

by always having the submarginal series on the ventral surface composed of single dashes, rather than paired spots, between the veins; this character is especially noticeable in cell  $M_3$  on the forewing. Fruhstorfer (1915) placed *A. paraena* as a subspecies of *A. serpa*, but following the rearing experiments of Moss (1933), Hall (1938) correctly reinstated *A. paraena* as a full species, as which it has subsequently been regarded by most authors. However, on account of the confusingly similar dorsal pattern, *A. paraena massilia* has been placed as a subspecies of *A. serpa* (DeVries, 1987; Lamas and Small, 1992), or completely synonymised with *A. serpa celerio* (Hall, 1938), and it was only recently that Neild (1996) correctly placed it as the Central American subspecies of *A. paraena*.

The various subspecies of the remaining four species have been placed in numerous combinations by previous authors. Fruhstorfer (1915) separated *A. seriphia* and *A. serpa* (as *A. celerio*), and with the exception of *syrna* and *godmani*, which he treated as forms of subspecies of *A. celerio*, he correctly associated all the then known taxa with each species. Fruhstorfer (1915) however associated both *A. hyas* and *A. radiata* with *A. serpa* as forms or subspecies, despite the stability of phenotypes in each taxon and apparent sympatry, though the rarity of *A. radiata radiata* somewhat justifies his decision. Hall (1938), in his influential review of Fruhstorfer names, followed the rather extreme course of regarding all the described taxa of *A. hyas*, *A. serpa*, *A. seriphia* and *A. radiata* as forms of a single species, *A. serpa*. Workers in South America varied in their treatment of nominate *A. hyas*, either following Fruhstorfer (1915) and Hall (1938) in regarding it as a subspecies or form of *A. serpa* (Hayward, 1973), or treating it as a distinct species (Hoffmann, 1937; Biezanko *et al.*, 1978; Brown, 1992).

DeVries (1987) made no mention of *A. seriphia godmani* occurring in Costa Rica, while Lamas and Small (1992) retained *A. seriphia* and *A. serpa* as separate species with some reservations that they might prove to be elevational forms. Neild (1996) treated *A. seriphia* and *A. serpa celerio* as good species, and also correctly noted that *godmani* represented Central American *A. seriphia*. Although *A. seriphia godmani* and *A. serpa celerio* are very similar, they can be distinguished by several characters, the first three of which are diagnostic for each species (with the exception of *A. serpa serpa*) throughout its range: *A. seriphia* has the blocks of the white postdiscal band on the dorsal forewing displaced slightly diagonally, whereas in most *A. serpa* taxa they are arranged more vertically; the orange subapical marking on the forewing of *A. seriphia* is oriented vertically, in *A. serpa* it is more horizontal; on the ventral hindwing the orange band distal to the white postdiscal band is straight in *A. seriphia*, but convex in *A. serpa*, while the inner submarginal series is roughly parallel with this band in *A. serpa* but noticeably closer to the band in cell  $M_1$  and Rs in *A. seriphia*. Throughout the eastern Andes there is little difficulty separating *A. seriphia* and *A. serpa*, and the two species also appear to occupy exclusive elevational ranges, with *A. seriphia* occurring at higher elevations. *A. serpa serpa* is similar in several respects to Central American *A. seriphia*, but as the Bolivian *A. seriphia thersasia* appears to be very distinct, and as the species occurs only at fairly high elevations in the eastern Andes, we do not believe that *A. serpa serpa* and *A. seriphia* are conspecific. We regard *A. s. serpa* as being conspecific with remaining *A. serpa* taxa on the basis of close allopatry and specimens from Paraguay in the BMNH that are phenotypically intermediate between *A. s. serpa* and the Amazonian *A. serpa diadochus* (the latter was regarded as conspecific with *A. s. celerio* by Fruhstorfer (1915)).

Except for the nominate subspecies of each, both *A. hyas* and *A. radiata* contain some very rare taxa and therefore have been taxonomically poorly understood. East Andean *A. hyas* (*viracocha* and *hewitsoni*) closely resemble *A. seriphia*, but are usually smaller,

lack the dark orange outer postdiscal series dashes on the ventral forewing in cells 1A+2A-Cu<sub>1</sub>, have ventral hindwing characters typical of *A. serpa* and have the base of the ventral forewing costa white, not red. These characters link nominate *A. hyas* with *A. h. viracocha* and *A. h. hewitsoni*. *A. radiata* has a ventral pattern similar to *A. serpa*, but in all subspecies (except *myrlea*) lacks a well developed white spot at the base of cell Cu<sub>1</sub> on the dorsal forewing. *A. radiata myrlea* resembles *A. serpa serpa* on the dorsal surface, but like *A. radiata radiata* has the hindwing submarginal series split by dark rays between each pair of veins.

