A new species of *Psoralis* Mabille, 1904 from Panama (Lepidoptera, Hesperiidae, Hesperiinae, Moncini)

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Abstract. A new species of *Psoralis* Mabille, 1904, *P. darienensis* **sp. nov.**, is described based on two specimens collected in Darién National Park, Darién Province, Panama. Based on wing phenotype this new species is similar to *P. mirnae* Siewert, Nakamura & Mielke, 2014, recently described from Guatemala. Illustrations of the adult, stigma, male genitalia, and a distribution map are provided.

Key words: butterfly, Central America, morphology, stigma, skipper

INTRODUCTION

Moncini is one of the richest tribes among Hesperiidae, currently comprising more than 500 species distributed in 83 genera (Warren *et al.*, 2017). Although Moncini are abundant throughout Neotropics, its systematics could be considered the most poorly known of all Neotropical butterflies (Carneiro *et al.*, 2012, 2013). Several genera lack a broader taxonomic study, resulting in weak diagnoses, making it difficult for some species to be correctly assigned to a genus.

Psoralis Mabille, 1904 comprises 12 species, not including the new one described below, distributed throughout South America (Mielke, 2005; Siewert *et al.*, 2014). The genus was described (Mabille, 1904) to include only *Psoralis sabaeus* Mabille, 1904. Evans (1955) synonymized the type species of *Psoralis* with *P. idee* (Weeks, 1901) and included eight additional species in the genus. Later, Mielke & Casagrande (2002) included *Lerema coyana* Schaus, 1902 in *Psoralis,* and synonymized *P. ravus* Evans, 1955 with the latter. *Psoralis chittara* (Schaus, 1902) was first included in the genus by Robbins *et al.* (1996) (*P. chittara* ssp. n.), without any justification, and this combination appeared in Mielke (2004, 2005), again without justification. In these last two studies, *Psoralis alis* Bell, 1959 was synonymized with *P. chittara* without justification (B. Hermier, pers. comm.). The last two species described in the genus were *P. concolor* Nicolay, 1980 and *P. mirnae* Siewert, Nakamura & Mielke, 2014.

The purpose of this paper is to contribute to the knowledge of Neotropical Hesperiidae by describing a new species of *Psoralis* from Panama.

MATERIAL AND METHODS

Specimens of *Psoralis* had their abdomen detached and soaked in heated 10% potassium hydroxide solution for removal of the genitalia to examine their structure. All illustrations were prepared with the aid of a camera lucida attached to a stereoscopic microscope. Morphological terminologies follow Carneiro *et al*. (2012, 2013). The distribution map was prepared using Quantum GIS (QGIS Development Team 2017). All the specimens of the new species are deposited at National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (USNM).

RESULTS AND DISCUSSION

Psoralis darienensis Gaviria, Siewert, Mielke & Casagrande, **sp. nov.**
(Figs 1, 2, 3A, 4, 5)

Diagnosis. *Psoralis darienensis* **sp. nov.** externally resembles *P. mirnae*, but can be easily distinguished by the following characters: smaller and separated part of the black stigma in CuA_2-2A (Fig. 3A); ventral hindwing with a whitish patch on discal area (Fig. 1B); uncus broadly trapezoidal in dorsal view, and valva squared, with a well-developed distal process (Fig. 4).

Description of the male. *Head*: dark brown; frons densely covered by brown and yellow elongated scales with greenish tinge; antenna: length 9-10 mm; shaft brown on upper side, underside similar but with yellow scales at the base of each segment; basal half of the club ventrally yellow, nudum 13-14 segments (n=2); eye glabrous, brown, surrounded by yellow scaling; labial palpus mixed with brown, yellow and greenish scales in the first and second segments, third segment short, conical, dark brown. *Thorax*: dorsally and ventrally dark brown with greenish sparse scales; legs reddish, and presence of spurs on tibiae. *Forewing*: length 19 mm (n=2); triangular; costal margin straight; apex slightly produced; outer margin convex; tornus rounded; inner margin straight. *Upper side*: ground color dark brown; fringes light brown with paler outer two thirds; two small apical semi-hyaline spots in R_4-R_5 and R_5-M_1, the first visible on the underside and the latter the larger of the two; two semi-hyaline spots in M_3-CuA_1 and CuA_1-CuA_2, the first squared, the second elongated, and also with a slightly arrowhead extremity along CuA2; male with tripartite and sagittate

