and uncus, broadly triangular.

FEMALE: Forewing length: 14.1mm (13.6-15.0, N = 3). Wings as male, but hindwing without hair tuft. Head, thorax, abdomen, and appendages as male; antennal nudum of 11 segments on one paratype with antennae. *Genitalia*: lamella postvaginalis rather narrow, deeply but narrowly divided by a long "U"-shaped cleft on its caudal margin. Ostium bursae large, circular, very narrowly separated from cleft of

lamella postvaginalis; lamella antevaginalis weakly developed, forming a lightly sclerotized ring around ostium, the post-seventh sternite cuticula is lightly sclerotized, covers the ostium ventrally and could be considered part of the lamella antevaginalis. Antrum not sclerotized; ductus bursae very long, forming a single coil forward of antrum, bearing patterned interior spicules which form vague signa; corpus bursae rather spherical (or is this merely the cephalad terminus of a long, slender corpus rather than ductus?), sharply angled. Ductus seminalis attached at antrum; papillae anales quadrate; apophyses posteriores approximately equal to papillae width; apophyses anteriores not developed.

TYPES.— Holotype ♂: COSTA RICA: Cartago Province; Turrialba, 1 June 1972, leg. H. L. King, bearing the following labels: printed and hand printed white label - COSTA RICA: CARTAGO / Turrialba [sic!] / 1.vi.1972 / H. L. King; printed white label - A. C. Allyn Acc. 1972-5; printed red label - HOLOTYPE / *Artines rica* / S. R. Steinhauser / & G. T. Austin; printed and handprinted white label - Allyn Museum Photo / No. 890626-19,20 / 890719-21, 22; printed and hand printed white label - SRS Database / No. 568.

Paratypes (8 ♂, 3 ♀): COSTA RICA (leg. H. L. King unless noted otherwise).— *Cartago*: Turrialba, 22 Jun 1971 (1 ♂), 30 Jun 1971 (1 ♂), 25 May 1972 (1 ♂), 28 May 1972 (2 ♂), 1 Jun 1972 (2 ♂), 2 Jun 1972 (1 ♀), 10 Jun 1972 (1 ♀), 8 Sep 1971, leg. T. Taylor, (1 ♀), 15 Jul 1973, leg. M. S. Condie (1 ♂).

TYPE LOCALITY.— COSTA RICA: Cartago Province; Turrialba, 9°54'N, 83°41'W, elevation 600m.

DEPOSITION OF TYPES.— The holotype and 11 paratypes are deposited at the Allyn Museum of Entomology.

DISTRIBUTION.— This species is known at present only from the type locality, Turrialba, a single male from Brazil: D. F.; near Sobradinho, 1-2 May 1973, leg. C. Callaghan, and three males and a female from the vicinity of Cacaulandia, Rondônia, Brazil. The identity of the first Brazilian specimen is slightly questionable because of damage to the genitalia.

ETYMOLOGY.— This insect is named for Costa Rica.

DIAGNOSIS AND DISCUSSION.— Superficially, *A. rica* is practically identical to *Artines aepitus* (Geyer, [1832]), differing only in the size of the forewing white spots which are slightly larger, on average, on *A. aepitus*. Individuals may vary, but the overall difference can be seen in series. The genitalia of the two taxa are very distinct. On the male, the harpe of *A. aepitus* is much longer and the "knob"-like process of the ampulla much smaller and actually located on the proximal portion of the harpe. The gnathos of *A. rica* is both longer and broader than of *A. aepitus* on which it is about equal in breadth to the uncus; the ventral penis process of *A. aepitus* extends further caudad than on *A. rica*. In the female genitalia, the two taxa are very similar, but the ostium bursae of *A. aepitus* is separated from the base of the cleft of the lamella postvaginalis by approximately the diameter of the ostium, whereas on *A. rica*, they are nearly adjacent. The distribution of *A. aepitus* is from Panama south to Brazil (Evans, 1955).

