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# Five new riodinid species from northwestern dry forest and northeastern Andean cloud forest habitats in Peru (Lepidoptera: Riodinidae)

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SUMMARY

*HALL JPW, LAMAS G. 2001. Five new riodinid species from northwestern dry forest and northeastern Andean cloud forest habitats in Peru (Lepidoptera: Riodinidae). Rev. per. Ent. 42.-* Five new riodinid species, *Euselasia perisama, Napaea tumbesia, Lasaia maritima, Symmachia calderoni* and *Uraneis incubus* are described from dry habitats in the northwest and wet cloud forest habitats in the northeast of Peru. Discussions concerning each of their closest relatives and brief notes on their habitats and behaviors are given. *Napaea umbratica* Zikán, 1952, is synonymised with *N. agroeca* Stichel, 1910 (**syn. n.**), and *Uraneis zamuro* (Thieme, 1907), is synonymised with *U. hyalina* (Butler, 1867) (**syn. n.**).

Key words: cloud forest, dry habitats, Ecuador, endemism, morphology, Peru, taxonomy.

RESUMEN

*HALL JPW, LAMAS G. 2001. Cinco especies nuevas de riodínidos de hábitats de bosque seco del noroeste y bosque nublado del noreste de los Andes en Perú (Lepidoptera: Riodinidae). Rev. per. Ent. 42.* Se describe cinco especies nuevas de riodínidos de Perú, *Euselasia perisama, Napaea tumbesia, Lasaia maritima, Symmachia calderoni* y *Uraneis incubus,* de hábitats secos en el noroeste, y bosque nublado húmedo en el noreste. Para cada una se presenta una discusión acerca de sus congéneres más cercanos y se ofrece notas breves sobre sus hábitats y comportamientos. Se sinonimiza *Napaea umbratica* Zikán, 1952 con *N. agroeca* Stichel, 1910 (**syn. n.**), y *Uraneis zamuro* (Thieme, 1907) con *U. hyalina* (Butler, 1867) (**syn. n.**).

Palabras clave: bosque nublado, Ecuador, endemismo, hábitats secos, morfología, Perú, taxonomía.

## *Introduction*

Andean premontane forests continue to yield more undescribed riodinid species, and indeed species from many other butterfly groups, than any other habitat in the Neotropics (SALAZAR & CONSTANTINO 1993, HALL & WILLMOTT 1995a, b, c, 1996a, 1998a, b, c, CALLAGHAN & SALAZAR 1997), yet there remains a relative paucity of basic biological surveys for the region, and there is a growing awareness that the increasing threat from human encroachment make the Andes one of the highest priorities for scientific research and conservation (CHURCHILL *et al.* 1995, BIODIVERSITY SUPPORT PROGRAM *et al.* 1995, DINERSTEIN *et al.* 1995, ALDRICH *et al.* 1997). Indeed, two of the species described below were collected during a recent joint RAP (Rapid Assessment Program) expedition by Conservation Intemational (Washington, DC, USA), and the Museo de Historia Natural (Lima, Peru) (SCHULENBERG & AWBREY 1997), to the remote Cordillera del Cóndor in Amazonas department.

The purpose of this paper is to describe three riodinid species in the genera *Euselasia* Hübner, [1819], *Symmachia Hübner,* [1819], and *Uraneis* Bates, 1868, from cloud forests in the northernPeruvian Andean departments of Amazonas and San Martín and two species in the genera *Napaea* Hübner, [819], and *Lasaia* Bates, 1868, from the dry northwestern departments of Tumbes, Piura and La Libertad. Together with a large area of south-west Ecuador, these latter departments also constitute a relatively poorly sampled (but see LAMAS 1976) and threatened region (see PARKER & CARR 1992) of high endemism, although of substantially lower diversity. Since all of the species are described here from localities in

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northem Peru that are in relatively close proximity to the southern border of Ecuador, often only kilometers away, it is expected that most, if not all, will eventually be found in that country, and indeed the new species of *Uraneis* is already known from Ecuador. Keith R. Willmott is included as an author on this last species as he was its co-discoverer.

