

## THREE NEW SPECIES OF SYMMACHIINI FROM PANAMA AND COLOMBIA (LEPIDOPTERA: RIODINIDAE)

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**ABSTRACT.**— Three new species in the riodinid tribe *Symmachiini*, *Symmachia satana* n. sp., *Lucillella splendida* n. sp. and *Esthemopsis talamanca* n. sp., are described from Panama and Colombia. The male of *Symmachia praxila* Westwood is illustrated, and the taxon returned to species rank (**stat. rev.**); *L. pomposa* Stichel is also raised to species rank (**n. stat.**).

**KEY WORDS:** androconia, Boyacá, Central America, Chiriquí, Chocó, cloud forest, Colombia, Colón, Costa Rica, endemism, *Esthemopsis*, *Esthemopsis talamanca* n. sp., *Lucillella*, *Lucillella splendida* n. sp., Mesoamerica, Neotropical, Panama, Puntarenas, South America, *Symmachia*, *Symmachia satana* n. sp., taxonomy.

The primary purpose of this paper is to describe three new riodinid species in the *Symmachiini* genera *Symmachia* Hübner, [1819], *Lucillella* Strand, 1932, and *Esthemopsis* C. & R. Felder, 1865, to provide names for a morphological survey of male androconia in the Riodinidae (Hall and Harvey, 2002). The tribe *Symmachiini* has been adequately diagnosed elsewhere (Harvey, 1987; Hall and Willmott, 1996, 2002) and this information is not repeated here.

We also take this opportunity to reassess the status of and figure the male of *Symmachia praxila* Westwood, [1851]. This taxon was described by Westwood ([1851]) from a female specimen as a full species, but subsequently synonymized by Stichel (1930-31) with *Symmachia probetor* (Stoll, 1782). However, the correctly associated male of *S. praxila* illustrated in Fig. 1 (also figured by d'Abrera (1994:1044) as "*Symmachia* ? sp.") is clearly not conspecific with *S. probetor*, and we thus return this taxon to the rank of species (**stat. rev.**). *S. praxila* belongs to a group of species that includes *S. accusatrix* Westwood, [1851], *S. probetor* and *S. falcistriga* Stichel, 1910, and the male genitalia most closely resemble those of *S. probetor* and *S. falcistriga*, but have a broader and more strongly bifurcate saccus, a slightly different valve shape and a slightly different arrangement of vesical cornuti. *Symmachia praxila* is known to range from Espirito Santo to Santa Catarina in southeastern Brazil (Hall, unpubl. data).

### METHODS

Morphological terms for genitalia follow Eliot (1973) and Klots (1956), and terminology for wing venation follows Comstock and Needham (1918). All those collections listed in Hall (1999) have been examined for material of the species described here, but only the following collection acronyms are used in the text:

BMNH	The Natural History Museum, London, England, UK
PJD	Collection of Philip J. DeVries, Milwaukee Public Museum, Milwaukee, WI, USA
USNM	National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
ZMHU	Zoologisches Museum für Naturkunde, Humboldt Universität, Berlin, Germany

#### *Symmachia satana* Hall & Harvey, new sp.

Fig. 2; 5.

**Description:** MALE: forewing length HT 19mm; PTs 15-18mm. Forewing costa convex at base, distal margin straight; hindwing pointed at apex and

tornus. **Dorsal surface:** forewing ground color black; dark iridescent green occupies basal half of wing extending to subapex along costa and becoming blue at base of costa, cell end black, two faint black spots towards base of cell Cu2, some orange scaling at base of cell 2A; fringe brown. Hindwing ground color black; bright orange occupies anal half of wing extending to margin in tornal cells, distal margin of orange jagged; dense patch of orange erectile hairs along base of cell Cu2; fringe brown. **Ventral surface:** forewing ground color brown; four dark brown marks in discal cell, one dark brown mark at base of cell Cu1, two dark brown marks at base of cell Cu2, faint row of disjointed dark brown spots, distal margin dark brown. Hindwing markings same as on ventral forewing. **Head:** labial palpi very short and brown. Eyes bare and brown, margins orange. Frons brown. Antennal segments brown with white scaling at base ventrally; clubs brown, tips orange-brown. **Body:** dorsal surface of thorax black with orange scaling laterally, ventral surface black, tegula orange; dorsal surface of abdomen orange, ventral surface brown; a medially divided band of concealed androconia on dorsal half of anterior margin of abdominal tergites four and five. All legs brown. **Genitalia** (Fig. 5): uncus angular, small medial posterior projection at dorsal posterior margin; falces and tegumen of average size and shape; vinculum a narrow ribbon, small saccus broad and rectangular in ventral view; aedeagus short and prominently dorsally bowed, tip opens to left, everted vesica with two parallel lateral rows of anteriorly projecting spines of one or two spines in width, spines increasingly larger posteriorly; pedicel broad, strap-like and dorsally medially grooved; valvae consist of a weakly sclerotized triangular upper portion joined above aedeagus by a narrow band of weakly sclerotized tissue and a strongly sclerotized triangular lower portion that is inwardly curved and outwardly bulbous.