***Phemiades rufescens* Steinhauser & Austin, new sp.**

Figs. 13, 14 (♂); 21 (♂ genitalia)

DESCRIPTION.— MALE: Forewing length: 17.4mm. *Dorsum*: forewing produced; black with orange postmedian band of quadrate spots separated by dark veins from vein R_4 to mid anal margin, those behind

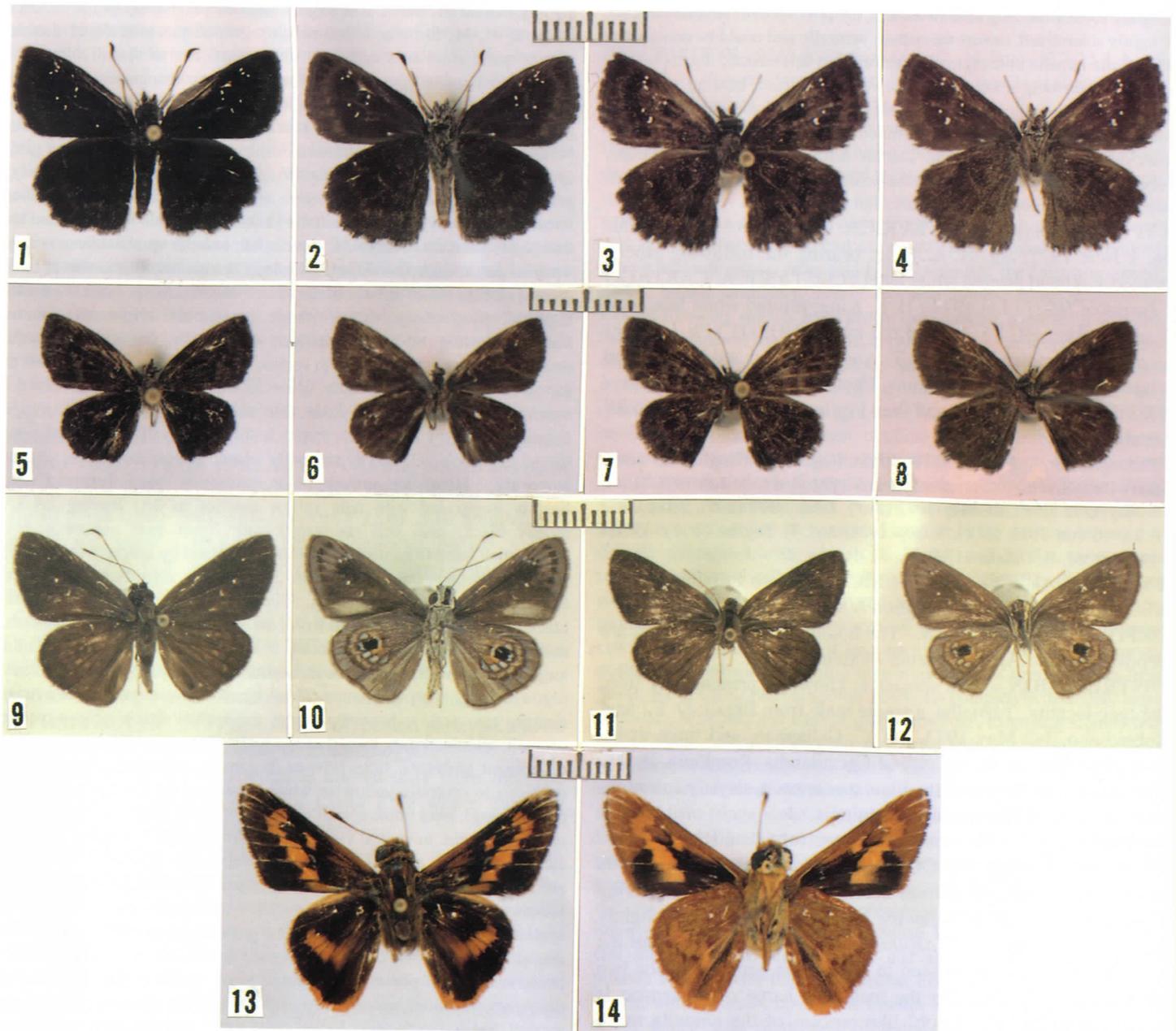
M_3 staggered; a few orange scales also in R_3 - R_4 ; band slightly offset distally behind M_1 where it is angled, the subapical spots of the band in R_4 - R_5 to M_1 - M_2 forming a line roughly normal to costa; fused double spot of same color near narrowly black distal end of discal cell; basal half of costa and of discal cell dull orange; some orange scaling at base of CuA_2 -2A and extreme base of CuA_1 - CuA_2 . There is a narrow tripartite gray stigma in CuA_1 - CuA_2 , not reaching either vein, extending from behind origin of CuA_1 , continuing behind CuA_2 as two smaller gray spots in CuA_2 -1A, not reaching 2A. Fringe dull orange posteriorly, grading to ground color anteriorly. *Hindwing*: narrow, produced at tornus; black with orange postmedian band of quadrate spots divided by dark veins from mid cell Rs - M_1 to vein 2A; anterior spot smallest, nearly square; spot in CuA_2 -2A diffuse with long orange hair-like scales to base of cell; similar scales at base of discal cell and in 2A-3A; costal and anal margins yellow-orange; fringe orange, longest and brightest at tornus. *Venter*: forewing red-brown anteriorly and distally, this widest at apex, narrower along costa, tapering to tornus; remainder of wing black except for yellow-orange postmedian spots as on dorsum but less distinct anteriorly on paler ground color, and absent behind 2A; dull orange anterior streak in discal cell fused with orange-yellow cell-end spot distad of which cell-end is narrowly black; fringe red-brown, darker anteriorly. *Hindwing*: ground color red-brown, black behind CuA_2 , heavily overscaled with pale yellow anterior to 2A; leaving 2A-3A mostly black; anal cell red-brown with fewer pale yellow scales; postmedian band from above indistinct, bordered by sparsely overscaled red-brown ground color; spot in 1A-2A yellower, slightly more distinct; fringe red-brown. Palpi missing. Antennae slightly less than 1/2 costa; black above, yellow-orange in front, including club, checkered beneath; nudum 8/8, red-brown; club stout, 0.3 total antennal length; apiculus long, 1.6 club width, angled well beyond thickest part of club, terminal segment long, sharply pointed. Head black above centrally, otherwise orange, pale yellow beneath; thorax red-brown above, yellow-orange beneath; abdomen dark brown above with ochreous and fulvous scaling at segment junctures; sides fulvous, becoming ochreous below median; ochreous to centrally yellowish white beneath. Legs red-brown (middle pair missing); hind tibiae spined with pair of distal spurs, single proximal spur. *Genitalia*: in ventral view, uncus narrowly and shallowly bifurcate caudally; gnathos divided, converging caudally, the tips lightly shagreened; in lateral view, uncus slender, terminally hooked; gnathos broader, rectangular, slightly shorter than uncus and appressed to it. Valvae symmetrical; harpe broadly quadrate posteriorly, extending dorsad of ampulla, slightly curved inward, somewhat ridged or wrinkled dorso-posteriorly, small posteriorly directed tooth on lower posterior corner, dorso-anterior inner side with inwardly projecting vertical flap; ampulla narrow, barely overlapping harpe; costa rather humped anteriorly where valva is nearly 1/3 broader than harpe. Penis long, more than twice valva length, slender, bearing single small tooth distally on right side, somewhat larger, semi-detached tooth-like process or "flag" on left side; four small tooth-like cornuti, one with double points; juxta and transtilla prominent.

