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NINE NEW SPECIES AND ONE NEW SUBSPECIES OF *EUSELASIA* FROM ECUADOR (LEPIDOPTERA: RIODINIDAE)

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ABSTRACT.– Nine new species and one new subspecies in the euselasiine genus *Euselasia* Hübner, [1819] (*Euselasia andreae* **n. sp.**, *Euselasia cyanofusa* **n. sp.**, *Euselasia hieronymi bianala* **n. ssp.**, *Euselasia illarina* **n. sp.**, *Euselasia jigginsi* **n. sp.**, *Euselasia mapatayna* **n. sp.**, *Euselasia nauca* **n. sp.**, *Euselasia palla* **n. sp.**, *Euselasia pillaca* **n. sp.**, and *Euselasia thaumata* **n. sp.**), are described from Ecuador, with brief notes on their habitats and behavior.

KEY WORDS: behavior, Brazil, Central America, *Charis*, cloud forest, conservation, Costa Rica, deforestation, *Diaethria*, *Dynamine*, endemism, *Eueides*, *Eresia*, *Euptychia*, ***Euselasia andreae*** n. sp. ***Euselasia cyanofusa*** n. sp., ***Euselasia hieronymi bianala*** n. ssp., ***Euselasia illarina*** n. sp., ***Euselasia jigginsi*** n. sp., ***Euselasia mapatayna*** n. sp., ***Euselasia nauca*** n. sp., ***Euselasia palla*** n. sp., ***Euselasia pillaca*** n. sp., ***Euselasia thaumata*** n. sp., Euselasiinae, *Hades*, *Hamadryas*, *Hyposcada*, *Ithomeis*, *Melanis*, *Methone*, Mexico, mimicry, *Myscelia*, Neotropical, Nicaragua, Nymphalidae, Panama, Peru, *Phoebis*, Pieridae, South America, *Stalachtis*, *Symmachia*, taxonomy.

Euselasia Hübner, [1819], is the largest riodinid genus with approximately 152 described species (Hall and Willmott, unpubl. data), and contains all members of the subfamily Euselasiinae Kirby, 1871, except the three species in *Hades* Westwood, 1851, and *Methone* Doubleday, 1847 (Harvey, 1987). *Euselasia* species are widespread throughout the Neotropics and form a significant proportion of the riodinid fauna in all wet forest habitats up to about 1700m. While some species are common and likely to be seen by the casual observer, many are very rare and poorly known.

Seitz (1916) and D'Abrera (1994) both gave pictorial overviews of the genus, but the only attempt at a comprehensive taxonomic revision of *Euselasia* was that of Stichel (1928), who recognised 133 species. However, his appraisal is now woefully outdated by information collated over the last 25 years during intensive regional studies. These have usually resulted in the recognition of previously confounded sibling species (Brévignon, 1995, 1996, 1997; Callaghan, 1997) but quite novel phenotypes continue to be discovered, especially in the comparatively less well studied Andean cloud forest habitats (Hall and Willmott, 1995a). The purpose of this paper is to describe a number of *Euselasia* taxa from both of the above categories. The majority of these taxa have been collected by the authors during a faunistic study of Ecuadorian butterflies over the last five years, but the last two originate from the private collection of R. C. Busby, with whom those species descriptions are co-authored.

Approximately 92% of extant holotype specimens representing *Euselasia* taxa reside in the four museums listed below and all have been examined. Type illustrations and/or descriptions have been consulted for the remainder (we follow Heppner and Lamas (1982) in using the following acronyms throughout the text):

BMNH British Museum (Natural History), London, England
MNHN Muséum National d'Histoire Naturelle, Paris, France
USNM United Sates National Museum, Washington, DC, USA
ZMHU Zoologische Museum, Humboldt Universität, Berlin, Germany

Euselasia palla Hall & Willmott, **new sp.**

Fig. 1a,b.

Description.– MALE: unknown.

FEMALE: forewing length 26mm. Outer forewing margin convex, four radial veins; hindwing rounded with slightly dentate distal margin. *Dorsal surface*: forewing ground color dark brown; orange extends from wing base to cell end, with some black scaling at the costal edge of the cell, and two-thirds distance from cell base to distal wing margin as ellipsoids in cells Cu_1 and Cu_2, a similar distance from wing base to distal margin in cell 1A+2A, with extensive black scaling occurring in the central area of the distal half and along the anal margin; one tiny, faint costal white fleck in cells R_4+R_5 and R_3, one large elongate submarginal white spot in cells M_1, M_2 and M_3, and increasingly smaller submarginal spots in cells Cu_1, Cu_2 and 1A+2A. Hindwing ground color dark brown; large orange patch extends from wing base three-quarters distance to distal wing margin, becoming darker at its distal edge and paler along anal margin. *Ventral surface*: forewing ground color pale brown; dull orange extends from wing base two-thirds distance to distal wing margin, outer edge convex; uneven, dark orange-brown line, 1mm thick, extends from cell R_2 at costa to vein 1A+2A at a point two-thirds distance from wing base to tornus; thin line of dark orange-brown scaling extends along costal edge of discal cell; one small submarginal white spot in cells R_4+R_5 and R_3, one large elongate submarginal white spot in each of cells M_1, M_2 and M_3, the latter two containing a pale brown macule across their middle, and three parallel pairs of submarginal spots in cells Cu_1, Cu_2 and 1A+2A that are all white except the proximal spot in Cu_2, which is dull orange. Hindwing ground color pale brown; dull orange extends from wing base three-quarters distance to distal wing margin; uneven, dark orange-brown line, 1mm thick, extends from distal end of vein Sc+R_1 at costa almost to edge of orange in cell 1A+2A, then at a right angle up to anal margin; a pair of parallel submarginal white spots in cells M_1-Cu_2, two pairs partially joined in cell 1A+2A, two thin white dashes in cell 3A; thin, orange-brown marginal line at tornus. *Head*: labial palpi white. Eyes black and bare. Frons white with orange scaling beneath antennae. Dorsal surface of antennae black, ventral surface black with brown band at base of each segment; clubs black, tips orange-brown. *Body*: thorax black; abdomen orange-brown, slightly paler on ventral surface. Legs orange-brown.