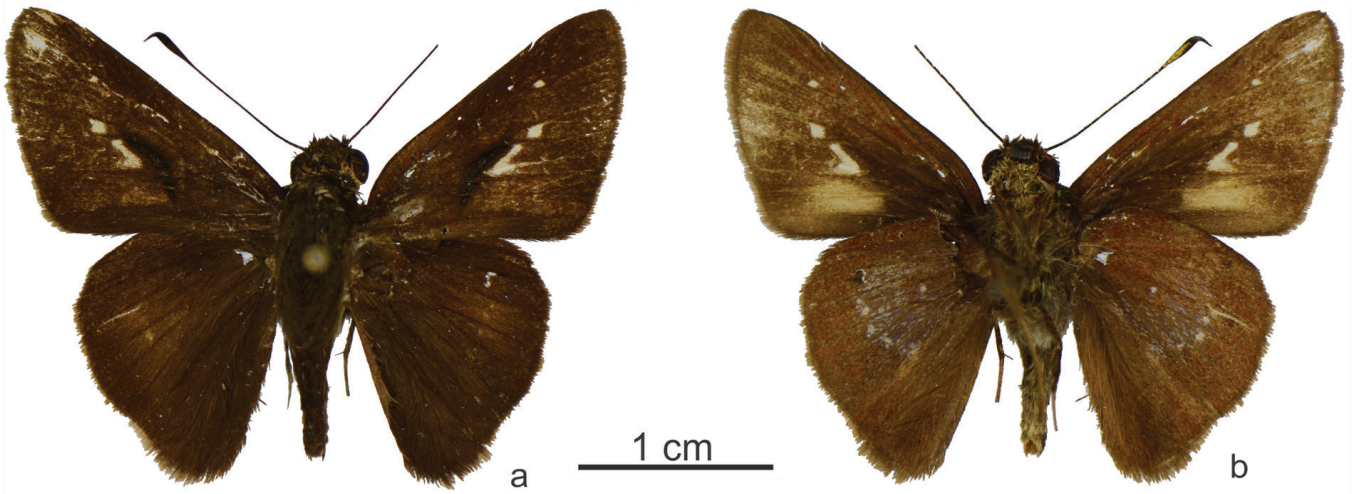

Figure 1. *Psoralis darienensis* **sp. nov.** Holotype male from Darién National Park, Darién Province, Panama, dorsal (a) and ventral (b) views.

Figure 2. Labial palpus of *Psoralis darienensis* **sp. nov.** Paratype male, Darién National Park, Darién Province, Panama, ventral view.

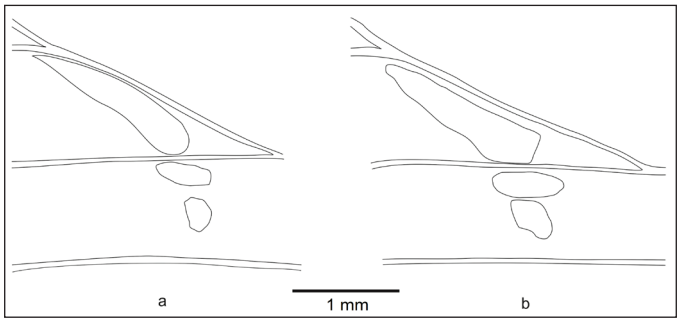

Figure 3. Male stigma of *Psoralis darienensis* **sp. nov.** (a) and *P. mirnae* Siewert, Nakamura & Mielke, 2014 (b).

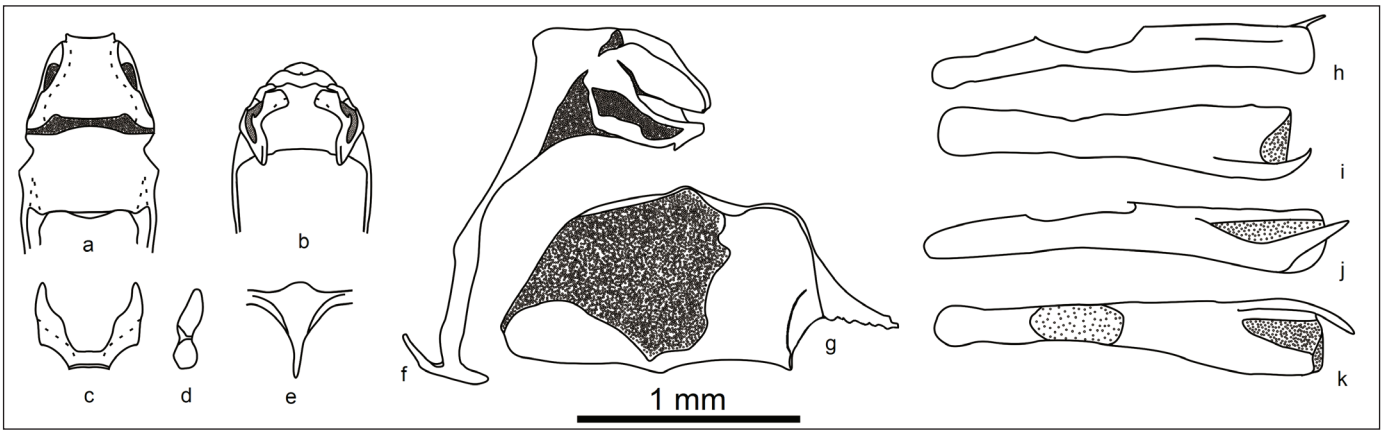

Figure 4. Male genitalia of *Psoralis darienensis* **sp. nov.** (paratype). Tegumen, uncus, and gnathos, dorsal (a) and ventral (b) views. Fultura inferior, posterior (c) and left lateral (d) views. Saccus, dorsal view (e). Tegumen, uncus, gnathos and saccus, lateral view (f). Right valvae, internal view (g). Aedeagus, left lateral (h), ventral (i), right lateral (j) and dorsal (k) views.