FEMALE: unknown.

TYPES.— Holotype ♂: COSTA RICA: Heredia Province; 3.8km N Santa Clara, 5 Oct 1987, leg. G. & A. Austin with the following labels: printed white label - COSTA RICA / Heredia Province / 3.8km N / Santa Clara / 5 Oct 1987 / leg G&A Austin; printed and hand printed white label - Genit. Vial / SRS - 2955; printed red label - HOLOTYPE / *Phemiades rufescens* / S. R. Steinhauser / & G. T. Austin. This is the only known specimen.

DEPOSITION OF TYPE.— The holotype will be deposited at the Allyn Museum of Entomology.

TYPE LOCALITY.— COSTA RICA: Heredia Province; 3.8km north of Santa Clara, 10°15'N, 83°54'W, at 200m elevation. The



Figs. 1-14. New species of Hesperiidae from Costa Rica (scale line = 1 cm): 1) *Staphylus unicornis*, new species, holotype male, dorsal surface, data in text; 2) *Staphylus unicornis*, holotype male, ventral surface; 3) *Staphylus unicornis*, paratype female, dorsal surface, COSTA RICA: Limon Province; Germania, 12 Sept. 1986; 4) *Staphylus unicornis*, paratype female, ventral surface, same specimen as Fig. 3; 5) *Staphylus parvus*, new species, holotype male, dorsal surface, data in text; 6) *Staphylus parvus*, holotype male, ventral surface; 7) *Staphylus parvus*, paratype female, dorsal surface, COSTA RICA: Limon Province; Puerto Viejo, 13 Sept. 1986; 8) *Staphylus parvus*, paratype female, ventral surface, same specimen as Fig. 7; 9) *Artines rica*, new sp., holotype male, dorsal surface, data in text; 10) *Artines rica*, holotype male, ventral surface; 11) *Artines rica*, paratype female, dorsal surface, COSTA RICA: Cartago Province; Turrialba, 10 June 1972; 12) *Artines rica*, paratype female, ventral surface, same specimen as Fig. 11; 13) *Phemiades rufescens*, new sp., holotype male, dorsal surface, data in text; 14) *Phemiades rufescens*, holotype male, ventral surface.

