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NOTES ON THE GENUS *ARGYROGRAMMANA*, PART 2, WITH ONE NEW SPECIES (LEPIDOPTERA: RIODINIDAE)

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ABSTRACT.– The species of the *Argyrogrammana trochilia* (Westwood, [1851]) complex and *Argyrogrammana stilbe* (Godart, [1824]) complex (groups "Trochiliiformes" and "Stilbeformes" respectively, of Stichel, 1911, 1930) are illustrated (including many type specimens), with notes on taxonomy and distribution. In addition, a new species (*A. pastaza* **n. sp.**) is described from the cloud forests of eastern Ecuador, and a revised classification is proposed for the entire genus *Argyrogrammana* Strand, 1932.

KEY WORDS: ***Argyrogrammana pastaza*** n. sp., *Baeotis*, Bolivia, Brazil, cloud forest, Clusiaceae, Colombia, Costa Rica, Ecuador, French Guiana, Guttiferae, hilltopping, hostplants, Neotropical, perching behavior, Peru, taxonomy.

The genus *Argyrogrammana* Strand, 1932, contains a number of species of Neotropical riodinids which are usually rare, often extremely similar in appearance, and occasionally quite variable. All species in the genus possess a thin gold or silver-blue submarginal line, traversing both wings on both dorsal and ventral surfaces, and often kinked basally in the forewing apex. In addition, all species appear to have a black medial stripe across the eyes, which may or may not appear on the frons. This combination of characters is unique among genera in the *incertae sedis* section (4 forewing radial veins) (*sensu* Harvey, 1987) of the Riodinidae, in which *Argyrogrammana* is currently placed.

The genus may be roughly divided into three main species complexes on the basis of external morphology. However, there are species intermediate between all these groups, and they are used here for the sake of convenience and are not intended to indicate any necessary monophyletic relationship between included species. The first group, the "*amalfreda* complex," we discussed in a previous paper (Hall and Willmott, 1995). This paper represents the second and concluding part of a review of *Argyrogrammana*, in which we critically examine the existing systematic arrangement and reassess the species diversity of the genus. Here we treat the "*trochilia* complex", characterised by banded females and often blue banded males, and the "*stilbe* complex," characterised by an orange or yellow dorsal surface mottled with small black spots (groups "Trochiliiformes" and "Stilbeformes" respectively, of Stichel, 1911, 1930), illustrate many type specimens, and give notes on distribution, taxonomy and identification.

Among species of the "*trochilia* complex," we have found that the angle of the blue bands, the pattern of blue along the anal margin, and the shape of the silver submarginal line near the apex on the forewing dorsal surface are reliable characters for species diagnosis. Within the "*stilbe* complex," the precise pattern of black spots in the forewing ventral surface apex and the shape of the silver submarginal line are both useful characters in identifying both males and females. The male genitalia are relatively homogenous, but some interspecific variation may be observed in the shape of the valvae and uncus. The diagnostic characters mentioned in each species account are consistent throughout the known ranges for all the specimens examined by us.

As a result of field work in Ecuador, it became apparent that there was a species in the "*trochilia* complex" from mid-altitude Andean cloud forest sites that was in need of description, and this is also formally described and named below. Finally, we present a new classification for the entire genus *Argyrogrammana*, incorporating information from our previous paper on the genus (Hall and Willmott, 1995).

Argyrogrammana Strand, 1932

Argyrogramma Stichel, 1910, preoccupied (Hübner, [1823])

"*trochilia* complex"

A. saphirina (Staudinger, [1887])

Fig. 1a,b. Male type, Río San Juan, W. Colombia (Zoologische Museum Humboldt Universität, Berlin, Germany, ZMHU).
Fig. 1c,d. Female type, Río San Juan, W. Colombia (ZMHU).
Fig. 15a-c. Male, nr. San Lorenzo, W. Ecuador (coll. of the authors).
Distribution: Panamá (Darién) - W. Ecuador.

This rare species is restricted to a rather small geographic range, where it can be found only in very wet lowland rainforest. It can immediately be distinguished from its close Amazonian relatives by its larger size and the interlocking pattern of blue squares towards the outer margins of both wings. The male genitalia are also distinctive (see Fig. 15a-c), with long pointed valvae which are joined at the tip by a sclerotized process (unique in the "*trochilia* complex"), and a pronounced bilobed uncus, in ventral view.

A. trochilia (Westwood, [1851])

Fig. 2a,b. Male type, no locality data (Natural History Museum, London, England, BMNH).

