



## Four new symmachiine taxa from the eastern Andes of Peru and Ecuador (Lepidoptera: Riodinidae)

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### Abstract

Four new riodinid taxa in the tribe Symmachiini are described from wet forest habitats between 300 and 1700 m in the eastern Andes of Peru and Ecuador: *Mesene leucogyna leucogyna*, *Mesene leucogyna notia*, *Mesene margaretta anartia* and *Symmachia pena*. Discussions on their systematic placement are presented. The following taxonomic changes are proposed: *Mesene bigemmis* Stichel is removed from synonymy with *Mesene nepticula stigmosa* Stichel and reinstated as a species (**rev. stat.**); and *Mesene oriens* Butler is synonymized with *Mesene margaretta* (White) (**n. syn.**).

**Key words:** Andes, Ecuador, montane forest, morphology, Peru, taxonomy

### Introduction

Montane and premontane forest habitats throughout the tropical Andes continue to yield significant numbers of undescribed butterfly taxa, particularly in the family Riodinidae (Salazar & Constantino, 1993; Hall & Willmott, 1995a,b,c, 1996, 1998a,b,c, 2006; Callaghan & Salazar, 1997; Callaghan, 1999; Hall & Harvey, 2001, 2006; Hall & Lamas, 2001, 2004; Hall & Callaghan, 2003; Hall, 2005a,b). The purpose of this paper is to describe four new riodinid taxa, two species and two subspecies, in the symmachiine genera *Mesene* Doubleday, 1847, and *Symmachia* Hübner, [1819], from the eastern Andes of Peru and Ecuador. As well as providing names for the butterfly faunal checklists of Ecuador and Peru that each of us is involved in compiling, these descriptions further our knowledge of morphological diversity in the Symmachiini, a tribe that is becoming one of the better studied in the subfamily Riodininae (e.g. Hall & Willmott, 1996; Hall & Harvey, 2002).

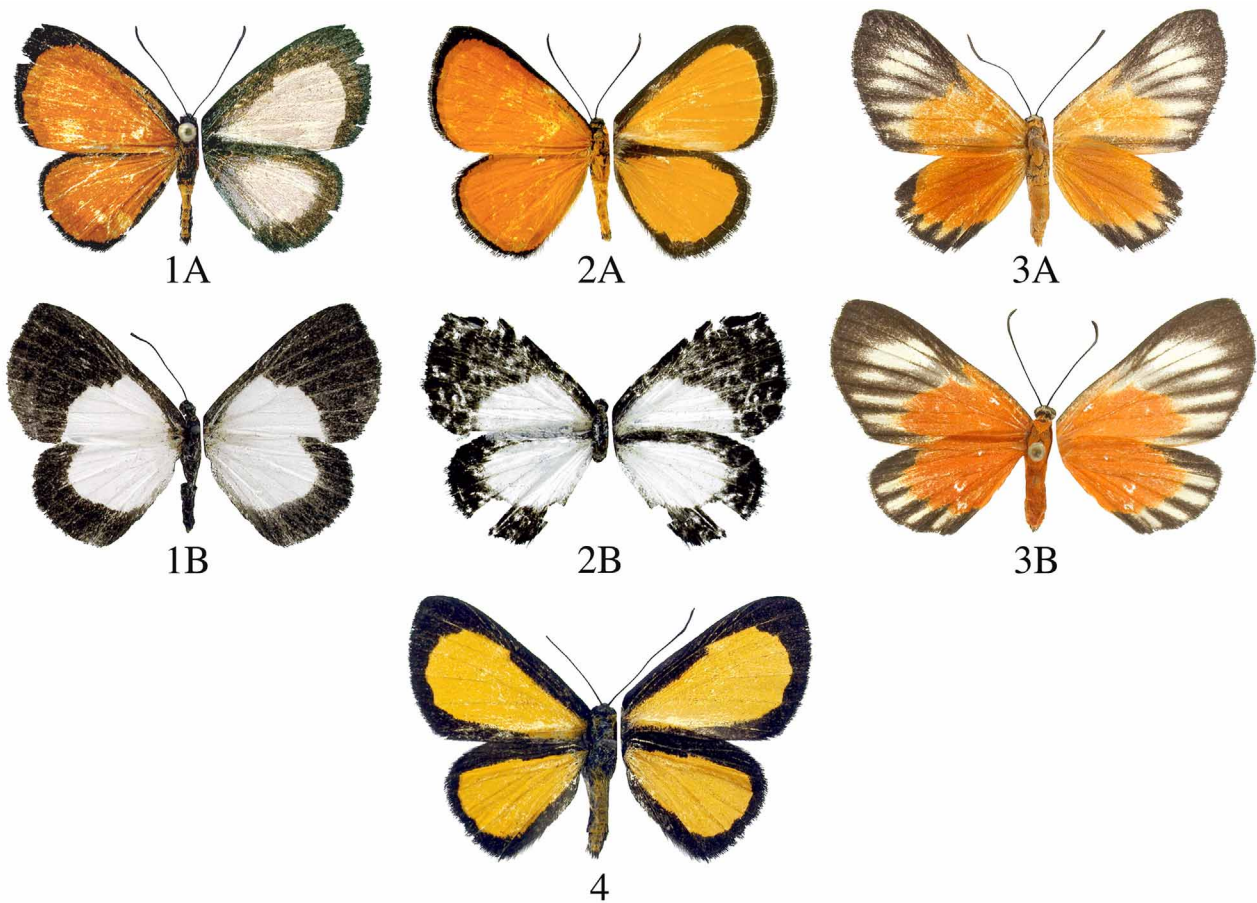
### Descriptions

#### *Mesene leucogyna* Hall & Lamas, new species

(Figs. 1A,B; 5; 9)

**Description:** Male: Forewing length 13 mm. Forewing costa approximately straight, distal margin slightly convex, four forewing radial veins; hindwing round. *Dorsal surface:* Ground color of both wings dark orange; forewing with narrow black costal and distal margins, broadening at apex; hindwing with narrow black costal, distal and anal margins; fringe on both wings entirely black. *Ventral surface:* Ground color of both wings dirty white, with a hint of very pale orange from dorsal surface, becoming grayish along anal margin of hindwing; forewing with very broad dark brown margins distally and along costa, including upper half of discal cell;

hindwing with very broad dark brown margins distally and below costa, and a very narrow whitish strip along basal two-thirds of costal wing margin.