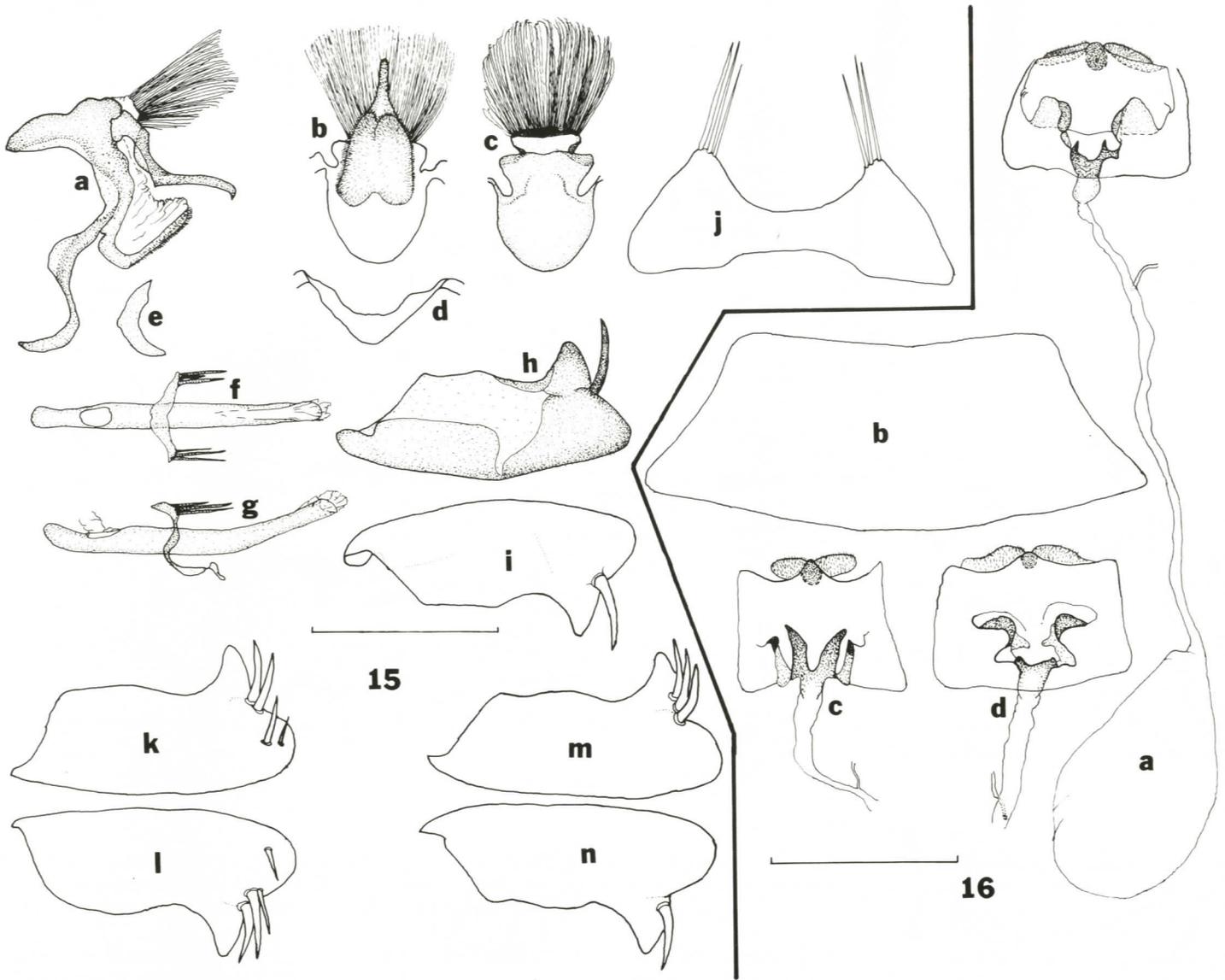