Below we present a synonymic checklist of *Adelpha serpa* and the related species discussed here (taxa considered infrasubspecific are preceded by a "-"):

***Adelpha serpa*** (Boisduval, 1836)

*celerio* (H. W. Bates, 1864) (Mex.-N.W. Ven.) **rev. stat.**

- *diademeta* Fruhstorfer, 1913

- *phintias* Fruhstorfer, 1913

*duilliae* Fruhstorfer, 1913 (W. Ecuad.)

*diadochus* Fruhstorfer, 1915 (Ven.-Bol., Braz. [Amaz.], Guianas) **n. stat.**

- *timehri* Hall, 1938 **n. syn.**

- *florea* Brévignon, 1995 **n. stat.**

*serpa* (Boisduval, 1836) (S.E. Braz.-Parag., N.E. Arg.)

- *damon* Fruhstorfer, 1913

- *ornamenta* Fruhstorfer, 1915

***Adelpha hyas*** (Doyère, [1840])

*hewitsoni* Willmott & Hall, **n. ssp.** (E. Ecuad.)

*viracocha* Hall, 1938 (C. Peru-Bol.) **n. stat.**

*hyas* (Doyère, [1840]) (S.E. Braz.-Urug.)

***Adelpha seriphia*** (C. & R. Felder, 1867)

*godmani* Fruhstorfer, 1913 (Mex.-W. Ecuad.)

- *syrna* Fruhstorfer, 1915 **n. stat.**

*egregia* Röber, 1927 (Col. [Sta. Marta]) **n. stat.**

*seriphia* (C. & R. Felder, 1867) (Ven. [Cord. de la Costa])

*pione* Godman & Salvin, 1884 (Ven. [Mérida]-Col. [Cord. Occ. N. of Bogotá])

*aquillia* Fruhstorfer, 1915 (Col. [Cauca, Cord. Centr. and Occ. S. of Bogotá]-C. Peru)

- *naryce* Fruhstorfer, 1915 **n. stat.**

*thersasia* Fruhstorfer, 1915 (S. Peru-Bol.)

**n. ssp.** Willmott, in prep. (Trinidad)

***Adelpha radiata*** Fruhstorfer, 1915

*aiellae* Willmott & Hall, **n. ssp.** (C. Pan.-W. Ecuad.)

*gilletella* Brévignon, 1995 (F. Guiana) **n. stat.**

*explicator* Willmott & Hall, **n. ssp.** (E. Ecuad.)

*myrlea* Fruhstorfer, 1915 (S.E. Braz. [Esp. Sant.-Rio de J.]) **n. stat.**

*radiata* Fruhstorfer, 1915 (S.E. Braz. [Rio de J.-Sta. Cat.]) **n. stat.**

***Adelpha paraena*** (H. W. Bates, 1865)

*massilia* (C. & R. Felder, 1867) (Mex.-W. Pan.)

**n. ssp.** Willmott, in prep. (E. Pan.-W. Col.)

*reyi* Neild, 1996 (N.W. Ven.)

*paraena* (H. W. Bates, 1865) (Ven.-Bol., Braz., Guianas)

***Adelpha hyas hewitsoni*** Willmott & Hall, **new ssp.**

Fig. 8a,b; 18

**Description.**—MALE: forewing length 27mm; forewing slightly falcate, hindwing with dentate distal margin. *Dorsal surface: Forewing:* ground color dark blackish brown; orange-brown scaling at very base of discal cell at posterior edge of costal vein; two black lines in discal cell with red scaling between near costa, a red bar over the discocellulars; line of white postdiscal blocks extending from anal margin to cell Cu<sub>1</sub>, that in