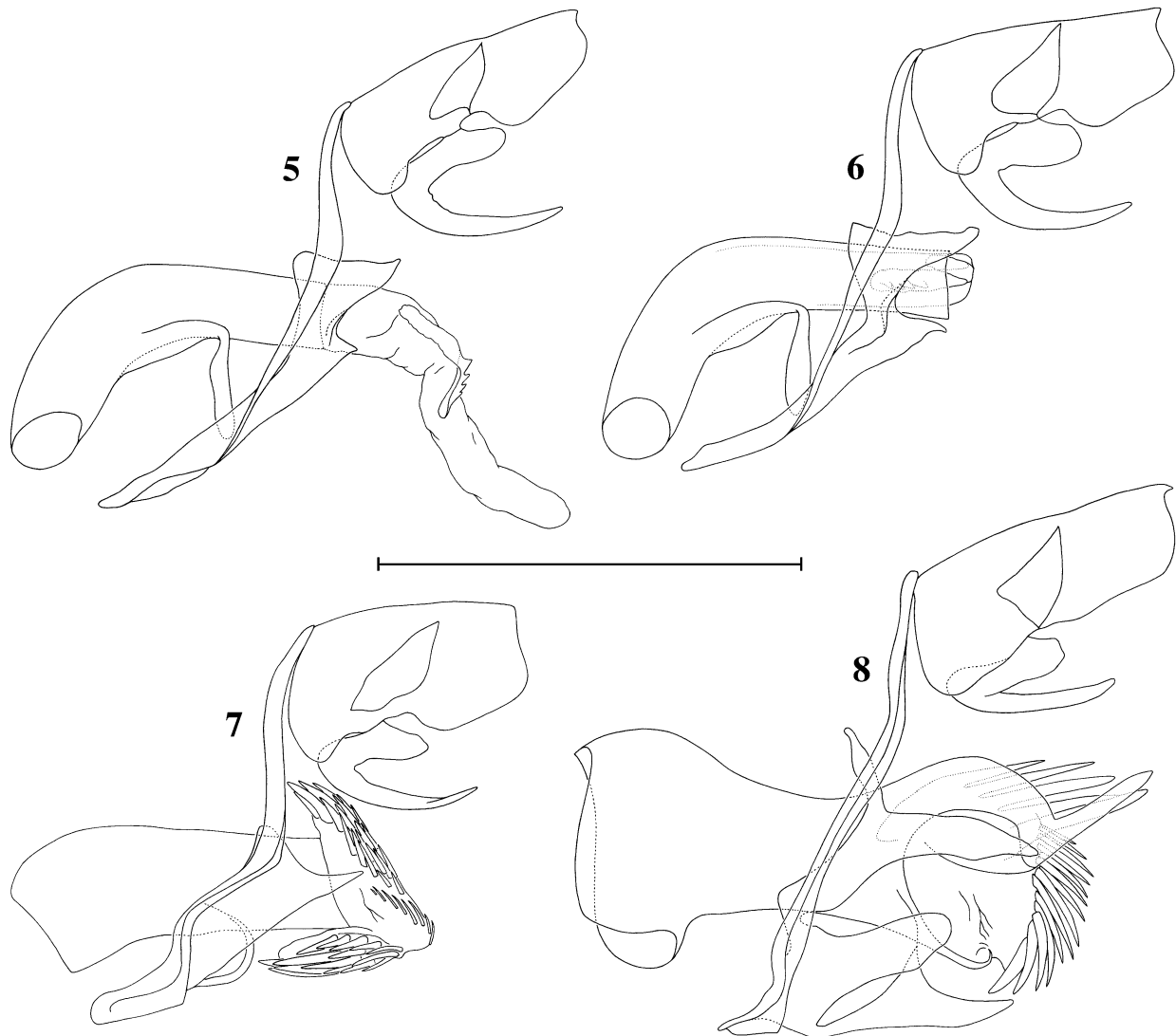
**FIGURES 1–4.** Symmachiini adults (dorsal surface on left, ventral surface on right). **1A.** *Mesene leucogyna leucogyna* Hall & Lamas, n. sp., holotype ♂, Qbda. Siete Jeringas, Junín, C. Peru (MUSM). **1B.** *M. leucogyna leucogyna*, putative ♀, Yakunk-Cutucú trail, Morona-Santiago, S. Ecuador (JHKW). **2A.** *Mesene leucogyna notia* Hall & Lamas, n. ssp., holotype ♂, San Pedro, Cuzco, S. Peru (USNM). **2B.** *M. leucogyna notia*, paratype ♀, San Pedro, Cuzco, S. Peru (MUSM). **3A.** *Mesene margaretta anartia* Hall & Lamas, n. ssp., holotype ♂, Aldea, Junín, C. Peru (MUSM). **3B.** *M. margaretta anartia*, paratype ♀, Pakitza, Madre de Dios, S. Peru (USNM). **4.** *Symmachiea pena* Hall & Lamas, n. sp., holotype ♂, Qbda. Siete Jeringas, Junín, C. Peru (MUSM).