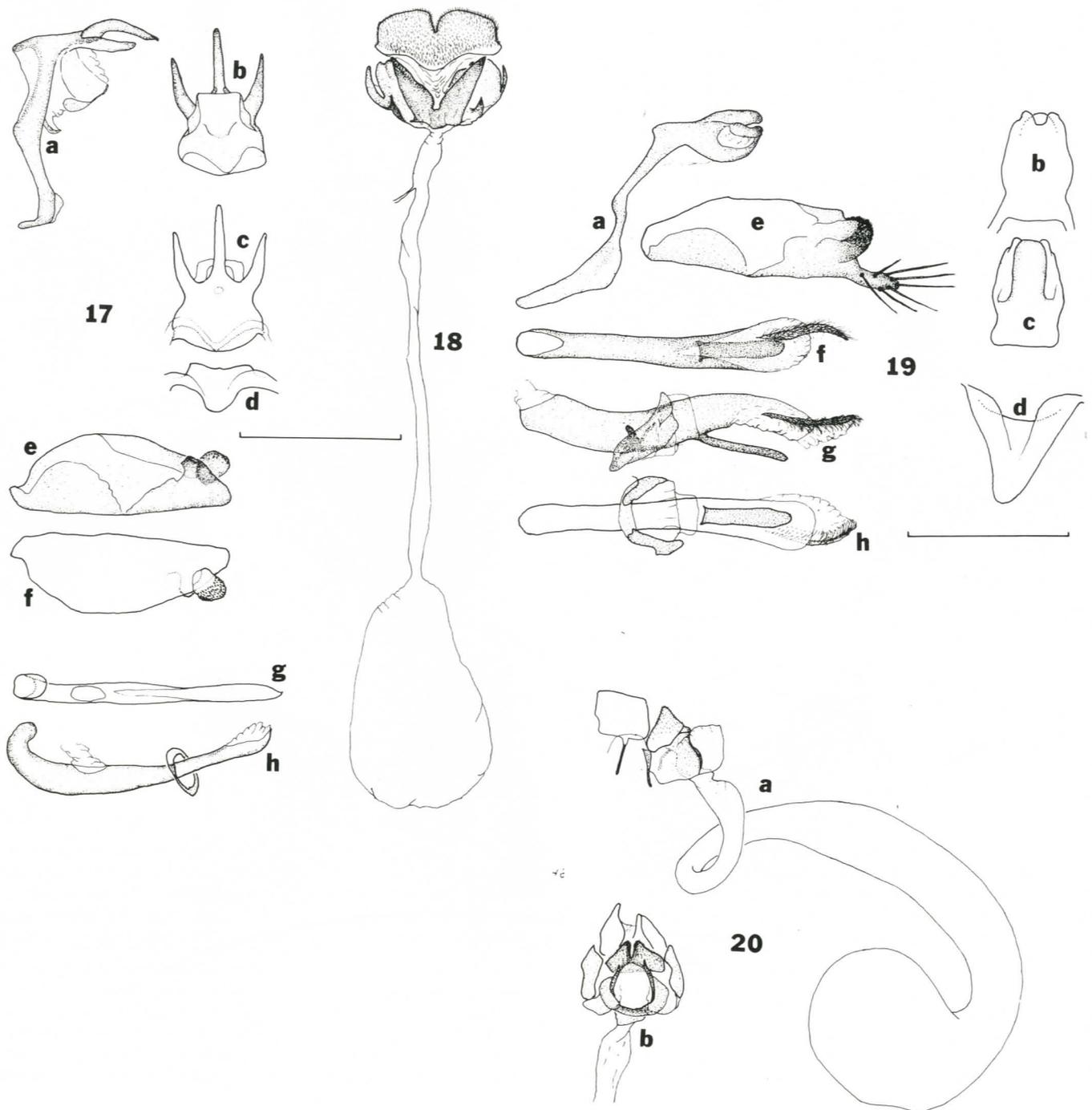