Fig. 2c,d. Female, Pará, Brazil (BMNH).

Fig. 2e; 16. Male, nr. Tena, E. Ecuador (coll. of the authors).

Distribution: E. Colombia-Bolivia, Brazil (Amazon), Guianas.

Foodplant: *Tovomitopsis* sp., *Garcinia* sp. (Clusiaceae) (DeVries *et al.*, 1994). These records may also be referable to *A. johannismarci* and/or *A. rameli*.

Although there is no specific type locality stated in the original description or accompanying the type specimen, it is clear from the heavy blue patterning on the hindwing dorsal surface that the type originates from the lower Amazon. Specimens from the base of the eastern Andes have the blue hindwing bands separate in the tornal area, and reduced orange submarginal lines on the forewing dorsal surface; these specimens might represent a distinct subspecies, but as we have seen no specimens from western Brazil we are unable to assess whether the observed differences are simply clinal. In addition, females from the base of the eastern Andes have wider white bands. *A. trochilia* can be quickly distinguished from other Amazonian congeners in this group by the steep (nearly vertical) blue transverse bands on the forewing, and by the blue line along the anal margin of the forewing dorsal surface, which joins the first three bands and then reappears below the fourth band (a "3-1 pattern") (see Fig. 14a). The male genitalia are rather distinctive in that the apical tip of the valve is sharply squared off, and slightly serrate (see Fig. 16).

A. rameli (Stichel, 1930)

Fig. 3a. Male type (as figured in Meier-Ramel (1928)) Tefé, W. Brazil (*biblio*).

Fig. 3b,c; 17. Male, nr. Tena, E. Ecuador (coll. of the authors).

Fig. 3d,e. Female, Carimang River, Guyana (BMNH).

Distribution: E. Ecuador-Peru, Brazil (Amazon), Guianas.

This species was originally described by Meier-Ramel (1928) as *A. trochilia boyi*, but since this name is a junior homonym of *A. boyi* (Röber, 1926), Stichel (1930) proposed the replacement name *rameli*. However, this taxon was still regarded as a subspecies of *A. trochilia* until Brévignon and Gallard (1995) finally raised it to full specific rank. *A. rameli* shows little variation throughout its range, except that Peruvian specimens have slightly broader blue bands. *A. rameli* can be distinguished from the sympatric *A. trochilia* and *A. johannismarci* by the less steeply inclined forewing dorsal surface blue bands, and by the blue line along the anal margin of the forewing dorsal surface, which joins the first two bands and then appears again below the third band (a "2-1 pattern") (see Fig. 14b). The shape of the valvae of the male genitalia (Fig. 17) resembles that of *A. johannismarci*, but it is more elongate, and the uncus is deeper and bilobed in lateral view.

A. johannismarci Brévignon, 1995

Male holotype, female allotype, Galion, Roura, French Guiana (coll. L. & C. Brévignon, LCB).

Fig. 4a,b. Male, Ecuador (BMNH).

Fig. 18. Male, nr. Tena, E. Ecuador (coll. of the authors).

Distribution: E. Ecuador-Peru, French Guiana.

The diagnostic characters for this recently described species are blue bands which traverse the forewing dorsal surface at an angle intermediate to that of *A. trochilia* and *A. rameli*, and a blue line along the anal margin of the forewing dorsal surface which joins the first pair of bands and then the second pair of bands (a "2-2 pattern"). On the ventral surface of the forewing, the yellow band which is just basal to the submarginal silver line curves towards the apex as it nears the costal margin, instead of being straight (see Fig. 14c). The shape of the uncus, tegumen and valvae in the male genitalia (Fig. 18) differs from that of *A. rameli* (see above). *A. johannismarci* varies little throughout its range, although we have collected two specimens from Ecuador which appear to be melanic forms, both with little or no blue on the dorsal surface. *A. johannismarci* is the least well represented species of the *trochilia* species group in collections, and although Brévignon and Gallard (1995) designate and illustrate a female allotype for this species, its great similarity to their figure of female *A. trochilia* casts some doubt on its validity as the true female of *A. johannismarci*, and consequently we do not figure a female of this species, uncertain of its real identity.