*Head:* Labial palpi a mixture of dark brown and whitish scaling, second and third segments short; eyes brown and bare, lateral scaling dark brown; frons dark brown, with whitish scaling laterally and ventrally; antennae approximately 70% of forewing length, antennal segments black with a discontinuous nudum section lateroventrally, clubs black.

*Body:* Dorsal surface of thorax prominently dark orange, ventral surface grayish; dorsal surface of abdomen dark orange, lateral margins dark brown, ventral surface grayish; a broad and continuous band of concealed androconial scales present dorsally across posterior margin of abdominal tergites four, five and six; forelegs whitish, mid- and hindlegs predominantly dark brown.

*Genitalia* (Fig. 5): Uncus angular in lateral view, with a short posterior projection from dorsal middle of posterior margin, falces with a prominent angular “elbow”, tegumen typical of tribe; vinculum an evenly narrow diagonal ribbon, saccus anteriorly elongate and ventrally rounded; valvae short and medially divided into a slightly larger, triangular upper section, with an uneven dorsal margin and a slightly upturned, rounded pos-

terior tip, and a vertically elongate lower section, with a narrowly pointed and slightly downwardly curved posterior tip; aedeagus short, broad and bent medially at nearly 90°, posterior tip angular and ill-defined with respect to vesica, rounded anterior tip opens to left, single cornutus a long, broad, sclerotized band, with three or four prominent triangular spines along posterior portion of dorsal margin (when vesica everted); pedicel broad in basal and posterior sections, but medially constricted and bent beyond 90°.



**FIGURES 5–8.** Symmachiini male genitalia in lateral view. **5.** *Mesene leucogyna leucogyna*, holotype ♂, Qbda. Siete Jeringas, Junín, C. Peru (MUSM). **6.** *Mesene leucogyna notia*, holotype ♂, San Pedro, Cuzco, S. Peru (USNM). **7.** *Mesene margaretta anartia*, paratype ♂, Pakitza, Madre de Dios, S. Peru (MUSM). **8.** *Symmachia pena*, holotype ♂, Qbda. Siete Jeringas, Junín, C. Peru (MUSM). Scale bar = 1 mm.

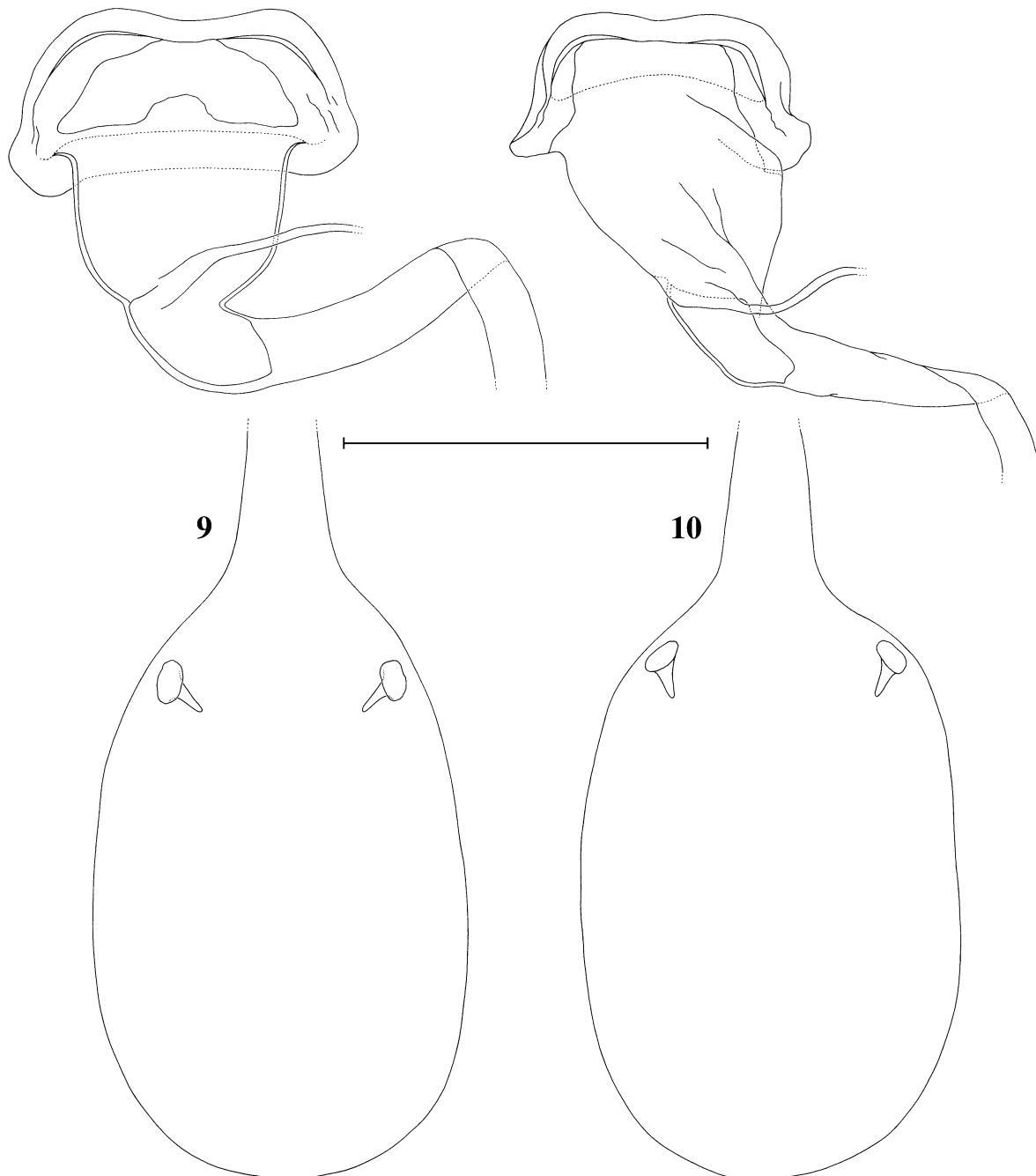
Putative female: Forewing length 14.5 mm. Forewing costal margin approximately straight, distal margin prominently convex; hindwing round. *Dorsal surface:* Ground color of both wings white; costal margin and distal half of forewing black, distal third of hindwing black, distal margin of white areas on both wings rounded; fringe on both wings entirely black. *Ventral surface:* Same as dorsal surface, but slightly paler.