Fig. 15-16. *Staphylus unicornis*, genitalia (scale line = 1 mm): **15.** Male, (a-j) holotype, genit. vial SRS-4075: a) tegumen, uncus, gnathos, and associated structures - lateral; b) same - ventral; c) same - dorsal; d) saccus - ventral; e) juxta - ventral; f) penis, transtilla - dorsal; g) penis, transtilla, juxta - lateral; h) right valva interior; i) right valva - exterior; j) 8th tergite, flattened - dorsal; (k, l) paratype, COSTA RICA: Limon Prov., genit. vial SRS-2988: k) left valva - exterior; l) right valva - exterior; (m, n) paratype, COSTA RICA: Limon Prov., genit. vial SRS-2981: m) left valva exterior; n) right valva - exterior. **16.** Female, ventral views of three paratypes, COSTA RICA: Limon Prov., papillae anales not shown: a, b) genit. vial SRS-3038: a) genitalia; b) 7th tergite, flattened; c) genit. vial SRS-3045; d) genit. vial SRS-2999.



Figs. 17-18. *Staphylus parvus*, genitalia (scale line = 1 mm). 17. male holotype, genit. vial SRS-2963: a) tegumen, uncus, gnathos, and associated structures - lateral; b) same - ventral; c) same - dorsal; d) saccus - ventral; e) right valva - interior; f) right valva - exterior; g) penis - dorsal; h) penis, transtilla, juxta - lateral. 18. Female paratype, COSTA RICA: Limon Prov., genit. vial SRS-3000, ventral view, papillae anales not shown.
 Figs 19-20. *Artines rica*, genitalia (scale line = 1 mm). 19. Male paratype, COSTA RICA: Cartago Prov., genit. vial SRS-2637: a) tegumen, uncus, gnathos, and associated structures - lateral; b) same - ventral; c) same - dorsal; d) saccus - ventral; e) right valva interior; f) penis - dorsal; g) penis, juxta - lateral; h) same - ventral. 20. Female paratype, COSTA RICA: Cartago Prov., genit. vial SRS-2817: a) lateral; b) ventral.

