

Scientific Note: *Euselasia andreae* Hall, Willmott & Busby, 1998, in Panama (Lepidoptera: Riodinidae)

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Euselasia andreae is a spectacular riodinid butterfly described by Hall, Willmott and Busby in 1998 from two males (Fig. 1A,B) caught in eastern Ecuador in 1987 by R. Busby. It was named by him for Andrea Martinson (Hall & Willmott, 1998). In January 2014, as part of an ongoing faunal survey of Panama butterflies by Albert Thurman, two male *E. andreae* were caught on a ridge top in the Darién region of Panama by John MacDonald and Ichiro Nakamura. Not only were these captures a new record for Panama, but they were the first

reported sightings of this species since its description. The two Panamanian males captured were exhibiting typical mate locating behavior (Scott, 1974), perching about 2 m above the ground, on a hilltop, with occasional spiraling interaction, between 0700-0800 h. Interestingly, this behavior was in contrast to that reported in the original description, where two males were encountered perching between 1400 and 1430 h, 5-8 m above the ground, on streamside vegetation that formed a remnant portion of gallery forest (Hall & Willmott, 1998).

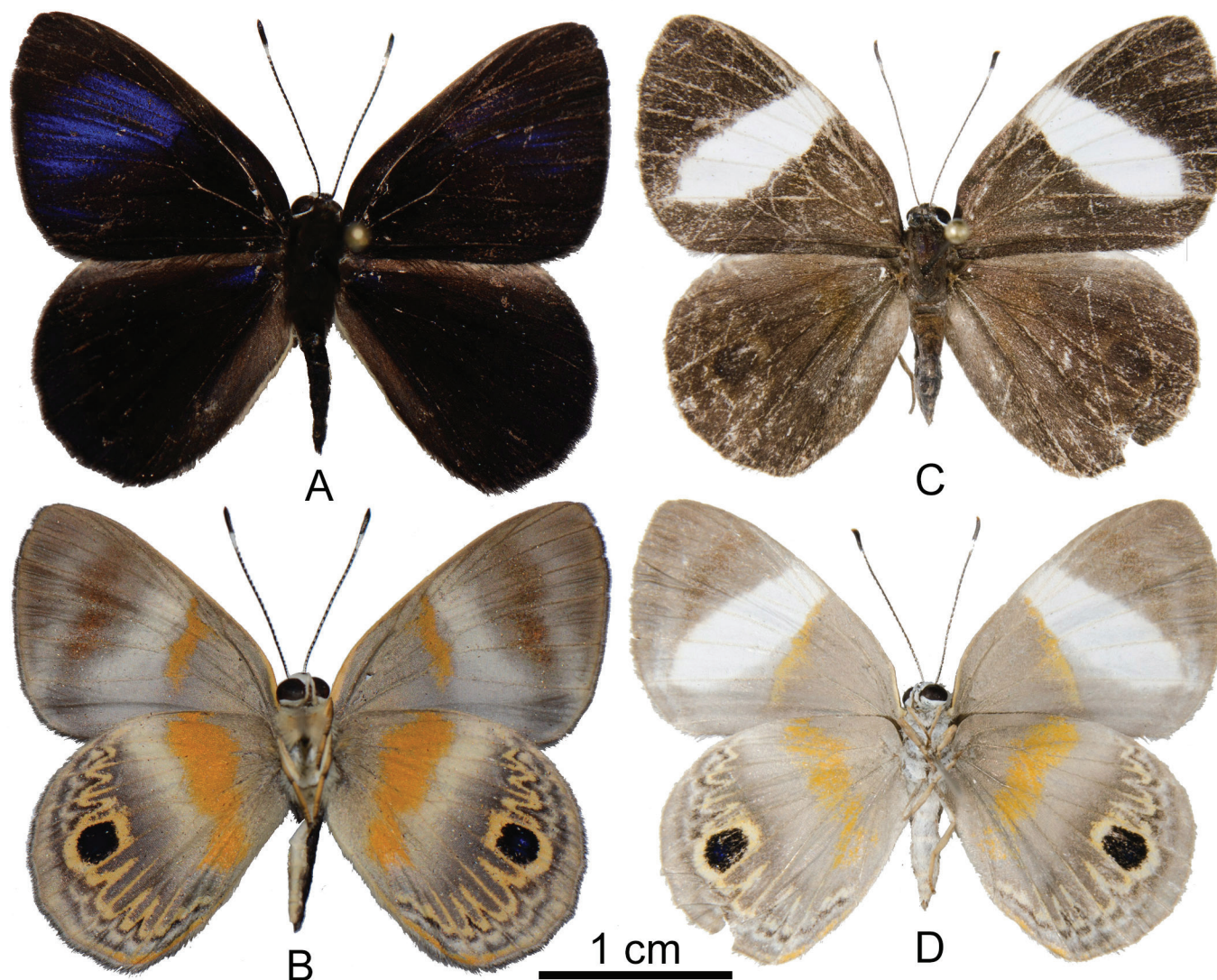


Fig. 1-4. *Euselasia andreae* Hall, Willmott & R. Busby, 1998. A: male dorsal surface; B: male ventral surface. C: female dorsal surface; D: female ventral surface.