*Head:* Same as male, but nudum on antennal segments continuous.

*Body:* Dorsal and ventral surfaces of thorax black with some white scaling; dorsal and lateral surfaces of abdomen black, ventral surface a mixture of black and white scaling; no abdominal androconia present; all legs predominantly dark brown.

**Genitalia** (Fig. 9): Corpus bursae slightly elongate and rounded, with a pair of invaginated, spine-like signa at posterior wall; ductus bursae mostly evenly narrow, abruptly becoming broader immediately before ostium bursae, ductus bursae membranous except for a small portion of sclerotization at point of broadening, membranous ductus seminalis exits right ventral side of ductus bursae at posterior margin of sclerotized area; ostium bursae consists of a rectangular band of broad sclerotization that is constricted at middle of posterior margin and flares laterally at anterior corners, and has a pair of narrowly elliptical concave areas dorsolaterally.

**Type material:** Holotype ♂, PERU: *Junín*, Quebrada Siete Jeringas, 1700 m, 11°12'S 75°24'W, 13 Nov 2003 (C. Peña) (Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru [MUSM]).



**FIGURES 9–10.** Symmachiini female genitalia in dorsal view. **9.** *Mesene leucogyna leucogyna*, putative ♀, Yakunk-Cutucú trail, Morona-Santiago, S. Ecuador (JHKW). **10.** *Mesene leucogyna notia*, paratype ♀, San Pedro, Cuzco, S. Peru (MUSM). Scale bar = 1 mm.

No additional male specimens of this taxon have been located in the world's major collections. The specimen described and illustrated here from the Yakunk-Cutucú trail, in Morona-Santiago province, southern Ecuador, as the putative female of this taxon is not designated as a paratype because of the distance of its capture location from the type locality and slight wing pattern differences, leaving the possibility that it may belong to yet another undescribed subspecies of *M. leucogyna*.

**Etymology:** The name of this species has been derived from combining the Greek words for “white” and “female”, in reference to its highly sexually dimorphic black and white patterned female.

**Diagnosis:** This new species possesses the concealed androconial scales diagnostic of the *Symmachiini* (Harvey, 1987) on male abdominal tergites four, five and six, a character state that is shared only with the species of *Mesene*, the two species of *Chimastrum* Godman & Salvin, 1886, and *Esthemopsis crystallina* Brévignon & Gallard, 1992 (Hall & Harvey, 2002). By having small, compact and rounded wings, an orange and black patterned male, and no black spotting, *leucogyna* can be placed in the genus *Mesene*.

By sharing similar male wing patterns, and very similar male and female genitalia, the Andean *M. leucogyna* can confidently be placed as sister to the allopatric lowland sister species pair (as first determined by Hall & Harvey, 2002) of *Mesene nepticula* Möschler, 1877 (Amazonia), and *Mesene simplex* Bates, 1868 (southeastern South America). The male genitalia of these three species have the same unique valve shape, and the genitalia of the two lowland species differ significantly from those of *M. leucogyna* only by having a shorter sclerotized pad on the everted vesica that lacks distal spines. The female genitalia of the three species do not differ significantly. Of the two lowland relatives, *M. simplex* has the most similar male to that of *M. leucogyna* because it is also almost entirely orange, lacking the isolated white or orange forewing subapical spot of *M. nepticula*. The male of *M. leucogyna* (from both the nominotypical subspecies and the subspecies described below) differs externally from that of *M. simplex* by being slightly larger, and by having a frons, palpi and legs that are dark brown to black with some white scaling instead of predominantly orange, a ventral abdominal surface that is grayish instead of pale orange, slighter broader black borders on both wings, black scaling along the anal margin of the hindwing, a broad subcostal black border on the ventral hindwing, and no traces of white marginal markings in ventral hindwing cells  $Cu_2$ ,  $M_3$  and  $M_2$ . The only sympatric congener with which *M. leucogyna* might be confused is *M. cyneas* (Hewitson, 1874). However, both sexes of *M. cyneas* differ externally from the male of *M. leucogyna* by having an entirely black thorax, abdomen and frons, black instead of whitish to cream forelegs, mid- and hindlegs that are half black and half orange, white fringe scaling in the forewing apex, considerably broader black borders on both wings, no black scaling along the anal margin of the hindwing, and no subcostal black border on the ventral hindwing. The female of *M. leucogyna* is unique within *Mesene* in being black and white. Indeed it does not closely resemble any phenotype within the *Symmachiini*. Perhaps the most similar riodinid butterfly is the female of *Machaya watkinsi* (D’Abrera, 1994) (*incertae sedis* section) (a novel combination discussed by Hall, 2007), a species that is sympatric with *M. leucogyna* in the southern Andes. However, the female of *M. watkinsi* is readily distinguished from that of *M. leucogyna* by having an angular hindwing, a variably faint white subapical forewing band, and a basal white forewing patch that is medially divided by a horizontal black line and suffused with yellow along its costal margin.