cell 1A+2A squarish and bordered by a white band of equal width along anal margin, an isolated oval spot in cell  $Cu_2$  and a small, isolated, roundish spot near base of cell  $Cu_1$ ; large orange subapical marking in shape of an irregular pentagon, in cells  $M_3$ - $M_1$ ,  $R_4$  and  $R_3$ , one side broadly bordering vein  $M_3$ , basal side straight and almost perpendicular to costa, distal edges parallel to distal margin and then straight almost perpendicular to costa; all veins within subapical marking black; sparse orange scaling posterior to subapical marking in anterior half of cell  $Cu_1$ ; very faint, pale gray paired spots of inner submarginal series visible, most obvious in cells 1A+2A and  $Cu_2$ , fringe dark brown, a few white scales in cells 1A+2A and  $R_3$ - $R_4$ . *Hindwing*: ground color dark blackish brown; white postdiscal band extending from costa, constricted slightly at vein  $R_5$ , broadest in cell  $M_3$  then tapering to end roundly at vein 1A+2A near tornus; very faint, pale gray paired spots of inner submarginal series visible, ending at tornus with a small triangular orange spot; fringe dark brown, few white scales in each cell. *Ventral surface*: *Forewing*: ground color dark brown; base of costa mostly white with sparse reddish scaling along anterior edge of costal vein; discal cell bars black, first cell bar strongly convex, second cell bar "w"-shaped, third cell bar "v"-shaped dividing space between second and fourth cell bars into three, fourth and postcellular bars straight; discal cell ground color bluish white distal to first cell bar, white basal to first cell bar with no basal line, reddish in middle of space between first and second cell bars and filling space between fourth and postcellular bar; base of cell 1A+2A whitish, then thin black line, then reddish, then thin black line, then whitish, then black line followed by white postdiscal block similar to dorsal surface except extended slightly distally; postdiscal markings in cells  $Cu_2$  and  $Cu_1$  as on dorsal surface; few bluish white scales distal to postcellular bar in cell  $M_3$ ; very pale orange subapical marking reflecting that on dorsal surface, fused with white postdiscal markings in cells  $M_3$  to costa which fill each cell, distal edges of subapical marking indistinct, dark brown lines intruding halfway into subapical marking bisecting each cell and veins within subapical marking dark brown; area between subapical marking, distal margin and vein  $Cu_1$  slightly paler brown than ground color, each cell bisected by a dark line intruding in from distal margin; almost entire inner and outer submarginal series composed of paired silvery white spots in each cell, very faint in cells  $Cu_1$ - $M_2$  and posterior half of cell  $M_1$ ; fringe as on dorsal surface. *Hindwing*: ground color dark brown; basal area and all of anal margin to vein 3A white, a black line from base across distal half of humeral vein to costa; black postbasal line from just anterior to vein Sc+ $R_1$  through middle of discal cell then extending along vein 3A to anal margin; broad orange band distal to preceding black line extending from costa to anal margin, bordered distally by thin black line crossing discocellulars; white postdiscal band as on dorsal surface; inner postdiscal series absent, outer postdiscal series an even orange band almost touching white postdiscal band at costa, then curving gently away from wing base to end at anal margin where band broadens and joins the inner orange band; submarginal series entire and consisting of paired, roughly oblong flecks in each cell, those of inner series wider than outer series, inner series almost parallel to orange band of outer postdiscal series, displaced slightly distally in cell  $M_2$ ; fringe as on dorsal surface. *Head*: eyes dark brown with short hairs in anterior half; dense white scales at ventral base of eyes and a small tuft of white scales at top of head behind eyes; antennae black with white at ventral base and ventral surface of basal few segments; labial palpi outer side white with broad black lateral stripe, inner side black with few white hairs, ventral surface white with long black hairs; top of head black, frons black. *Thorax*: dorsal surface black with short dark brown hairs, ventral surface grayish white, black stripes where legs rest against thorax, forelegs white, mid and hindlegs black with ventral surface of femur white, tibia with few white scales. *Abdomen*: dorsal surface black with short dark brown hairs, ventral surface white, then with dark gray lateral stripe, then white lateral stripe, spiracles outlined with white. *Genitalia* (Fig. 18): valvae triangular in lateral view, tapering sharply from base to posterior tip, posterior half of ventral surface with "teeth," clunacula absent, aedeagus

relatively straight and with a small internal sclerotised pad bearing tiny spines; saccus deep.