***Euselasia perisama*** Hall & Lamas, ***sp. n.***

*Male* (figs. 1a-b).- FW length 20-22 mm (n=6). Forewing somewhat elongate, costa smoothly convex, distal margin approximately straight; hindwing elongate with tornus produced into rounded lobe, distal margin slightly pointed at vein $Cu_1$. **Dorsal surface:** Forewing ground color black; broad, postdiscal cyan band surrounded by iridescent purple scaling curves from vein $R_3$ at costa around discal cell end to vein 2A in tornus, slightly narrower below vein $M_3$, curves slightly outwards at tornus; fringe brown. Hindwing ground color black; small elongated triangle of cyan lined by iridescent purple scaling proximally in apex, occupying cells $M_3$-$Cu_1$ to $R_s$-$M_1$; distal half of wing exhibits subtle steely green iridescence at oblique angle; fringe brown. **Ventral surface:** Forewing ground color pale brown; yellow at base of costa, broad indistinct darker brown band at wing base, rich red-brown discal band surrounded by pale iridescent purple vertically traverses wing from costa to middle of cell $Cu_2$-2A where it becomes dark brown, crossing discal cell end; distal portion of wing red-brown, except for dark brown below middle of cell $Cu_2$-2A, with thin pale brown submarginal line and three black triangular spots (iridescent dark purple at oblique angle) in each of cells $M_2$-$M_3$ to $R_{4+5}$-$M_1$ (decreasing in size in that order), each surrounded by paler brown scaling, and proximally directed dark brown triangles outlined in pale brown in cells $Cu_2$-2A to $M_3$-$Cu_1$; postdiscal portion of veins outlined in pale brown. Hindwing ground color pale brown; broad darker brown band at wing base, rich red-brown discal band surrounded by pale iridescent purple above vein 2A diagonally traverses wing frorn costa to anal margin, pinkish-red stripe at anal margin occupies distal portion of anal cell, all of cell 2A-3A, and some scaling is present towards base of cell $Cu_2$-2A, distal portion of wing red-brown above vein 2A with thin orange rnarginal line, then thinner pale blue-gray line, medial area of red-brown contains elongate ovoid spots in each of cells $Cu_2$-2A (two) to $Cu_1$-$Cu_2$ and $M_2$-$M_3$ to $R_s$-$M_1$ surrounded by pale brown that is less prominent towards anal margin, those in cells $M_2$-$M_3$ to $R_s$-$M_1$ brown, that in cell $Cu_1$-$Cu_2$ black, those in cell $Cu_2$-2A dark iridescent purple, and an ovoid black spot, with a large distally positioned dark iridescent purple pupil, surrounded by pale yellowish brown, in cell $M_3$-$Cu_1$; postdiscal portion of veins outlined in pale yellowish brown. **Head:** Labial palpi yellow-brown, third segment very short. Eyes bare and brown, margins yellow-white. Frons brown with yellow-white lateral scaling. Antennal segments brown with yellow-white basal scaling, narrow strip devoid of scales along inner-ventral edge; clubs brown, tips orange-brown. **Body:** Dorsal surface of thorax and abdomen black, ventral surface pale brown. All legs yellow-brown. **Genitalia** (figs. 6a-b): Uncus rounded; elongate valvae gradually taper to rounded tip in lateral view, distal portion of approximately even width in ventral view, sparse scales roundly elongate; aedeagus of approximately even width tapering to pointed tip, everted vesica a large round sac with two small rounded lateral projections and a fan of about nine rounded teeth or ridges at lower right side, no prominent transtilla.

*Female.*- Unknown.

*Type-material:* HOLOTYPE male, **PERU**, Amazonas, Cordillera del Cóndor, PV3 (Alfonso Ugarte), 1000-1200 m, 03°55'S 78°26'W, 18 July 1994 (G. Lamas); in the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (MUSM). PARATYPES: 4 males, same data as HT, but dates 18, 19, 19 and 25 July 1994, all in the MUSM; 1 male, same data as HT; deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (USNM).

*Etymology:* A noun in apposition; the name refers to the similarity in dorsal pattem between this species and many members of the nymphalid genus *Perisama* Doubleday, 1849.

*Remarks: Euselasia perisama* sp. n. belongs in the "*euodias* group" of *Euselasia (sensu* Hall & Willmott 1998c) with *E. euodias* (Hewitson, 1856), *E. issoria* (Hewitson, 1869), *E. orba* Stichel, 1919, and *E. pillaca* Hall & Willmott, 1998. The group is recognised by its species having a variably elongate patch of reddish-purple along the anal margin of the ventral hindwing, and the configuration of the remaining ventral pattern elements and male genitalia suggest that it is probably the sister group to the "*orfita* group" *(sensu* Callaghan 1997). *E. perisama* perhaps most closely resembles *E. euodias and E. issoria* because of its particularly elongate hindwing and by

possessing reddish-purple along the entire anal margin of the ventral hindwing, but it is readily distinguished from all species in the group by having extensive reddish-brown in the distal portion of both wings surrounding the submarinal ocelli (especially proximally on the hindwing) instead of dark brown and, most prominently, by having bright cyan dorsal coloration as a band on the forewing and a triangle in the apex of the hindwing instead of various hues of barely perceptible dark purple. The male genitalia in *Euselasia* vary very little interspecifically, and the "*euodias* group" is no exception. While the valvae of *E. pillaca* curve inwards towards their tips in ventral view (HALL & WILLMOTT 1998c), the valvae of the remaining species in the group are straight in ventral view and do not significantly differ from each other in their shape.