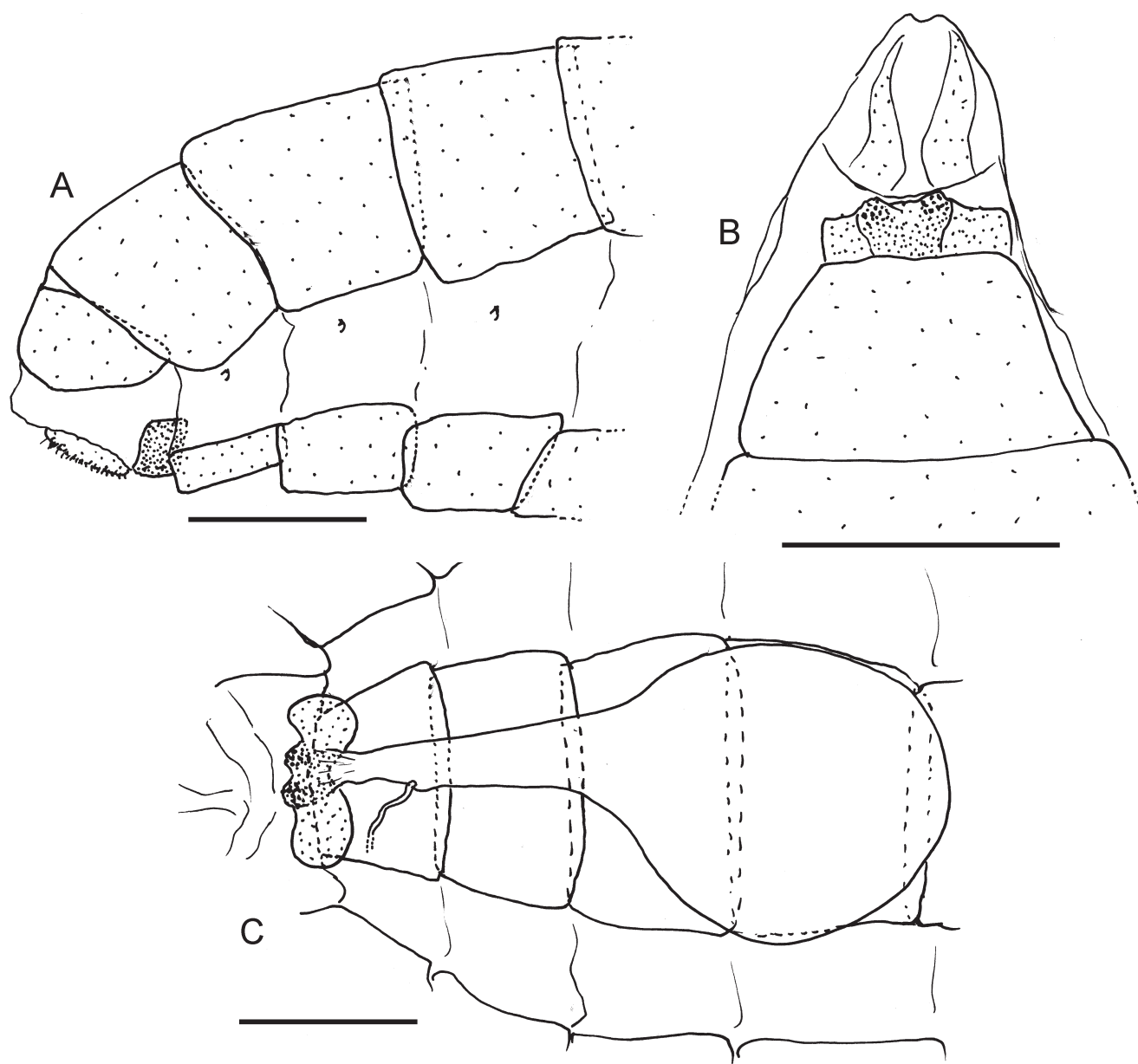


Fig. 2. Female genitalia of *Euselasia andreae*, dissection KW-15-94, FLMNH. A. Lateral view abdomen tip; B. Ventral view abdomen tip; C. Dorsal view genitalia. Scale bars are 1 mm.

Most male riordinids mate-locate by perching behavior as described by Scott (1974). Callaghan (1983) studied the perching behavior of riordinids, combining the topography and microhabitat of perching locations with a temporal component, and postulating that phenotypically similar species used time and space as a premating isolating mechanism. Subsequently, Hall (1999) found, in his monograph on the genus *Theope*, that it was actually more likely that similar looking species would share similar perching niches. In areas of high species richness, there is considerable overlap of time and space with similarly appearing species.