**FEMALE:** unknown.

**Types.**— *Holotype male:* PANAMA.— Colón, 1000ft, 1 Feb 1969 (G. B. Small); in the USNM.

*Paratypes:* PANAMA.— same locality data as HT, 1 male: 1500ft, 5 Jan 1968; 1 male: 1 Feb 1969; 1 male: 21 Feb 1969. Colón, 1 male: Santa Rita, 1500ft, 12 Jan 1972 (S. S. Nicolay); all in the USNM. 1 male: Santa Rita ridge, 9°22'N 79°43'W, 1000ft, Mar 1969 (G. B. Small) (#1999-155); in the USNM.

**Etymology.**— The species name refers to the mixture of dark and bright coloration.

**Diagnosis.**— *Symmachia satana* n. sp. belongs to a group of rare species that includes *S. arion* (C. & R. Felder, 1865), *S. fassli* Hall & Willmott, 1995, *S. fulvicauda* Stichel, 1910, *S. hippodice* Godman, 1903, *S. mielke* (Hall & Furtado, 1999), *S. nemesis* Le Cerf, 1958, *S. pardalis* Hewitson, 1867, *S. stigmosissima* Stichel, 1910, *S. virgatula* Stichel, 1910 and *S. virgaurea* Stichel, 1910. All members of this group have elongate wing shapes, typically orange and black dorsal surfaces and drab brown ventral surfaces, and very similar male genitalia (as described above) and abdominal androconia, which are typically medially divided. Additionally, the males of



Fig. 1-4. Adults (dorsal surface on right, ventral surface on left, unless otherwise stated). 1. *Symmachia praxila* Westwood, male, Joinville, Brazil (USNM). 2. *Symmachia satana* Hall & Harvey, n. sp., holotype male, dorsal surface on left. 3. *Lucillella splendida* Hall & Harvey, n. sp., holotype male. 4. *Esthemopsis talamanca* Hall & Harvey, n. sp., a) holotype male, dorsal surface on left; b) allotype female.

five species in this group, *S. fassli*, *S. fulvicauda*, *S. stigmossissima*, *S. virgatula* and *S. virgaurea* are known to us to perch on the sides of tree trunks (Brévignon and Gallard, 1998; Hall and Willmott, unpubl. data; A. Neild, pers. comm.), suggesting this behavior, not exhibited elsewhere in the Symmachiini, may occur in all members of the group. All of the aforementioned species have quite distinctive wing patterns and male genitalic cornuti, which have a basic ground-plan of two rows of parallel anteriorly projecting spines. *Symmachia satana* is similar only to *S. hippodice* Godman, but the dorsal orange patterning is different and the forewing possesses a green iridescence not present elsewhere in the tribe. While the left-hand row of cornutal spines is typically attached to a sclerotized bar in most species of the group, both rows are "free-standing" in *S. satana*, and the lower valve process is more posteriorly elongate and bulbous.

**Distribution.**— This species is currently known only from the Canal Zone of Panama, but is likely to also occur in Costa Rica and the Chocó of west Colombia and west Ecuador.

*Lucillella splendida* Hall & Harvey, new sp.

Fig. 3; 6

**Description:** MALE: forewing length 22mm. Forewing costa straight, distal margin convex; hindwing rounded. *Dorsal surface:* forewing ground color black, dark iridescent blue at an oblique angle; horizontal red bar extends from discal cell end across base of cells M3 and Cu1 to upper edge of cell Cu2; fringe black. Hindwing ground color black, dark iridescent blue at an oblique angle; costal margin yellow, pale gray-blue scaling in distal portion of discal cell and as broad rays in cells 2A to Rs separated by black along the veins, short interneural black lines at margin, in cell Cu2 extends to wing base; fringe black. *Ventral surface:* forewing ground color brown; medial colored patch orange and slightly larger in extent; dull dark gray-blue rays distally in all cells, two rays in cell Cu2. Forewing ground color brown; costal colored patch orange; dull dark gray-blue rays distally in all cells, two rays in cell Cu2. *Head:* labial palpi short and brown. Eyes