Argyrogrammana pastaza Hall & Willmott, **new sp.**

Fig. 5a-d; 19

Description.- MALE: forewing length 13mm. *Dorsal surface*: forewing ground color black; very thin silver-blue submarginal line; outer margin fringe black, white in 1A+2A, Cu_1, M_2 and M_1; five diagonal, broad, shining pale blue bands, all except the most distal extending from costa to 1A+2A; most distal band terminates at Cu_1; space between anal margin and 1A+2A entirely shining pale blue, from base to midpoint of the most distal blue band terminating at the anal margin. Hindwing ground color black; outer margin fringe black, white in 1A+2A, Cu_1 and M_2; very thin silver-blue submarginal line, bordered distally by a thin orange-brown submarginal line; five diagonal, broad, shining pale blue bands, all except the most distal extending from costa to 1A+2A; most distal band terminates at Cu_1; space between anal margin and 1A+2A entirely shining pale blue, from base to midpoint of the most distal blue band terminating at the anal margin. *Ventral surface*: forewing ground color pale yellow; very thin silver-blue submarginal line, which is kinked basally at M_1; more basal submarginal dark brown line extending and thinning from costa to Cu_2, where it surrounds the submarginal blue macula; four further diagonal dark brown lines extending from costa to anal margin, the most distal bordered distally in M_1 and M_2 by a dark brown patch with pale blue scaling; a small dark brown dash just basal of the cell end, between the second and third dark brown lines. Hindwing ground color pale yellow; very thin silver-blue submarginal line, bordered basally by a dark brown line; more basal submarginal dark brown line extending and thinning from costa to Cu_2, where it meets the submarginal dark brown line; four further diagonal dark brown lines extending from costa to anal margin. Labial palpi pale yellow, tip black. Eyes brown with a black medial stripe and bare. Frons pale yellow crossed by black stripe. Antennae black and banded with pale yellow, clubs black. Thorax and abdomen dorsal surface dark brown, thorax with shining blue scales, ventral surface brown. Legs pale yellow. Genitalia (Fig. 19): uncus and tegumen elongate, valvae slightly pointed and broad in lateral view.

FEMALE: not known with certainty (see discussion).

Types.– *Holotype* ♂: ECUADOR.– *Pastaza Prov.*, km 25 Puyo-Tena, Río Llandia, San José, 900m, 10 Sept 93 (K. R. Willmott); to be deposited in the BMNH.

Paratypes: ECUADOR.– 1 ♂: same data as above; 2 ♂: *Tunguruhua Prov.*, Río Machay, 1700m, 5 Feb 95 (J. P. W. Hall); 2 ♂: *Zamora-Chinchipe Prov.*, km 7 Zamora-Loja, Quebrada de Chorillos, 1250m, 3 Apr 95 (J. P. W. Hall); in the coll. of the authors. 3 ♂: *Napo Prov.*, km 16 Hollín-Loreto rd., 1200m, 46°S 77°41'W, 9 Nov 88 (R. Robbins); in the United States National Museum, Washington, DC, USA (USNM).

Fig. 1-5. **1**. *Argyrogrammana saphirina*, type ♂: a) dorsal surface; b) ventral surface. Type ♀: c) dorsal surface; d) ventral surface. **2**. *A. trochilia*, type ♂: a) dorsal surface; b) ventral surface. Brazilian ♀: c) dorsal surface; d) ventral surface. Ecuadorian ♂: e) dorsal surface. **3**. *A. rameli*, type ♂, illustration in Meier-Ramel (1928): a) dorsal surface. Ecuadorian ♂: b) dorsal surface; c) ventral surface. Guianan ♀: d) dorsal surface; e) ventral surface. **4**. *A. johannismarci*, Ecuadorian ♂: a) dorsal surface; b) ventral surface. **5**. *A. pastaza* **n. sp.**, holotype ♂: a) dorsal surface; b) ventral surface.

Fig. 5-9. **5.** *A. pastaza* ♀ (tentative determination): c) dorsal surface; d) ventral surface. **6.** *A. leptographia*, type ♂: a) dorsal surface; b) ventral surface. Ecuadorian ♀: c) ventral surface. **7.** *A. glaucopis virgata*, French Guianan ♂: a) dorsal surface. *A. glaucopis glaucopis*, type ♂: b) dorsal surface; c) ventral surface. Brazilian ♀: d) dorsal surface; e) ventral surface. **8.** *A. subota*, type ♀: a) dorsal surface; b) ventral surface. **9.** *A. placibilis*, type ♂: a) dorsal surface; b) ventral surface. Brazilian ♀: c) dorsal surface; d) ventral surface. *A. perone*, syntype ♂ (= *A. placibilis*): e) dorsal surface; f) ventral surface.