black stigma, with an elongated part in CuA_1-CuA_2 and bipartite in CuA_2-2A. *Underside*: costa, apex and external margin rufous brown; similar spots as on the upper side; opaque yellow patch in CuA_2-2A; inner margin dark brown. *Hindwing*: rounded; costal margin convex; apex rounded; external margin rounded; inner margin slightly straight towards tornus. *Upper side*: ground color dark brown; fringes dark brown with paler tips; presence of a tuft near the base of costa. *Underside*: ground color rufous brown; anal fold dark brown and inner margin narrowly rufous brown; whitish patch on discal area; one rounded white spot in discal cell; four smaller spots in M_1-M_2, M_2-M_3, M_3-CuA_1 and CuA_1-CuA_2 (the spot in M_1-M_2 is traceable on the upper side). *Abdomen*: dorsally dark brown, ventrally yellowish. *Genitalia*: tegumen squared in dorsal view; saccus triangular, proximally rounded; uncus trapezoidal; valvae rectangular, with a well-developed distal and central process; fultura inferior bifid; aedeagus cylindrical, with a spine-like distal projection at the right side in lateral view.

Female. Unknown.

Etymology. This species is named after the region where the specimens were collected, Darién National Park, on Panama's border with Colombia.

Distribution. The two known specimens of *P. darienensis* were collected at the abandoned mine site known as "Cana", in Darién National Park, eastern Panama.

Type material. Holotype male with the following labels: /HOLOTYPUS/ PANAMA: 1500m. Darien Cana 16.Feb.1984 Gordon Small [*leg.*]/

HOLOTYPUS *Psoralis darienensis* Gaviria, Siewert, Mielke & Casagrande det. 2017/. Deposited in the USNM.
Paratype. PANAMA**:** Darién, Darién National Park, Cana, 1500 m, 13-I-1984, Gordon Small *leg.* (USNM).

Discussion. *Psoralis darienensis* **sp. nov.** resembles *P. mirnae* in some external morphological traits, such as the markings of both wings and the tripartite black stigma in CuA_1-CuA_2 and CuA_2-2A on the forewings (erroneously reported on M_3-CuA_1, CuA_1-CuA_2 and CuA_2-2A in the original description of *P. mirnae*) (Fig. 3). However, their genitalia morphology are clearly distinctive (see illustrations of *P. mirnae* in Siewert *et al.* 2014).

As well as many other Moncini genera, *Psoralis* lacks comprehensive systematic study and several species currently assigned to the genus could be part of another or even a new genus awaiting to be described. This could be the case of *P. mirnae* and the species currently described herein, since their genitalia morphology presents some distinctive characteristics (e.g., in the uncus and valvae) when compared with other *Psoralis* species (Evans, 1955).

Evans (1955) included *Psoralis* and *Tigasis* in the "*Lerema* subgroup" together with eight other genera characterized by having the apiculus with nine segments and nudum with 11-13 segments. As a diagnosis for both genera, Evans (1955) distinguished *Psoralis* by the length of the antennae reaching half of the length of the forewing costa, while the antennae of *Tigasis* is long, nearly as long as the discal cell. We decided to describe the new species in *Psoralis* due to the length of the antennae, the form of the tripartite stigma on the dorsal forewings, and the undivided uncus (as in *P. idee* Weeks, 1901, the type species of the genus) (Evans, 1955). However, these characters are also found in some species of *Tigasis* and should be explored in future studies. Recently, the monophyly of several Moncini genera has been questioned, resulting in several taxonomic rearrangements (Dolibaina *et al*., 2014, 2015, 2017; Carneiro *et al*., 2015a, b). The generic classification is beyond the scope of the present paper, but a broader study is encouraged in *Psoralis* and in *Tigasis* to clarify their generic and internal relationships, since they appear to be potentially non-monophyletic groups.

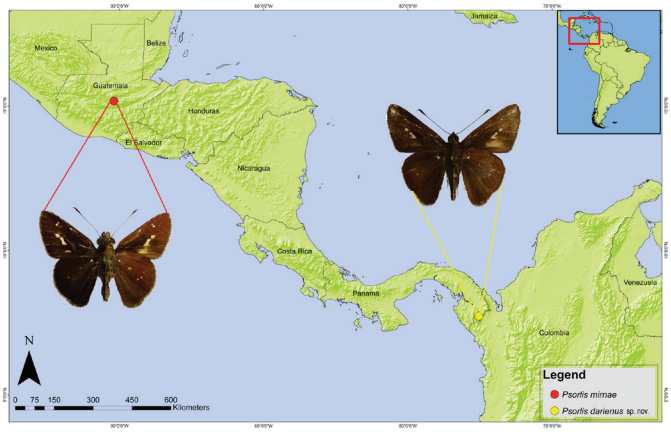

Figure 5. Known geographical distribution of *Psoralis darienensis* **sp. nov.** and *Psoralis mirnae.*

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