Types.– *Holotype female*: ECUADOR.– *Esmeraldas Prov.*: km 44 Lita-San Lorenzo rd., La Punta, 300m, 21 Jun 1994 (K. R. Willmott); to be deposited in the BMNH.

Paratypes: ECUADOR.– same data as above, 1 ♀ (J. P. W. Hall); in coll. of the authors.

Etymology.– This species is named after the Quechua word "palla", which means a woman of the Inca nobility, in reference to its impressive size and the fact that it is currently known only from female specimens.

Diagnosis.– *Euselasia palla* n. sp. is uniquely patterned amongst the Euselasiinae, bearing a fleeting resemblance only to the female of *Euselasia aurantiaca* (Salvin & Godman, 1868), which lacks the subapical white forewing markings and the broad distal black margin on the hindwing. It has been suggested to us (Harvey, pers. comm.) that the female specimens of *E. palla* match a small series of male

specimens (in the USNM and ZMHU) from Costa Rica that belong to an undescribed species close to *E. aurantiaca*. However, we think it unlikely that these males are conspecific with *E. palla* for two reasons. Firstly, males and females of *Euselasia* species always have virtually identical ventral pattern elements and, in particular, the ventral hindwing of female *E. palla* lacks the central black triangular eyespot at the distal margin seen in the male of the undescribed species, a character also seen in both sexes of *E. aurantiaca* and the great majority of other *Euselasia*. Instead, female *E. palla* has a parallel series of white spots reminiscent of those found on both sexes of the southeast Brazilian species *Euselasia zara* (Westwood, 1851). Secondly, it would be reasonable to assume that the female belonging with the male of the undescribed species would be of a similar size to that of female *E. aurantiaca* (i.e., forewing length about 20-22mm, rather than 26mm) since the males of the two species are similar in size (with forewing lengths 16-17mm). We thus expect the male of *E. palla* to be considerably larger than the males of either *E. aurantiaca* or the undescribed species.

Discussion.– Athough both females were caught on a single morning, no more individuals were subsequently seen despite numerous return visits to the type locality and other locations in the vicinity. This particular day, towards the end of the wet season, was exceptional for riodinid abundance and species diversity, and the capture of *E. palla* heralded the discovery of several additional undescribed species (Willmott and Hall, 1994; Hall and Willmott, 1995b, 1996, in prep.). Both females were encountered between 1000h and 1100h near the forest edge, one along a recent logging road (now the main Ibarra-San Lorenzo road), flying about 3-5m above the ground with a slow, fluttering flight reminiscent of an ithomiine or acraeine. This flight behavior is all the more noteworthy as *E. palla* has a wing pattern that clearly places it in an orange and white mimiçry complex which involves a number of lowland Chocó butterflies, including the riodinids *Ithomeis eulema serena* (Stichel, 1910), and *Stalachtis magdalenae* Westwood, 1851, the ithomiine *Hyposcada illinissa aesion* (Godman & Salvin, 1878), the heliconiine *Eueides lybia olympia* (Fabricius, 1793) and the orange and white female form of the nymphaline *Eresia sestia* Hewitson, 1869.

Euselasia thaumata Hall & Willmott, **new sp.**

Fig. 2a,b; 11a,b.