It is worth reiterating here that *Mesene bigemmis* Stichel, 1925 (with its synonyms *fissurata* Stichel, 1929, and *arouany* Brévignon, 1998) is not a synonym of *Mesene nepticula stigmosa* Stichel, 1910, as indicated in the recent catalog of Callaghan & Lamas (2004), but an unrelated species belonging to the *Mesene phareus* group (with very different male genitalia), as clearly indicated by Hall & Harvey (2002) (**rev. stat.**).

**Biology:** This very rare taxon appears to be confined to montane forest habitats, where it is currently known from between 1350 and 1700 m. The male holotype was observed resting about 6 m above the ground in a forest lightgap. The only known putative female was collected at 1445 hrs flying across an open ridgetop lightgap about 3 meters above the ground (K. Willmott, pers. comm.). Males of the superficially similar but unrelated *Mesene cyneas* were perching in the same lightgap at that time.

**Distribution:** *Mesene leucogyna leucogyna* is currently known with certainty only from the type locality in the central Peruvian department of Junín, but may range at least as far north as central eastern Ecuador if the figured female truly belongs to nominotypical *M. leucogyna*, rather than another undescribed subspecies. This taxon appears to be replaced in the southern Andes by *M. leucogyna notia*.

***Mesene leucogyna notia* Hall & Lamas, new subspecies**

(Figs. 2A,B; 6; 10)

**Description:** MALE: Forewing length 12 mm. Forewing costa approximately straight, distal margin very slightly convex, four forewing radial veins; hindwing round. *Dorsal surface:* Ground color of both wings orange; forewing with evenly narrow black border along distal margin and very narrow black border along costal margin tapering towards wing base; hindwing with evenly very narrow black border at distal wing margin extending from apex to tornus; fringe on both wings entirely black. *Ventral surface:* Forewing same as dorsal surface, but orange slightly paler and black wing borders slightly broader; hindwing same as dorsal surface, but orange slightly paler, distal black border slightly broader, an evenly very narrow black border present along anal margin, and an evenly narrow black band present below costal margin, leaving a narrow pale orange area along basal two-thirds of costal wing margin itself.

*Head:* Labial palpi a mixture of dark brown and cream scaling, second and third segments short; eyes brown and bare, lateral scaling dark brown; frons dark brown, with cream scaling laterally and ventrally; antennae approximately 70% of forewing length, antennal segments black with a discontinuous nudum section lateroventrally, clubs black.

*Body:* Dorsal surface of thorax predominantly dark orange, ventral surface predominantly black; dorsal surface of abdomen dark orange, lateral margins dark brown, ventral surface a mixture of black and grayish scales; a broad and continuous band of concealed androconial scales present dorsally across posterior margin of abdominal tergites four, five and six; forelegs cream, mid- and hindlegs a mixture of brown and cream scales.

*Genitalia* (Fig. 6): Same as those of nominotypical *M. leucogyna*, but both upper and lower sections of valvae slightly more posteriorly elongate, with a consequently slightly deeper medial indentation.

Female: Forewing length 13 mm. Forewing costal margin approximately straight, distal margin convex; hindwing round. *Dorsal surface:* Ground color of both wings white; costal margin and distal half of forewing black, distal third of hindwing black, with black extending in a broad band below costal margin from apex to wing base, leaving a very narrow white strip along basal two-thirds of costal margin, distal margin of basal white areas on both wings rounded; fringe on both wings entirely black. *Ventral surface:* Same as dorsal surface.

*Head:* Same as male, but nudum on antennal segments continuous.

*Body:* Dorsal and ventral surfaces of thorax black with some white scaling; dorsal and lateral surfaces of abdomen black, ventral surface a mixture of black and white scaling; no abdominal androconia present; all legs predominantly dark brown.

*Genitalia* (Fig. 10): Same as those of nominotypical *M. leucogyna*, but ostium bursae ill-defined ventrally, and posterior section of ductus bursae more lightly sclerotized.

Type material: Holotype ♂, PERU: *Cuzco*, San Pedro, 1400 m, “13°09’S 71°26’W” [inaccurate], 31 Aug 1989 (R. K. Robbins) (National Museum of Natural History, Smithsonian Institution, Washington, DC, USA [USNM]).

Paratypes: PERU: *Cuzco*, 1♀: San Pedro, 1400 m, 13°03’S 71°33’W, 15 Aug 2001 (J. Grados) (MUSM).

**Etymology:** The name of this taxon has been derived from the Greek and Latin words for “southern”, in reference to its southerly distribution within the Andes.

**Diagnosis:** Given that this new taxon and *Mesene leucogyna* have non-overlapping ranges, the same habitat preferences, similar wing patterns and virtually identical genitalia, we tentatively describe *notia* as a subspecies of *M. leucogyna* rather than as a distinct species. However, additional material is clearly needed before the taxonomic status of *notia* can be definitively determined. The male of *M. leucogyna notia* differs from that of nominotypical *M. leucogyna* by having brighter orange dorsal coloration, a narrower black border around the dorsal forewing apex, no narrow black border along the costal and anal margin of the dorsal hindwing, uniform orange ventral coloration instead of cream coloring that fades to gray at the base of the hindwing, narrower black instead of brown borders around both ventral wings, and cream instead of whitish scaling on the ventral areas of the head, thorax and abdomen. Slight differences in size and the degree of convexity of the distal forewing margin are probably not significant. The male genitalia of *M. leucogyna notia*, at least those of the single example examined, differ very slightly in the shape of the valvae, which have slightly more posteriorly elongate upper and lower sections, with a deeper medial indentation between them. The female of *M. leucogyna notia* differs from the illustrated putative female of *M. leucogyna leucogyna*, which may actually belong to a separate subspecies, by having a subcostal black band on the ventral hindwing. The single examples of female genitalia examined for the two taxa differ slightly in the degree of sclerotization along the ventral margin of the ostium bursae and across the broad posterior section of the ductus bursae, with *M. leucogyna notia* lacking a well sclerotized ventral margin to the ostium and having a hardened membranous posterior section to the ductus bursae rather than a well sclerotized one, but such differences may well not be diagnostic.