bare and brown, margins brown. Frons brown. Antennal segments brown; clubs brown. *Body:* dorsal and ventral surface of thorax and abdomen brown, tegula brown; a weakly medially divided very narrow band of concealed androconia on dorsal half of anterior margin of abdominal tergites four, five and six. All legs brown. *Genitalia* (Fig. 6): uncus angular, small medial posterior projection at dorsal posterior margin; falces and tegumen of average size and shape; vinculum a narrow ribbon, small saccus broad and rounded in ventral view; aedeagus short, straight and broad, everted vesica bulbous at base with three evenly spaced cornutal bands, two bulbous lateral bands of very dense anteriorly projecting spines and one ventral line of individual slightly longer anteriorly projecting spines, very small spines sparsely distributed between these bands; pedicel broad, strap-like and dorsally medially grooved; valvae rectangular and sharply indented medially, upper portion joined above aedeagus by a narrow band of weakly sclerotized tissue.

FEMALE: unknown.

**Types.**— *Holotype male:* COLOMBIA.— Boyacá, Arcabuco, 2200m, 31 Jan 1971 (S. S. & S. Nicolay); in the USNM.

*Paratypes:* 1 male: same data as HT (#2000-176); in the USNM.

**Etymology.**— This species is named for its exuberant coloration.

**Diagnosis.**— We have been able to examine the male genitalia of all *Lucillella* species, including those of the unique type of *L. pomposa* in the ZMHU. *Lucillella camissa* (Hewitson, 1870) (the type-species), *L. aterra* (Grose-Smith, 1898), *L. pomposa* Stichel, 1910 and *L. splendida* sp. n. clearly form a monophyletic group based on similarities in wing pattern and male genitalia, while *L. suberra* (Hewitson, 1877) has a slightly different wing shape and pattern, different male genitalic valvae and a very different arrangement of aedeagal cornuti. Based on similarities in valve shape, the only significantly variable male genital character in the genus, *L. splendida* appears to be most closely related to *L. camissa* and *L. pomposa*. *Lucillella splendida* differs from these species in its larger size, smaller and almost horizontally positioned red (instead of orange in *L. camissa*) forewing band, and by possessing yellow dorsally and orange ventrally at the costal margin of the hindwing and pale blue rays across the entire hindwing. It is appropriate to

note here that, based on small differences in the shape of the valvae and significant differences in wing pattern, *L. pomposa* should be raised to species status (**n. stat.**).

**Distribution.**— This species is currently only known from the type locality on the western slope of the east Colombian cordillera in the Middle Magdalena Valley.