Most riordinids perch for only a single period in a day, although there are exceptions (e.g. *Charis anius* (Cramer, 1776), which we observed perching in early morning and then late morning, but in similar topographic locations and height). Male perching duration varies among species and topographic

locations, averaging about two hours, ranging from one to five hours (pers. obs.). Perching time of day is species-specific and generally similar even across large geographic areas (based on the position of the sun, rather than local time according to the time zone). Riordinid perching sites (e.g. hill top or ridge top tree fall) may be used throughout the day by many different species, and different species have different perching heights above ground, resulting in a vertical stratification for mate locating behavior (pers. obs.). Hall (1999) described vertical stratification for perching species in the genus *Theope*. Thus, each species has a characteristic four-dimensional mate locating niche (topographic location plus vertical stratification and time of day). So why would *E. andreae* perch in the early morning on ridge and hill top at 2-3 m height in Panama, and perch mid-afternoon at a substantially different forest location and height in Ecuador?

Thus began the first author's personal search for *E. andreae*, to document the presence and behavior of this beautiful riordinid in Panama. The first author returned to the same Darién province ridge top location in April, 2014. Despite an extensive search, *E. andreae* was not found. In January, 2015, a return visit was successful. In fact, several perching sites were located from 155 to 675 m elevation, on hill tops and ridge tops, between 0700-0900 h, with a total of over 20 individual sightings. The males exhibited typical perching behavior, resting on the edge of leaves (on and under leaves), with wings closed vertically, flying out to investigate other flying species, with spiraling conspecific interactions, all between 2-3 m above the ground. Two individuals consistent with *E. andreae* were seen through binoculars, high in the canopy, between 0600-0700 h (prior to their mate locating activities). No *E. andreae* were observed after 0900 h. One *E. andreae* specimen, representing the first known female, was captured by the second author at one of the perching sites and is described below.

FEMALE (Fig. 1C,D): Description: Forewing length, 15 mm. Wing shape compact with hindwing rounded, forewing termen noticeably convex as compared to straight termen of male forewing. *Dorsal surface:* forewing color dark brown, lacking iridescent purple-blue of male, with a broad white medial band that extends from costa to posterior edge of vein Cu_2 . Hindwing ground color dark brown with cream at costa, lacking iridescent purple-blue of male. *Ventral surface:* forewing pale gray-brown in basal third, a narrow yellow-orange band traverses distal portion of discal cell from costa to vein $1A+2A$, a wide cream-white band traverses middle of wing, contiguous with yellow-orange band from costa through discal cell, extending to posterior edge of vein Cu_2 , distal third of wing slightly darker brown with diffuse cream colored subapical band, widest at costa and most visible at vein Cu_2 . Hindwing pale gray-brown at base, ground color darker distally, discal yellow-orange band diagonally traverses wing from costa to anal margin, pale grey-brown band distal and contiguous to yellow-orange band from costa to anal margin, grey-brown submarginal band thinning and becoming yellow-orange as it approaches anal margin, more proximal wavy cream line extends from vein $Rs-M_3$ to vein Cu_1-3A , more proximal wavy cream line with proximally directed points similarly extends from vein $Rs-M_3$ to vein Cu_1-3A ; black eyespot with central iridescent purple pupil in cell Cu_1 surrounded by yellow-cream that replaces previously mentioned most proximal line. *Head:* same as male with labial palpi whitish cream colored, eyes dark brown and bare, and frons dark brown, edged with white. Antennae brown with sparse white scaling at base of each segment and more extensive white scaling before clubs. *Body:* dorsal surface of thorax and abdomen brown, ventral surface cream-brown. Legs light brown. *Genitalia:* abdominal spiracles located nearer to tergite than sternite; lamella antevaginalis a simple rounded plate extending laterally from ostium bursae about half distance to terminal tergite; ostium bursae semi-sclerotized with two slight 'bumps' with tiny nodules, antrum unsclerotized, ductus bursae unsclerotized, ductus seminalis origin c. 2/3 distance from posterior to anterior edge of seventh sternite, corpus bursa rounded with no distinct signa.

Males of *E. andreae* in Panama and in Ecuador were clearly pursuing mate locating activity (i.e. perching), including spiraling conspecific interactions (R. C. Busby, pers. comm.), but at distinctly different four-dimensional niches. The Panamanian sites in the Darién province are in predominantly continuous pristine forest, while the Ecuadorian site had only remnant forest with many small fincas and open areas. While twice daily perching cannot be excluded, most likely the difference is based on adaptation to significantly different habitats and different selective pressures. It appears that this species is predominantly a canopy or subcanopy dweller in Panama, congregating at lower heights for mate locating on ridge and hilltops in the early morning, and affording an opportunity for lepidopterists to encounter it. This should reinforce the importance of "go early and stay late" when studying riordinid butterflies. *E. andreae* should be searched for and its behavior studied in other areas of the Chocó region, in particular Colombia, where it almost certainly exists.

Finally, finding many adult *E. andreae* in January but none in April may not be unexpected. Hall and Willmott (1998) re-emphasized that the perceived rarity of certain adult *Euselasia* may be related to the gregarious and synchronously processional feeding behavior of *Euselasia* larvae, which might accentuate temporally restricted emergence.

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