**Biology:** Nothing is known about the biology of this very rare taxon, except that it inhabits wet montane forest at about 1400 m.

**Distribution:** *Mesene leucogyna notia* is currently known only from the southern Peruvian department of Cuzco, but its range will undoubtedly eventually be found to include the Andes of Bolivia.

### ***Mesene margaretta anartia* Hall & Lamas, new subspecies**

(Figs. 3A,B; 7; 11)

**Description:** Male: Forewing length 13.5 mm. Forewing slightly elongate, with straight costal margin and angular distal margin, four forewing radial veins; hindwing rather angular, with pointed apex and tornus. *Dorsal surface:* Ground color of both wings dark brown, basal half of forewing reddish orange, broad cream-colored submarginal rays in each of cells  $Cu_2$  to  $R_{4+5}$ , rays in cells  $Cu_2$  and  $Cu_1$  continuous with basal reddish-orange area, remaining rays isolated, rays separated from each other by a dark brown venal stripe, with broadest dark brown venal stripe on either side of ray in cell  $M_3$ ; basal three-quarters of hindwing reddish orange, with costal half darker red than anal half, short and broad pale yellow rays extend distally from basal reddish-orange area in each of cells 2A to  $M_3$ , ray in cell 2A narrow, remaining rays broad; fringe on both wings entirely dark brown. *Ventral surface:* Differs from dorsal surface by having slightly paler reddish-orange scaling on both wings, with hindwing basal area of a uniform shade, forewing rays a more dirty whitish color, and hindwing rays slightly broader and longer.

*Head:* Labial palpi short and yellow; eyes black and bare, lateral scaling yellow; frons entirely pale yellow; antennae approximately 60% of forewing length, antennal segments entirely brown with a narrow and discontinuous nudum section lateroventrally, clubs dark brown.

*Body:* Dorsal surface of thorax and abdomen orange, ventral surface yellow; a broad and continuous band of concealed androconial scales present dorsally across posterior margin of abdominal tergites four, five, six and seven; forelegs entirely pale yellow, mid- and hindlegs a mixture of pale brown and pale yellow scales.

*Genitalia* (Fig. 7): Uncus rectangular in lateral view, falces with a rounded "elbow", tegumen typical of tribe; vinculum narrow and sinuous, formed into a large, broad saccus ventrally; valvae vertically elongate in

lateral view, with a broad anterodorsal section extending dorsally over aedeagus and a long, triangular, posterior section extending slightly upwards; aedeagus short, very broad and slightly downturned anteriorly, everted vesica very short and broad, with three large, oval-shaped, anteriorly directed patches of large spine-like cornuti, one patch positioned dorsally and other two positioned lateroventrally (patch on right not visible in Fig. 7), and an additional patch of smaller and more sparsely distributed spines between larger patches on left side of vesica; pedicel short, narrow and strap-like.

Female: Differs from male as follows: Forewing length 14.5 mm. Both wings slightly more elongate and rounded. Ground color of both wings slightly paler brown; basal areas on both wings consistently more reddish and slightly reduced in size, especially on hindwing, increasing length of contiguous distal rays, rays on both wings more whitish in color.

*Head*: Palpi, frons and scaling at eye margins cream.

*Body*: Ventral surface of thorax and abdomen cream; no abdominal androconia present; forelegs entirely cream, mid- and hindlegs a mixture of cream and pale brown scales.

*Genitalia* (Fig. 11): Corpus bursae elongate, with a pair of invaginated spine-like signa, one signum nearly half size of other and slightly displaced posteriorly and laterally towards other signum; posterior portion of otherwise membranous ductus bursae hardened, U-shaped, and covered with evenly spaced creases, with a darkened and heavily sclerotized dorsal protrusion across entire width of posterior section, membranous ductus seminalis exits this sclerotized protrusion dorsally on extreme right side; after a broad membranous area of ductus bursae, ostium bursae forms a broad, semicircular, sclerotized band dorsally, and a narrow, horizontal, sclerotized band ventrally.