Description.– MALE: forewing length 17mm. Forewing vein R_3 splits from R_4+R_5 in the very wing apex; hindwing is produced at tornus. *Dorsal surface*: forewing ground color black; in a view perpendicular to wing surface, a deep purplish blue extends from wing base to discal cell end and along anal margin to tornus, occupying entire wing area between anal margin and vein Cu_2, and basal half of cell Cu_2; in oblique view, blue extends additionally throughout cell Cu_2 and much of Cu_1. Hindwing ground color black, slightly paler at anal margin; in perpendicular view, deep purplish blue extends along distal wing margin from end of cell M_1 to tornus, broadening at the mid-point; in oblique view, blue additionally seen at base of cell 1A+2A. *Ventral surface*: forewing ground color pale brown; six dark brown bands vertically traverse wing from costa to near vein 1A+2A: one marginal, one submarginal and two postdiscal are roughly evenly spaced and of even width, except the most proximal which is slightly concave at its center, one broader discal band is slightly convex and wider centrally, and the basal sixth is largely restricted to the cell; dark yellow scales line proximal edges of brown bands one and three (numbered in from distal margin), and the distal edges of bands two and four. Hindwing ground color pale brown; six dark brown bands variably traverse the wing: one marginal and one submarginal extend from apex to tornus paralleling wing margin; outer postdiscal band extends from costa to vein M_3, forms a very pointed triangle in cell Cu_2, a less pointed triangle in 1A+2A, then extends at right angles up to anal margin, all sections of this band being edged distally with white scales between anal margin and M_3; inner postdiscal band, which is thicker especially in the costal half, extends in concave shape from costa to near tornus then diverts at an angle of 60 degrees as a thinner line to base of anal margin; discal band extends straight from costa towards tornus, slightly thicker at costa, then thinner, then markedly wider centrally before angling sharply towards wing base; thick, sharply convex, basal band extends from costa to tornal angle of discal band; dark yellow scales line the proximal edges of brown bands one and three (numbered in from distal margin), and the distal edges of bands two and four, and sparsely fill space proximal to basal band; elliptical black spot present in cell Cu_1 between bands two and three, with dark yellow scaling proximally and white scaling distally. *Head*: labial palpi very pale brown. Eyes black and bare. Frons brown with white at margins. Antennal segments black with brown scales laterally and white scales basally, increased white scaling before clubs, especially on ventral surface; clubs black, tips orange-brown. *Body*: thorax black; dorsal surface of abdomen black, ventral surface brown. Forelegs dark brown, mid and hindlegs yellow-brown. *Genitalia* (Fig. 11a,b): uncus rounded, aedeagal tip rounded, valvae upwardly curved in lateral view and slightly inwardly curved at tip in ventral view, tip rounded, scales elongate with bifid tips, transtilla evenly triangular.

FEMALE: unknown.

Types.– *Holotype male*: ECUADOR.– *Napo Prov.*: km 49 Tena-Loreto rd., 1300m, 31 Aug 1997 (K. R. Willmott); to be deposited in the BMNH.

Paratypes: ECUADOR.– same data as above, 2 ♂, in coll. of the authors; same locality data as above, 17 Sept 1995, 1 ♂ (A. F. E. Neild), to be deposited in the Museo Nacional de Ciencias Naturales, Quito, Ecuador (MNCN). *Morona-Santiago Prov.*: km 20 Macas-Nueve de Octubre rd., 1600m, 29 Sept 1997, 1 ♂ (R. C. Busby), in coll. of the authors; same data as preceding, 1 ♂, in coll. of G. W. Busby III, Boston, MA; same locality data as preceding, 1800m, 27 Sept 1997, 1 ♂ (R. C. Busby), in coll. of R. C. Busby, Boston, MA.

Etymology.– The name of this species is derived from the Greek word "thaumatos", meaning wonderful.

Diagnosis.– *Euselasia thaumata* n. sp. is clearly a member of the "*Euselasia eucritus* (Hewitson, [1855]) group", but although it has a similar dorsal surface to species such as *E. eucritus* and *Euselasia toppini* Sharpe, 1915, its almost uniformly brown ventral surface, which lacks basal and marginal red or orange coloration and has postdiscal bands of markedly varying widths, is diagnostic.

Discussion.- *E. thaumata* is currently known from primary cloud forest habitats between 1300m and 1800m. It has only been found at ridgetop sites, where solitary males perch on low sunlit bushes, about one meter above the ground, in open areas within the forest in the early morning from 0845h to 0945h. They rest on the tops of leaves with their wings shut and make brief sorties before returning to the same perching spot, in flight closely resembling members of the satyrine genus *Euptychia* Hübner, 1818. One male individual was attracted to a trap baited with rotting fish in the early afternoon (R. Busby, pers. comm.).

The species seems to be geographically local and to fluctuate in abundance. Seasonality may explain why it has been collected only in August and September, despite further visits to the type locality during March, April and October. However, it is also worth mentioning that males were common on the day the holotype was collected but absent only a few weeks later. We have also observed this phenomenon in *Euselasia pillaca* n. sp. (described below) and *Euselasia chinguala* Hall & Willmott, 1995. It is possible that the gregarious and synchronously processional feeding behavior of *Euselasia* larvae (DeVries *et al.*, 1994; DeVries, 1997; Brévignon, 1997) might accentuate the temporally restricted emergence of certain adult *Euselasia* and thus their perceived rarity.

Euselasia pillaca Hall & Willmott, **new sp.**

Fig. 3a,b; 12a,b.

Description.– MALE: forewing length 17.5mm. Forewing apex rounded; hindwing somewhat elongate, tornus rounded. *Dorsal surface*: forewing ground color black; dull, dark purple, in small patch at wing base, extends along costal margin above discal cell, then forms broad band tapering towards tornus at two-thirds distance between wing base and distal margin,