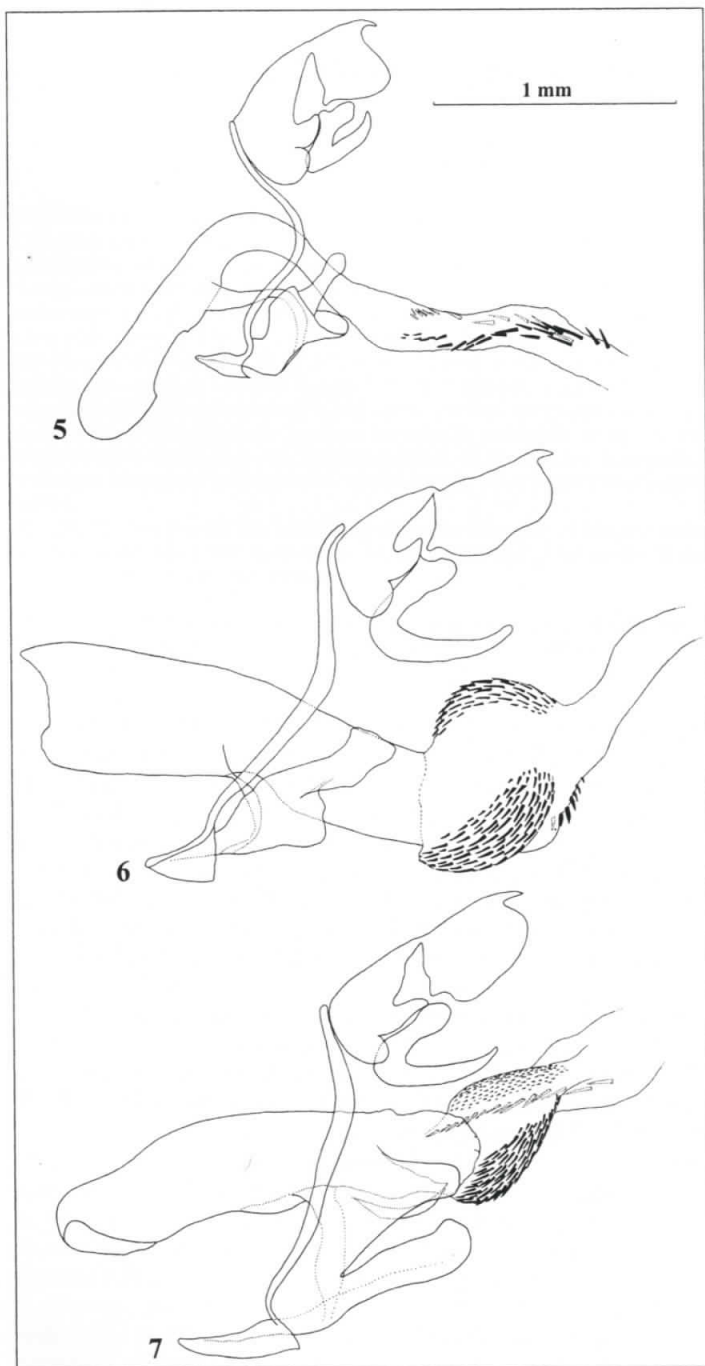


Fig. 5-7. Male genitalia in lateral view. 5. *Symmachia satana* Hall & Harvey, n. sp.. 6. *Lucillella splendida* Hall & Harvey, n. sp.. 7. *Esthemopsis talamanca* Hall & Harvey, n. sp..

***Esthemopsis talamanca* Hall & Harvey, new sp.**

Fig. 4a,b; 7

**Description:** MALE: forewing length HT 20.5mm; PT 19mm. Wing shape elongate; forewing costa straight, distal margin convex; hindwing slightly pointed at apex and tornus. **Dorsal surface:** forewing ground color black

overlaid with a steely gray-blue iridescence; iridescent pale blue along base of vein 2A, dirty gray bar along lower margin of discal cell, dirty gray triangle at base of cell Cu1, two dirty gray rays in cell Cu2, white subapical band extends from costa to upper half of cell Cu1 near distal margin; fringe black. Hindwing ground color black overlaid with a steely gray-blue iridescence, gray at anal margin; a dirty gray ray in each of cells Cu2 to M1; fringe black. **Ventral surface:** differs from dorsal surface in following respects: all rays brighter blue-gray, additional blue-gray ray through middle of hindwing discal cell, in hindwing cell Rs and at base of hindwing costa. **Head:** labial palpi short and orange. Eyes bare and brown, margins orange. Frons orange. Antennal segments brown; clubs brown. **Body:** dorsal and ventral surface of thorax black, dorsal surface with some medial gray-blue scaling, tegula black with gray-blue scaling along inner margin; dorsal surface of abdomen dark gray-blue with paler lateral stripes, ventral surface black; a weakly medially divided band of narrow concealed androconia on dorsal half of anterior margin of abdominal tergites four, five and six. Forelegs orange, remaining legs brown, some gray-blue scaling on femurs. **Genitalia** (Fig. 7): uncus angular, small medial posterior projection at dorsal posterior margin; falces and tegumen of average size and shape; vinculum a narrow ribbon, saccus broad and rounded in ventral view; aedeagus short, straight and broad, everted vesica slightly bulbous at base with three evenly spaced cornutal bands, two bulbous lateral bands of very dense anteriorly projecting spines, one with considerably smaller spines than the other, and one ventral line of individual slightly longer anteriorly projecting spines, very small spines sparsely distributed between these bands; pedicel broad and strap-like; valvae consist of an elongate, rounded and slightly inwardly curved lower process and a roundly triangular upper process with rectangular inner portion that broadly abuts aedeagus to keep it in position, upper process joined above aedeagus by a narrow band of weakly sclerotized tissue.

**FEMALE:** Differs externally from the male in the following respects: forewing length AT 18.5mm; PTs 19-21mm. Distal forewing margin more convex, hindwing rounded. Forelegs brown. **Genitalia:** Corpus bursae very elongate and narrow, signa asymmetrically placed with one a small indentation and the other a larger invaginated spine; ductus bursae short, posterior two-thirds well sclerotized and slightly twisted; ostium bursae broad and situated within sclerotized invagination, posterior portion medially pointed.

**Types.**— **Holotype male:** PANAMA.— Chiriquí, Distrito de Renacimiento, Santa Clara, 1350m, 7 Jul 1982 (G. B. Small); in the USNM.