**FEMALE**: differs from male as follows: forewing length 28mm; wings broader and more rounded. *Dorsal surface*: *Forewing*: ground color paler; submarginal series paler and more prominent; postdiscal white spots larger; pale postdiscal dashes in cells  $M_3$ - $M_1$ . *Hindwing*: ground color paler; white postdiscal band broader and more rounded near tornus; outer postdiscal series visible as a pale brown line on hindwing; submarginal series paler and more prominent. *Ventral surface*: *Forewing*: postdiscal spots larger; submarginal series broader. *Hindwing*: white postdiscal band as on dorsal surface; orange bands surrounding white postdiscal band broader and paler; submarginal series broader.

**Types**.—**Holotype** ♂: ECUADOR.—*Napo Prov.*: nr. Talag, Río Jatunyacu, Pimpilala, 600m, 14-15 Sep 1996 (K. R. Willmott) (to be deposited in the BMNH).

**Allotype** ♀: ECUADOR.—*Napo Prov.*: km. 20 Tena-Puyo rd., Apuya, 600m, 10 Oct 1996 (K. R. Willmott) (to be deposited in the BMNH).

**Paratypes**: ECUADOR.—*Napo Prov.*: 1 ♂: same data as HT (in the MNCN); 1 ♂: same data as HT except 17 Apr 1995 (J. P. W. Hall) (KWJH); 1 ♂: same data as HT except 14-16 Sep 1995 (A. F. E. Neild) (to be deposited in the USNM); 1 ♂: same data as HT except 20 Oct 1996 (KWJH); 1 ♂: same data as HT except 30 Aug 1997 (KWJH); 1 ♂: *Pastaza Prov.*: Río Llandia, km. 25 Puyo-Tena rd., San José, 950m, 10 Sep 1993 (J. P. W. Hall) (to be deposited in the AME).

**Etymology**.— This subspecies is named for William Chapman Hewitson, who described more valid species of *Adelpha* than any other worker, and who showed a far greater understanding of the important wing pattern characters in the genus than most who succeeded him.

**Diagnosis**.— *Adelpha hyas* consists of three known subspecies, *Adelpha h. hyas*, *Adelpha h. viracocha*, and *A. h. hewitsoni* n. ssp.. Both previously described subspecies differ from *A. hyas hewitsoni* in having the submarginal series on the ventral hindwing (and ventral forewing, though less noticeably) greatly enlarged and fused so that no individual markings are evident between the veins; the submarginal series also almost blend with the orange band of the outer postdiscal series on the ventral hindwing. *Adelpha seriphia aquillia* is also very similar, but has thinner white postdiscal bands on the dorsal surface, the base of the ventral forewing costa is orange instead of white, and on the ventral hindwing the orange band of the outer postdiscal series is straight rather than convex and the markings of the inner submarginal series are wider. *A. serpa diadochus* differs by not having dark lines intruding into the pale subapical marking on the ventral forewing and by having a larger white spot in  $Cu_1$  on the dorsal forewing. Sympatric subspecies of *A. radiata* and *A. paraena* lack a white spot in cell  $Cu_1$  on the dorsal forewing.

**Discussion**.— There is some variation in the amount of subapical orange in cell  $Cu_1$  on the dorsal forewing, which may be absent or almost extend to vein  $Cu_1$ .

*Adelpha hyas hewitsoni* is to date known only from a few localities at the base of the east Ecuadorian Andes, from 600-950m. It is sympatric with *Adelpha paraena paraena*, *Adelpha radiata explicator* n. ssp. and *Adelpha serpa diadochus*, while *Adelpha seriphia aquillia* also occurs in the east Ecuadorian Andes, but at higher elevations (1600-1800m). Males of *A. hyas hewitsoni* are typically encountered in groups in large (20-30m wide), old forest clearings along streams and rivers. Usually they perch from 1200-1330h in bright sun on the tops of bushes 5-6m high, making sorties out and returning to the same perch. At the type locality, Pimpilala, the species seems to be present year round in a particular coffee orchard, where it is often the most common perching *Adelpha*. Other species that resemble it on the dorsal surface and with which *A. hyas* perches include *Adelpha iphicleola thessalita* n. ssp., *Adelpha thoasa manilia* and *Adelpha serpa diadochus*. The single known female was flying in heavily disturbed ridgetop forest around midday, at a site where males have yet to be recorded.