*Euselasia perisama* is currently known only from the Peruvian type locality and no other specimens have been located in the world's major collections. It was collected at a remote locality on the upper Río Comainas along the eastern edge of the Cordillera del Cóndor as part of an international rapid assessment program (RAP) inventorying the flora and fauna of the area (SCHULENBERG & AWBREY 1997). Since the type locality is only a few kilometers from the Ecuador-Peru border, *E. perisama* is sure to occur in the former country. It is somewhat surprising to find another cloud forest species in the "*euodias* group" of *Euselasia* (see HALL & WILLMOTT 1998c) but, given the number of unique undescribed Satyrinae also collected in the Cordillera del Cóndor (LAMAS 1997), the possibility remains that *E. perisama* is endemic to this region. The six specimens were collected on different days always perching on the same tree in a small forest lightgap, between 1100 and 1300 h, settling at a height of about 5 m. No females and no further males were seen anywhere else in the area surveyed.

***Uraneis incubus*** Hall, Lamas & Willmott, ***sp. n.***

*Male* (figs. 2a-b).- FW length 21,5-23 mm (n=5). Forewing costa approximately straight, distal margin slightly convex; hindwing tornus produced into very small lobe. **Dorsal surface:** Forewing ground color dark iridescent blue; broad white postdiscal band extends from cell $R_2$-$R_3$ to $Cu_2$-2A, broadening at middle and nearly touching discal cell end in cells $M_2$-$M_3$ and $M_1$-$M_2$, white in cell $Cu_2$-2A divided horizontally into two portions that gradually fade out proximally, proximal and especially distal margins of entire band become gray-white; fringe black with faint pale scaling at margin of cell $Cu_2$-2A. Hindwing ground color dark iridescent blue, dark brown at costal and anal margins; a pale blue ray traverses each of cells $R_s$-$M_1$ to $Cu_2$-2A, two in cell $Cu_2$-2A, one in upper distal corner only of cell 2A-3A, all rays except that in cell $R_s$-$M_1$ terminate at submargin in a pale blue proximally pointing triangle; fringe black with faint paler scaling at margins of cells $Sc+R_1$-$R_s$ and $Cu_2$- 2A. **Ventral surface:** Forewing differs from dorsal surface in following ways: apex and margin dark brown, divided white marking in cell $Cu_2$-2A continues as two pale blue rays to wing base, pale blue ray in anal cell, pale blue scaling at base of costa and along costal edge of discal cell, prominent patches of pale blue setae along anal edge of discal cell and at base of cell $Cu_1$-$Cu_2$. Hindwing differs from dorsal surface in following ways: margins dark brown, pale blue rays in cells $Cu_2$-2A to $R_s$-$M_1$ more prominent with submarginal triangles less well differentiated, large broad pale blue rays occupy discal cell, anal cell, cells 2A-3A and $Sc+R_1$-$R_s$, and pale blue also occupies base of costa and wing base. **Head:** Ventral surface of labial palpi white, dorsal surface black, second segment elongate. Eyes bare and brown, margins white. Frons black with white lateral scaling in ventral two-thirds, two white spots dorsally behind antennae. Antennal segments entirely black, inner ventral surface entirely denuded of scales except towards base; clubs black and elongate, tips orange-brown. **Body:** Dorsal and ventral surface of thorax black, patagia black with large red anterior spot; dorsal surface of abdomen black, ventral surface with two white stripes along margins of sternites, white scaling at base of abdomen along lower margin of tergites. Ventral surface of forelegs black, dorsal surface white; ventral surface of femur of mid and hindlegs black, dorsal surface white, remainder brown on both surfaces. **Genitalia** (figs. 7a-b). Uncus angular, "V"-shape indentation at posterior margin dorsally; vinculum narrow, forming small triangular saccus ventrally; valvae roundly rectangular in lateral view with single small posterior projection at upper posterior corner, narrow and medially concave in ventral view with posterior projection at tip inwardly curved, inner margin towards tip slightly uneven; aedeagus ventrally bulbous posterior to pedicel then narrow and elongate; pedicel somewhat broad and medially divided (especially prominent at base).

*Female.*- Differs externally from male in following ways: FW length 25 mm (n=1). Wing shape more elongate, forewing apex and hindwing tornus less pointed. Dorsal iridescent

blue slightly paler and less prominent. Second and third palpal segments more elongate.