**Type material**: Holotype ♂, PERU: *Junín*, Aldea, 600–700 m, 10°54'S 74°55'W, 24 Aug 2003 (J. J. Ramírez) (MUSM).

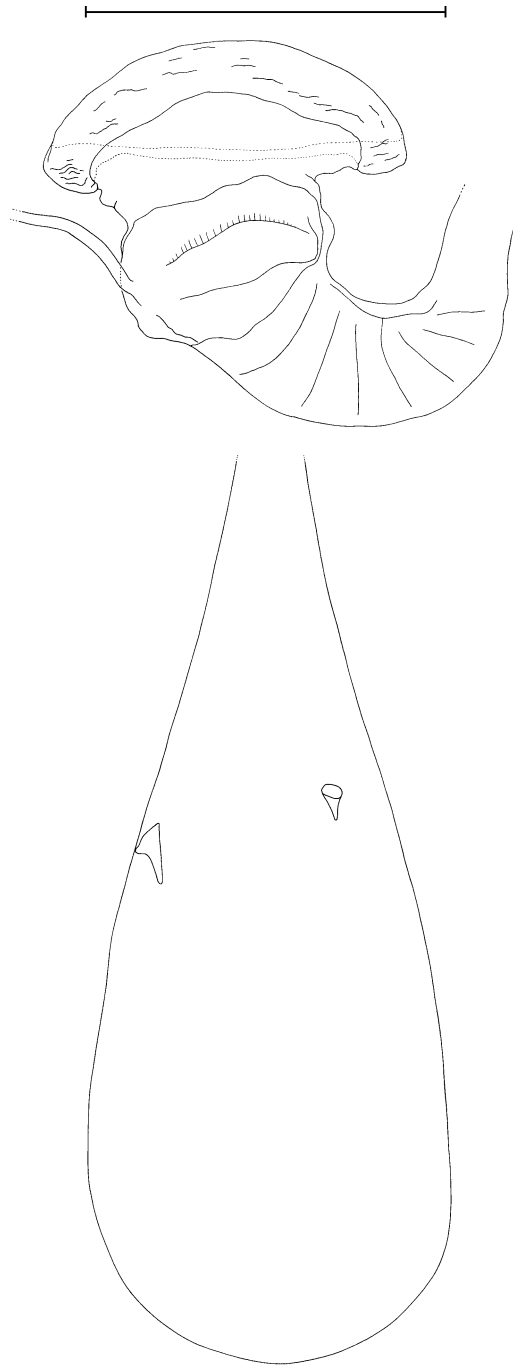
Paratypes: PERU: *Junín*, 1♂: La Merced, [c. 11°03'S 75°19'W, 750 m] (Natural History Museum, London, England [BMNH]). *Cuzco*, 1♀: Pilcopata, [c. 12°55'S 71°24'W], 750 m, 6–8 Feb 1975 (G. Lamas) (MUSM). *Madre de Dios*, 1♂: 20 km. S.W. of Puerto Maldonado, 300 m, 25 Oct 1983 (S. S. Nicolay) (USNM); Parque Nacional Manu, Pakitza, 350–400 m, 11°53'S 70°58'W, 1♂: 15 Oct 1990 (G. Lamas) (MUSM), 1♀: 18 Sept 1988 (M. G. Pogue) (USNM).

**Etymology**: This taxon is named after the Greek word for “uneven”, in reference to the characteristic uneven spacing of the distal rays on the forewing.

**Diagnosis**: Based on the shared possession of elongate wings and darker orange to red scaling across the costal half of the dorsal hindwing in males, this new taxon can be placed in a group with *Mesene margaretta* (White, 1843) and *Mesene nola* Herrich-Schäffer, [1853]. The new taxon and *M. margaretta* can be placed as each others closest relatives, and distinguished from *M. nola*, by having essentially identical male and female genitalia, concealed androconial scales on abdominal tergites four, five, six and seven (a unique character within *Mesene*), entirely dark brown antennae without any basal whitish scaling on each segment, and entirely yellow palpi without any brown ventral scaling. Despite their considerable differences in outward appearance, because these two taxa have parapatric or allopatric geographic ranges and identical morphology, *anartia* is conservatively described here as a subspecies of *M. margaretta*. However, if *anartia* and *margaretta* are ever found to have slightly overlapping or strictly parapatric ranges, without any sign of intergradation, then *anartia* should be raised to species status.

*Mesene margaretta anartia* differs from nominotypical *M. margaretta* by having an entirely cream ventral surface to the abdomen, without black stripes across the distal margin of each segment, reduced reddish orange on the forewing and often to a lesser extent on the hindwing, typically a broader area of whitish scaling overlying the rays on the dorsal hindwing, and forewing whitish rays that are broader, more indistinctly defined, confined to the postdiscal area instead of extending to the distal wing margin, and unevenly spaced, with the rays in cells  $M_2$  and  $M_1$  in males and  $M_2$  to  $R_{4+5}$  in females coalesced to form a larger spot.





**FIGURE 11.** Symmachiini female genitalia in dorsal view. **11.** *Mesene margaretta anartia*, paratype ♀, Pilcopata, Cuzco, S. Peru (MUSM). Scale bar = 1 mm.

With the description of this distinctive new subspecies, we now recognize two subspecies for *M. margaretta*. The name *semiradiata* was proposed by C. & R. Felder (1865–74) as a full species for typical Colombian specimens of *M. margaretta*. It was treated by Stichel (1910–11) as a subspecies of *M. margaretta*, and finally synonymized by Callaghan & Lamas (2004). The name *oriens* was proposed by Butler (1870) as a full species for northern Venezuelan specimens of *M. margaretta* with no whitish rays showing on the dorsal surface. It was downgraded to a subspecies of *M. margaretta* in Hall & Harvey (2002), and is here synonymized with *M. margaretta margaretta* (**n. syn.**) for several reasons. Similar entirely orange phenotypes recur throughout the range of this taxon, for example also in southern Mexico and eastern Colombia, some speci-

mens exhibit intermediate wing patterns, and the male genitalia of specimens exhibiting each of these wing pattern phenotypes do not differ. Given the fact that the entirely orange phenotype repeatedly occurs only in small geographic pockets throughout the range of *Mesene margaretta margaretta*, intermediates are rare, and the two phenotypes present different mimetic wing patterns, it seems likely that the entirely orange phenotype represents a localized geographic form restricted to a particular habitat type.

**Biology:** Nothing is known about the biology of this rare taxon, except that it inhabits wet lowland and premontane forest along the base of the eastern Andes from 300 to 750 m.

**Distribution:** *Mesene margaretta anartia* is currently known to range from central (Junín) to southern (Madre de Dios) Peru, along the base of the eastern Andes. However, its distribution almost certainly extends southwards into Bolivia, and may extend slightly further northwards. Nominotypical *M. margaretta* is known to range from Mexico to western Ecuador and from northern Venezuela to northeastern Ecuador. It remains unclear which of the two taxa will occur in southern Ecuador and northern Peru.

