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Comentarios sobre especies del género *adelpha* (hübner) de Colombia e ilustración de algunos híbridos (lepidoptera: nymphalidae)

Comments on the genus *adelpha* (hübner) from Colombia and illustration of some hybrids (lepidoptera: nymphalidae)



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Resumen: En el presente trabajo se comentan aspectos biológicos de algunas especies de mariposas diurnas pertenecientes al género *Adelpha* (Hübner), que abarca 89 especies 60 de las cuales habitan Colombia, con énfasis en su distribución, biogeografía. Además se reporta la presencia del fenómeno de hibridación que se presenta entre algunas subespecies que cohabitan determinadas regiones del centro y occidente de Colombia.

Palabras clave: mariposas; *Adelpha*; hibridismo; biogeografía; distribución.

Abstract: In the present work, biological aspects of some species of diurnal butterflies belonging to the genus *Adelpha* (Hübner), which includes 89 species 60 of which inhabit Colombia, are discussed, with emphasis on distribution and biogeography. Moreover, the presence of the phenomenon of hybridization that occurs between some subspecies cohabiting certain regions of central and western Colombia is reported.

Key Words: *Adelpha* butterflies; biogeography; distribution; hybridism.





Introduction

The genus *Adelpha* (Hübner) is a group of striking neotropical butterflies, characterized by having white or medial orange bands on the wings and a distinctive underside patterns. It is distributed from northwest EU, Central and South America, through to northern Argentina and the west Indies (Nuñez, 2013). According to the most recent review published by Willmott (2003) the genre includes 89 species, of which more than 60 inhabit Colombia (Salazar, 2007). They are common in a wide variety of forests and have been found from sea level to 3000 m., considering the tropical rain forest is greater speciation. This paper has the purpose of provide information on species relative to new records for Colombia, distribution and hybridism discovered in some of them.

Material and Methods

Material was analyzed by review of collections of the Museum Natural History, Caldas University (MHN-UCc) and that of the author's collection. Each specimen is properly extended and rotuled in entomological boxes (Cornell type) and they were compared with illustrations of followings works available: Fruhstorfer (1907), D'Abreu (1987) and Willmott (2003) and updated through the most recent taxonomic listing of butterflies of the Neotropics edited by Lamas (2004). Other additional literature consulted in Aiello (1984, 2006), De Vries (1987) and Willmott & Hall (2013).

Results

I. Species Account

1. - *Adelpha salus salus* Hall, 1935 (Fig. 1.1, ♂, ♀)

The type of this species deposited in the British Museum (N.H.) was described from Valdivia (Antioquia) (www.butterfliesofamerica.com) whose vegetal formation corresponds to rainforest (Espinal & Montenegro, 1963), although Willmott (2003) quote as wrong also the town of Villavicencio, Meta. The material that we know comes from the mountain wet forest as Willmott quote specimens in the collection LeCrom from Pensilvania (Caldas), and Tatamá Natural Park (Risarcaldá) presumably collected by the present author. However recently we locate a population in vicinity of Riosucio, Caldas (east slope of western Cordillera), flying in the coffee agro ecosystem of subtropical wet forest. Other specimens come from Fresno (Tolima), Samaná (Caldas) and San José del Palmar (Chocó) (type of *Adelpha palmarensis* Salazar, 2001) synonym of *A. salus* (Lamas, 2004).

2. - *Adelpha pleasure pseudomalea* Hall, 1938 (fig. 1.2, ♂)

It is a subspecies of Venezuela's own nature "Muchuchachi" by the female type illustrated both by Neild (1996) and by Willmott (2003). The dorsal pattern of forewing orange bands is continuous in the dorsal wings as with other *Adelpha* of Venezuela as *A. cytherea nahua* Grose-Smith, 1898 and *A. cocala orellanae* Neild, 1996. There is a preliminar record from Colombia Remolinos, Meta (coll. Le Crom), and a more capture in the tropical rain forest of the foothills (Villavicencio, Meta).

3. - *Adelpha hyas hewitsoni* Hall & Willmott, 1999

Entity described of eastern Ecuador (Napo), whose distribution is presumably much broader and extended to the Southwest of Colombia and Northeast Peru (Willmott, 2003). Indeed, Salazar (2007) records it or south country by a male from "bota caucana" (east Cauca department), rare in collections.