**Allotype:** Chiriquí, Potrerillos, 3600ft, 11 Feb 1970 (S. S. Nicolay); in the USNM. **Paratypes:** PANAMA.— 1 male: same data as HT. 1 female: same data as AT; 1 female: same locality data as AT, 14 Feb 1970 (G. B. Small) (#2000-511); 1 female: same locality data as AT, 30 Jan 1966 (G. B. Small); 1 female: same locality data as AT, 9 Mar 1970 (H. L. King); 1 male: same locality data as AT, 18 Aug 1967 (G. B. Small) (#2000-242); all in the USNM. 1 male, 1 female: "Chiriquí"; in the BMNH. COSTA RICA.— 1 female: *Puntarenas*, Las Alturas, Sept (P. J. DeVries); in the PJD.

**Etymology.**— This species is named for the mountain range to which it appears to be endemic.

**Diagnosis.**— This species was first illustrated by DeVries (1997) on his appendix plate 25 as "*Brachyglennis* nr *dodona*" [sic]; however, its orange frons and palpi, medially divided band of concealed androconia on abdominal tergites four to six in males, and the configuration of the male and female genitalia place it in the symmachiine genus *Esthemopsis*. Based on similarities of wing pattern and male genitalic morphology, *Esthemopsis talamanca* n. sp. can be placed in a group that includes *E. alicia* (Bates, 1865), *E. clonia* C. & R. Felder, *E. colaxes* (Hewitson, 1870), *E. jesse* (Butler, 1870) and *E. sericina* (Bates, 1867). *E. talamanca* perhaps externally most closely approximates the Andean *E. jesse*, but that species has more prominent gray rays and a narrower white forewing band, and the most divergent male genitalia of all the aforementioned species.

**Distribution.**— *Esthemopsis talamanca* appears to be endemic to the Cordillera de Talamanca in eastern Costa Rica and western Panama. DeVries (1997) additionally lists Guápiles and San Vito as localities for this species; however, while the latter is plausible, the former is probably based on a misidentification (no such specimen exists from this historical locality in the BMNH or USNM). The species is thus

probably confined to premontane cloud forest habitats between 1000 and 1600m.

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#### LITERATURE CITED

- Brévignon, C., and J.-Y. Gallard**  
1998. Inventaire des Riodinidae de Guyane Française. IV-Riodininae: *Symmachiini*, Charitini, Helicopini. Description de nouveaux taxa. *Lambill.* (Tervuren), 98:304-320.
- Comstock, J. H., and J. G. Needham**  
1918. The wings of Insects. *Amer. Nat.* (Salem), 32:231-257.
- d'Abbrera, B.**  
1994. *Butterflies of the Neotropical Region, Part VI. Riodinidae*. Victoria, Australia: Hill House. Pp. 880-1096.
- DeVries, P. J.**  
1997. *The Butterflies of Costa Rica and their Natural History. Volume II: Riodinidae*. Princeton: Princeton Univ. Pr. 288pp, 25 pl.
- Eliot, J. N.**  
1973. The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Brit. Mus. Nat. Hist. (Ent.)* (London), 28:373-506.
- Hall, J. P. W.**  
1999. *A Revision of the Genus Theope: its Systematics and Biology (Lepidoptera: Riodinidae: Nymphidiini)*. Gainesville: Scientific Publ. 127pp.
- Hall, J. P. W., and D. J. Harvey**  
2002. A survey of androconial organs in the Riodinidae (Lepidoptera). *Zool. J. Linn. Soc.* (London), 136:171-197.
- Hall, J. P. W., and K. R. Willmott**  
1996. Systematics of the riodinid tribe *Symmachiini*, with the description of a new genus and five new species from Ecuador, Venezuela and Brazil (Lepidoptera: Riodinidae). *Lambill.* (Tervuren), 96: 637-658.  
2002. Four new species of *Symmachiini* from Ecuador (Lepidoptera: Riodinidae). *Trop. Lepid.* (Gainesville), 12:45-49. (2001)
- Harvey, D. J.**  
1987. *The Higher Classification of the Riodinidae (Lepidoptera)*. Austin: Univ. of Texas. Ph.D Dissertation. 216pp.
- Klots, A. B.**  
1956. Lepidoptera. In S. L. Tuxen (ed.), *Taxonomists's Glossary of Genitalia in Insects*, 97-110. Copenhagen: Munksgaard.
- Stichel, H. F. E. J.**  
1930-31. Riodinidae. In E. Strand (ed.), *Lepidopterorum Catalogus*, 38-41: 1-795. Berlin: W. Junk.
- Westwood, J. O.**  
[1851]. In E. Doubleday, *The Genera of Diurnal Lepidoptera: Comprising their Generic Characters, a Notice of their Habits and Transformations, and a Catalogue of the Species of each Genus*. London: Longman, Brown, Green & Longmans. 534pp.