*Type-material:* HOLOTYPE male, **PERU**, Amazonas, Cordillera del Cóndor, PV3 (Alfonso Ugarte), 1000-1200 m, 03°55'S 78°26'W, 18 July 1994 (G. Lamas); in the MUSM. ALLOTYPE female, **ECUADOR**, Pastaza, Mera, "900 m" [actually, 1100m], Sept 1948 (W. C. MacIntyre); in the Carnegie Museum of Natural History, Pittsburgh, PA, USA (CMNH). PARATYPES: 1 male, **PERU**, San Martín, km 18 Tarapoto-Yurimaguas rd., 1250 m, 06°27'S 76°17'W, 17 Nov 1998 (R. K. Robbins); in the USNM; 1 male, **ECUADOR**, Pastaza, Río Pindo Grande, nr. Shell, 1050 m, 19 Apr 1995 (J. P. W. Hall); in the coll. of Jason P. W. Hall & Keith R. Willmott, Washington, DC, USA (JHKW); 1 male, **ECUADOR**, Napo, km 49 Tena-Loreto rd., 1300 m, 23 Oct 1996 (K. R. Willmott); 1 male: same data as previous but Mar 1995; both in the JHKW.

*Etymology:* A noun in apposition; an incubus is "a male demon supposed to lie upon persons, especially women, in their sleep" (BROWN 1956).

*Remarks:* The fact that forewing vein $R_4$ meets the wing margin posterior to the apex (PENZ & DEVRIES 1999), a unique synapomorphy within the tribe Nymphidiini *(sensu* HALL 1999a, b), places *incubus* sp. n. in the genus *Uraneis. Uraneis incubus* perhaps superficially most closely resembles the partially sympatric *U. hyalina* (Butler, 1867), as both species possess distal white forewing bands, but the male genitalia suggest that *incubus* is most closely related to the allopatric west Andean species *ucubis* Hewitson, 1870. Both species possess dark blue iridescence over both dorsal wings, although this is darker and pure blue instead of blue-green in *incubus,* but *incubus* has a broad postdiscal white band on the forewing instead of submarginal white rays, and faint gray-blue rays over the whole hindwing instead of white rays restricted to the margin. The male genitalia of *incubus* differ from those *of ucubis* only by lacking small spines along the inner valve margins preceding the large terminal projection.

It is important to note here that the taxon *U. zamuro,* described by THIEME (1907) from a single female specimen (the original description states the type to be a male) from Archidona at 600 m at the base of the east Ecuadorian Andes, represents the Ecuadorian female phenotype of *U. hyalina,* as evidenced by sympatric series of males and females that exhibit congruent wing pattern characters. *U. hyalina* is somewhat geographically variable, but since there is no evidence to suggest that this phenotype respresents a discrete population worthy of subspecific recognition, we synonymise *U. zamuro* with *U. hyalina* (**syn. n.**).

*Uraneis incubus* is currently known only from premontane forest in Ecuador and north Peru between 1000 and 1300 m, although the species is likely to range more widely along the east Andean slope. At km 49 on the Tena-Loreto road in Ecuador, small groups of males were found perching high in subcanopy lightgaps along a ridgetop trail from 1130 h to approximately 1400 h. Their flight was rapid, and pairs of males were occasionally observed in upwardly spiralling flights together. They rarely landed, but did so with their wings outspread both beneath and on top of leaves. A single male was attracted at this locality to a subcanopy rotting fish baited trap, a phenomenon that has also been reported for *hyalina* (HALL & WILLMOTT 2000). The Ecuadorian male collected at Shell was observed resting beneath a leaf about 6 m above the ground around mid-day, alongside a small river.

***Symmachia calderoni*** Hall & Lamas, ***sp. n.***

*Male* (figs. 3a-b).- FW length 11 mm (n=1). Forewing costa approximately straight, distal margin convex; hindwing slightly pointed at tornus. **Dorsal surface:** Forewing ground color dark orange, orange at margin; four evenly spaced black bars in discal cell with tiny costal flecks inbetween, one marking cell end, basal one forming band that extends to anal margin, three evenly spaced black marks in basal two-thirds of cell $Cu_2$-2A, arc of five small postdiscal black spots extends from costa to cell $Cu_1$-$Cu_2$, becoming faint below vein $M_3$; postdiscal black triangle at costa, submarginal row of five small, horizontally elongate black spots centered around each of veins 2A to $M_2$, a black bar extending from vein $M_1$ to costa, six larger black marginal spots in anal cell and each of cells $Cu_2$-2A to $M_1$-$M_2$, all round except that in cell $Cu_2$-2A vertically elongate; thin black line at very distal margin, fringe brown. Hindwing differs from forewing in following ways: costal and anal margin black, postdiscal arc of black spots very faint, marginal black spots become smaller towards apex. **Ventral surface:** Forewing ground color brown, pale brown at anal margin; black markings as on dorsal surface except each is more prominent and block-like, those in anal cell occupy width of cell, distal-most one disjointedly diagonal with orange scaling on either side, orange scaling