4. - *Adelpha nea nea* (Hewitson, 1847) (Fig 1.3, ♂)

This is a widely distributed species from Costa Rica to the southeast of Peru, Brazil and Guianas, although it may fly in the Colombian Chocó and Ecuador (Willmott, 2003). For Colombia was noticed by Salazar (2007) in the Catalogue published on the group with the Museum collection

Center (N.H.). D`Abrera (1987) said that the colombian populations are narrow and contrasting white stripes on the alar underside. Such variation known as camped Fruhstorfer, 1915, was later synonymized by Hall in 1938 (see Willmott, 2003). Willmott appointment some places in Colombia like "Bogotá" and a male from Mitú (Vaupes) deposited in the collection of Alexander von Humboldt Institute, Villa de Leyva (liAvH). Here their presence in Colombian Chocó is confirmed by a male taking in the upper Garrapatas river, Valle.

5.- ***Adelpha argentea*** Willmott & Hall, 1995 (Fig 1.4, ♂)

A. argentea and *A. shuara* Hall & Willmott, 1995 these two species are of recent discoveries about the genus, associated particularly to wet mountains of eastern Ecuador and Peru (Willmott & Hall, 1995). However Willmott (2003) confirmed its presence in Colombia citing for *A. shuara* the location of Villalobos river (Cauca) by a male deposited in the Schmidt-Mumm collection (liAvH) and a pair of *A. argentea* (male and female) from Caquetá but without precise place from the J.F. Le Crom collection (illustrated in this paper). In fact, both species are quite localized in the foothills of the southeastern Cordillera of Colombia.

6.- ***Adelpha melona leucocoma*** Fruhstorfer, 1915 (Fig. 1.5, ♂)

Subspecies scattered in the east of the Andes from Venezuela to Bolivia, Brazil, Guianas and Trinidad (Willmott, 2003). Several localities were cited by the author, including 4 males of Colombia (Leticia, Florida and Puerto Nariño-Amazonas). Salazar (2007) in addition cited a male of Mocoa, Putumayo from his collection; wich confirmed their presence for the Amazonas region, a local subspecies.

II. Hybrids

7.- Hybrid between ***Adelpha ethelda ethelda*** (Hewitson, 1867) X ***Adelpoha ethelda eponina*** Staudinger, 1886 (Fig. 2)

A. ethelda ethelda (Hew.) (Pl. 1, fig. 6, ♂) and *A. ethelda eponina* (Stgr.) were described of Quito, Ecuador and Cauca, Colombia respectively (Samson, 1978; Willmott, 2003). Are two phylogenetically related entities that occur in colombian montane rain forest region of Chocó, except a specimen of *A. ethelda ethelda* from La Belleza, Santander of the Schmidt-Mumm collection (liAvH) that maybe a misspelling of location (Willmott, op. cict.). As to distribution *A. ethelda eponina* fly on the west side of the Occidental Cordillera to the Calima river where it is replace by *A. ethelda ethelda* much further south. However in certain lowly areas as the canyon of Dagua river, Valle and in the area of San Juan river, Risaralda intersect at both subspecies hybrids like the pictured here (Fig. 7 above). Another identical specimen appearing in Willmott (2003: 127, fig.64).

8.- Hybrid between ***Adelpha lycorias wallisii*** Dewitz, 1877 X ***A. lycorias melanthe*** Bates, 1864 (Fig. 4)

A. lycorias lycorias is a butterfly wich was described in 1824 by Godart, present besides the nominotypical species, five subspecies all recorded for Colombia, making it the richest country of the group. This richness is due to the high biological and geographic wich facilitated even complexity and intergradation between them. This is the case of *A. lycorias wallisii* described of Antioquia, endemic of the Central and Western cordilleras (Willmott, op. cit.) that crossed low lying mountainous areas with *A. lycorias melanthe*, usually a resident of warmer sites from Central America to the Chocó. Willmott `s comments argue that the latter subspecies is not officially reported in Colombia, while its congener *A. lycorias melanippe* (Godman & Salvin, 1884), is known from the Magdalena river valley. However we have recorded of melanthe, several specimens from Chocó, the western Cordillera on both sides and the Cauca river valley wich verifies their presence in the country (Fig. 3 left).