### ***Symmachia pena* Hall & Lamas, new species**

(Figs. 4; 8)

**Description:** Male: Forewing length 14.5 mm. Forewing elongate, with straight costal margin and slightly convex distal margin, four forewing radial veins; hindwing apex rounded and tornus very slightly pointed. *Dorsal surface:* Ground color of both wings dark yellow; both wings with broad black costal, distal and anal margins, black borders becoming broader on both wings in apex and tornus, black anal border on forewing tapering gradually to nothing near wing base, black costal border on both wings extending slightly into discal cell along its entire length, anal border on hindwing a more grayish black, distal margin of yellow on both wings slightly undulating, narrow pale yellow stripe along costal edge of hindwing (obscured in Fig. 4 by overlapping forewing); fringe on both wings entirely black. *Ventral surface:* Same as dorsal surface, but slightly paler and duller.

*Head:* First palpal segment and basal half of second segment brown, distal half of second segment and third segment predominantly pale yellow, palpi short; eyes black and bare, lateral scaling pale yellow; upper half of frons brown, lower half pale yellow; antennae approximately 75% of forewing length, antennal segments entirely black with a narrow and discontinuous nudum section lateroventrally, clubs black.

*Body:* Dorsal surface of thorax and abdomen dirty dark yellow, ventral surface of thorax predominantly black, ventral surface of abdomen a mixture of black and cream scales; a broad and continuous band of concealed androconial scales present dorsally across posterior margin of abdominal tergites four and five; forelegs pale yellow, mid- and hindlegs dark brown with brownish yellow scaling on tarsal segments.

*Genitalia* (Fig. 8): Uncus rectangular in lateral view, with a tiny posterior projection from dorsal middle of posterior margin, falces thickened at “elbow”, tegumen with a broad strip of desclerotization dorsally; vinculum a very narrow ribbon of even width, with a short and broad saccus ventrally that has a small round protrusion at anterior corners and a tiny anterior protrusion at middle of anterior margin; valvae consist of two sections, a Y-shaped upper section, with a broad, tapered and inwardly curved posterior projection and a narrow anterodorsal projection that extends over aedeagus to nearly connect with opposing valve, and an evenly broad, round-tipped, upwardly directed lower section, two valve sections joined at their anterior base by a narrow strip of sclerotization; aedeagus short, very broad and medially constricted, with anterior tip twisting sharply to right, and posterior section ventrally tapering to a narrowly pointed tip and dorsally forming two broadly rounded flanges divided medially by a deep indentation (aedeagus thus appearing Y-shaped in dorsal view), partially everted vesica consists of two components, a pad of ten to twelve (not all of which could be shown in Fig. 8) very large, posteriorly and inwardly pointed spines lining ventral margin of each dorsal aedeagal flange culminating in a very large spine that is fused to distal tip of flange, and two closely spaced,

parallel, downwardly curved bands of numerous large spines through middle of vesica; pedicel short, broad and formed into two long, posteriorly projecting horns at lateral margins.

Female: Unknown.

**Type material:** Holotype ♂, PERU: *Junín*, Quebrada Siete Jeringas, 1700 m, 11°12'S 75°24'W, 25 Aug 2003 (C. Peña) (MUSM).

No additional specimens of this species have been located in the world's major collections.

**Etymology:** This species is named for the collector of the unique holotype specimen, Carlos Peña.

**Diagnosis:** This new species is a most interesting and unusual taxon because it appears to have no very close relatives among the symmachiine species discovered to date. One of the most important clues to phylogenetic placement in the Symmachiini is the arrangement of concealed androconial scales on certain male abdominal tergites (Harvey, 1987; Hall & Willmott, 1996; Hall & Harvey, 2002). This species has an unbroken band of scales on abdominal segments four and five, which is a common arrangement shared by most members of *Phaenochitonia* Stichel, 1910, *Symmachia*, *Xynias* Hewitson, 1874, *Xenandra* C. & R. Felder, 1865, *Mesenopsis* Godman & Salvin, 1886, and *Pirascia* Hall & Willmott, 1996. Most of these six genera are relatively small and well defined, and contain species that generally have rather homogeneous wing patterns and morphology. However, the large genus *Symmachia*, in addition to its core group of similar species that are closely related to the type species, currently contains a large heterogeneous assemblage of highly apomorphic species whose phylogenetic position within the tribe is unclear. Given that the wing pattern and morphology of *pena* do not closely match those of any described genus in the Symmachiini, *Symmachia* is therefore the most appropriate genus in which to temporarily place this new species until a generic-level phylogenetic revision of the tribe can reveal its true systematic status.

*Symmachia pena* cannot be confused with any other sympatric riodinid in the eastern Andes. Its simple wing pattern of large unbroken blocks of yellow on a black background is found in several species of *Mesene*, but only species of *Mesenopsis* also share its elongate wing shape. Particularly similar are *M. bryaxis* (Hewitson, 1870) and *M. briseis* Godman & Salvin, 1886, from west of the Andes. However, *S. pena* differs from these two species by having a slightly more compact wing shape, a slightly more rounded hindwing, more even black borders on both wings, a frons and palpi that are half brown and half yellow instead of entirely yellow, patagia that are covered with a mixture of brown and dark yellow scaling instead of bright yellow scaling alone, and an abdomen that lacks lateral and ventral yellow stripes. In addition, the male genitalia of *S. pena* are quite unlike those of *Mesenopsis* species, confirming the lack of any close phylogenetic relationship between the two taxa. All *Mesenopsis* species lack deeply bifurcate valvae, and have an evenly narrow aedeagus, without a pair of posterodorsal flanges, a dense patch of small spines at the dorsal base of the everted vesica instead of a long row of large spines beneath each aedeagal flange, and a single medial posterior projection from the pedicel instead of a pair of lateral projections.

**Biology:** Nothing is known about the biology of this very rare species, except that it inhabits wet montane forest at about 1700 m.

**Distribution:** *Symmachia pena* is currently known only from the type locality in the eastern Andes of central Peru.

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