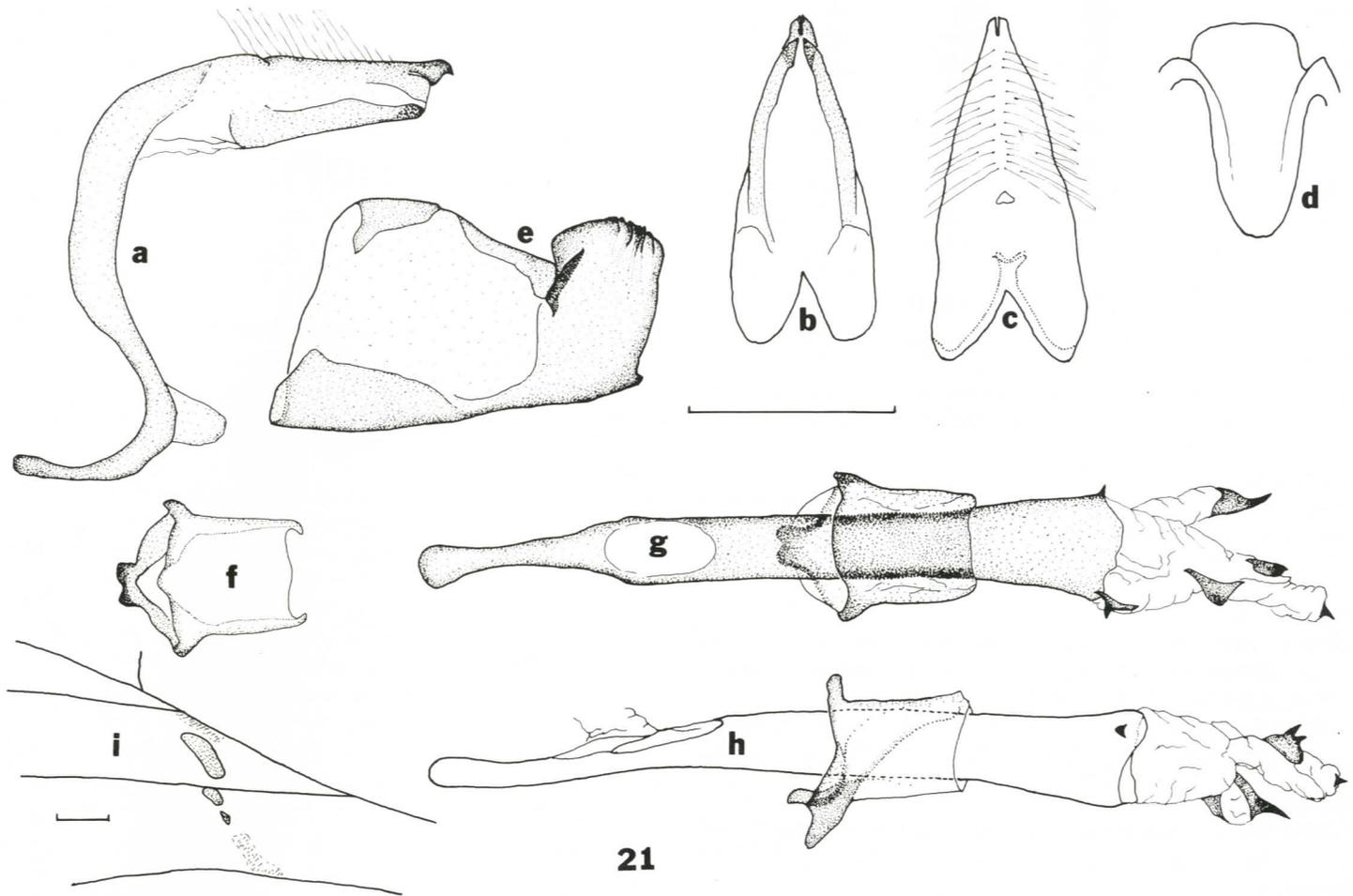


Fig. 21. *Phemiades rufescens*, male genitalia and secondary sex characters (scale line = 1 mm), holotype, genit. vial SRS-2955: a) tegumen, uncus, gnathos, and associated structures - lateral; b) same - ventral; c) same - dorsal; d) saccus - ventral; e) right valva - interior; f) juxta - ventral; g) penis, transtilla, juxta - dorsal; h) same - lateral; i) forewing stigma (sparse specialized black scales indicated by fine lines).

type was taken in disturbed forest (or its edge) between Rio Chirripo and Rio Sucio.

DISTRIBUTION.— This species is known only from the holotype taken in early October on the Atlantic slope of Costa Rica.

ETYMOLOGY.— The name refers to the reddish-brown ventral surface.

DIAGNOSIS AND DISCUSSION.— As noted by de Jong (1983), Hübner (1819) misidentified an unnamed species as *Papilio phineus* Cramer, [1777] when he included this species in his new genus *Phemiades*, which was described as having the "underside only sparsely marked with black." It is not clear, however, whether de Jong has actually applied to the International Commission on Zoological Nomenclature to decide how the resultant problem should be resolved. Meanwhile, we follow his action of separating *Phemiades* from *Propertius* Evans, 1955 on the basis, primarily, of the form of the uncus and gnathos: of equal length, broad and complexly fused in *Propertius*; gnathos shorter than and separate from the terminally narrow, bifurcate uncus in *Phemiades*. This clearly places our new species in *Phemiades* despite its narrow broken stigma which Evans (1955) used to characterize *Propertius*, and which is quite different from the brands of *Phemiades pseudophineus* de Jong, 1983.

The genitalia of *P. rufescens* are very similar, if not identical to those illustrated by Evans (1955) as *Phemiades pohli* (Bell, 1932), but rather different from Bell's figure, in which the harpe is rounder distally and lacks the small distal projection from its ventro-caudal corner, found on both the others as well as on *Phemiades cidra* Evans, 1955, which, incidentally deserves separate specific status, rather than subspecific. Superficially, *P. rufescens* differs from *P. pohli* in having an essentially black forewing discal cell with an orange cell-end spot on the dorsum instead of the essentially orange cell of *P. pohli* with a narrow median black stripe. The hindwing orange discal area of *P. pohli* is much more extensive than on *P. rufescens*, nearly reaching the termen in M_1 - M_2 .

From Evans' description and genitalia sketch, it appears that he misidentified *P. pohli*, although this remains conjectural until we have compared the type with the BM(NH) material (Olaf Mielke considers Evan's concept of *P. pohli* the same as that of Bell). Superficially, *P. "pohli"* Evans, *nec* Bell, differs from *P. rufescens* apparently only in the forewing stigma, which is prominently bordered with shining black scales at each end on *P. "pohli"* but with a mere suggestion of such scales on *P. rufescens*. The valva of *P. cidra* has a much more prominent distal tooth than either *P.*

rufescens or *P. "pohli"* [lacking on *P. pohli* (Bell)], and the dorsal portion of the harpe is caudally very straight, but rather rounder on *P. rufescens* and *P. "pohli"* [very round on *P. pohli* (Bell)]. *Phemiades "pohli"* Evans may or may not be an unnamed species.

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