As with the above mentioned, these two subspecies are crossed in the same regions of Queremal, Dagua and Garrapatas river, Valle and San Juan river, west Risaralda, producing hybrids or transitional



forms discussed by Willmott (2013), citing 12 males as intergrades, and within 3 males of Manizales, Caldas with front transverse white band of forewing as in *A. lycorias lara* (Hewitson, 1850) but pale orange pink. Here figure other specimen from the area of Pueblo Rico-La Quebra, Risaralda.

9.- Hybrid between ***Adelpha phylaca pseudoaethalia*** Hall, 1938 X ***A. lycorias melanthe*** Bates, 1864 (Fig. 4)

Aiello (1984) in his excellent work on the genus *Adelpha* includes these two subspecies in the group II (mesentina) characterized by morphological affinities in the final stages of larva, pupae and host plants. Such group considered at the time to *A. abyla* (Hewitson), *A. calliphiclea* (Butler), *A. delphicola* (Fruhstorfer), *A. mesentina* (Cramer) and *A. phylaca aethalia* (Felder). A more detailed account of immature stages appears in Aiello (2006) who related the close relationships between them and *A. erotia lerna* (Hewitson) and their dominant food plants (Urticaceae, Ulmaceae, Cannabaceae and Moraceae families). No wonder that these two subspecies cited were crossed with each other causing the presence of hybrids. Indeed in a subtropical wet forest near of the Cauca river adjoining between municipality of Supía and Riosucio, Caldas where usually fly the two entities, two males were captured. One of them figured here (Fig. 4 left above) is similar in design pattern to another specimen illustrated by Willmott (2003: pag. 241, fig. b, c.) but belong to a intersection of *A. thesprotia* (Felder & Felder, 1867) and *A. mesentina* (Cramer, 1777) from Peru. The second specimen male is like *A. ximena* (Felder & Felder, 1862) pattern with a broad patch orange on the forewing upperside (Fig. 4 left).

Conclusiones

The phenomena of hybridization is common in other groups of Neotropical butterflies (Vargas & Salazar, 2001, 2002, 2007) also occur in species of *Adelpha* and in fact, has favored a rapid diversification of the genus in question (Mullen et al., 2010).

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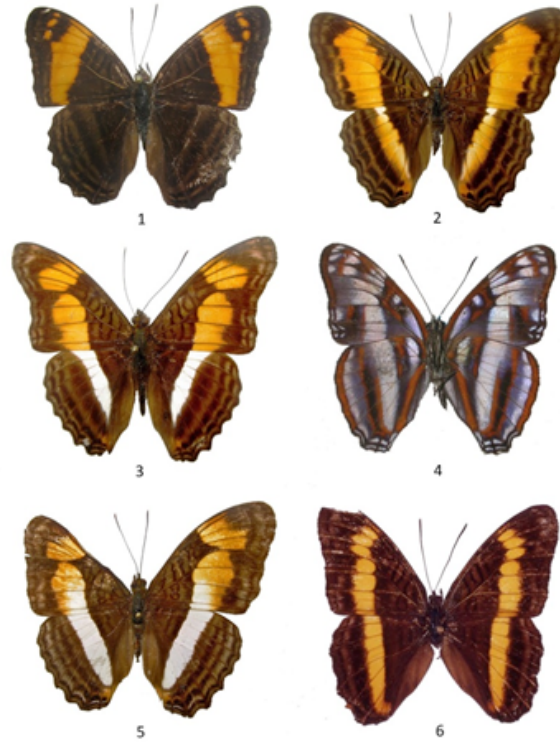


Fig 1. *Adelpha salus salus* Hall, 1935 (Fig 1.1, ♂, ♀), *Adelpha pleasure pseudomalea* Hall, 1938 (Fig 1.2, ♂), *Adelpha nea nea* (Hewitson, 1847) (Fig 1.3 ♂), *Adelpha argentea* Willmott & Hall, 1995 (Fig 1.4, ♂), *Adelpha melona leucocoma* Fruhstorfer, 1915 (Fig 1.5, ♂), *A. ethelda ethelda* (Hew.) (Fig 1.6, ♂)



Fig. 2 hybrid (above) of *A. ethelda* x *eponina*



Fig. 3. Hybrid (left) of *A.l. wallissii* x *A. l. melanthe*



Fig. 4. Hybrids (left) of *A.p. pseudoaethalia* x *A. l. melanthe*