

**A new *Strymon* species from the dry area of the Peruvian Andes
(Lepidoptera: Lycaenidae: Eumaeini)**

Zsolt BÁLINT^{1*} & Ofir TOMER²

¹ Hungarian Natural History Museum, Department of Zoology,
H-1088 Budapest, Baross utca 13, Hungary. E-mail: balint.zsolt@nhmus.hu

² Israel Lepidopterists' Society, P. O. Box 91, Beit Arye 7194700, Israel.
E-mail: ofir.tomer@gmail.com

Abstract – *Strymon dubileah* sp. n. is described from the dry area of the Peruvian Andes. It was collected in three localities between 2400 and 2900 m in the department Ancash. Based on genitalia character states the new species is placed in the *Strymon ziba* (Hewitson, 1868) species group, known hitherto being monotypic. In the literature and in a website the species was documented under the name *S. ahrenholzi* Nicolay et Robbins, 2005 and was placed in the *Strymon serapio* (Godman et Salvin, 1887) species group. Field observations regarding the behaviour of the *S. dubileah* imagines and the list of local papilionoid fauna are also given. With 15 figures.

Key words – diversity, hairstreaks, Neotropical region, species groups, taxonomy

INTRODUCTION

The Neotropical scrub-hairstreak genus *Strymon* Hübner, 1818 (type species: *Strymon melinus* Hübner, 1818, designated by RILEY 1922) was revised by ROBBINS & NICOLAY (2002). Subsequently, more information was published to deepen the insight of *Strymon* diversity and life history (NICOLAY & ROBBINS 2005, VILA & EASTWOOD 2006, ROBBINS 2010, GRISHIN & DURDEN 2012, SILVA *et al.* 2016, RAMÍREZ-FISCHER *et al.* 2016, COSTA *et al.* 2018).

One of the faunistically least known regions in the Neotropical realm is the dry areas of the Andes. This was exemplified by the relatively recent discoveries of five *Strymon* species (NICOLAY & ROBBINS 2005), and by rediscovery of *Thecla heodes* Druce, 1909 (BÁLINT & BENYAMINI 2017, BÁLINT *et al.* 2019).

In this paper we report the occurrence of another hitherto undescribed species, collected recently in the dry parts of the Peruvian Andes. Although some specimens were discussed in the literature and the name *S. ahrenholzi* Nicolay et

*Corresponding author.

Robbins, 2005 was proposed (NICOLAY & ROBBINS 2005, WARREN *et al.* 2019), in the light of the recent findings, evidence can be presented for discriminating these specimens as representing a distinct species.

The aims of the present paper are (1) to name and formally describe the species, and (2) to supplement the knowledge related to the butterfly fauna of the Andean dry areas. The material examined for comparative purposes and the methods applied are the same as used for previous papers dealing *Strymon* (BÁLINT & BENYAMINI 2017, BÁLINT *et al.* 2019, COSTA *et al.* 2018).

Abbreviations of collections – HNHM = Hungarian Natural History Museum (Budapest, Hungary); MUSM = Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (Lima, Peru).

TAXONOMY

***Strymon dubileah* sp. n.**

(Figs 1–6, 9–12)

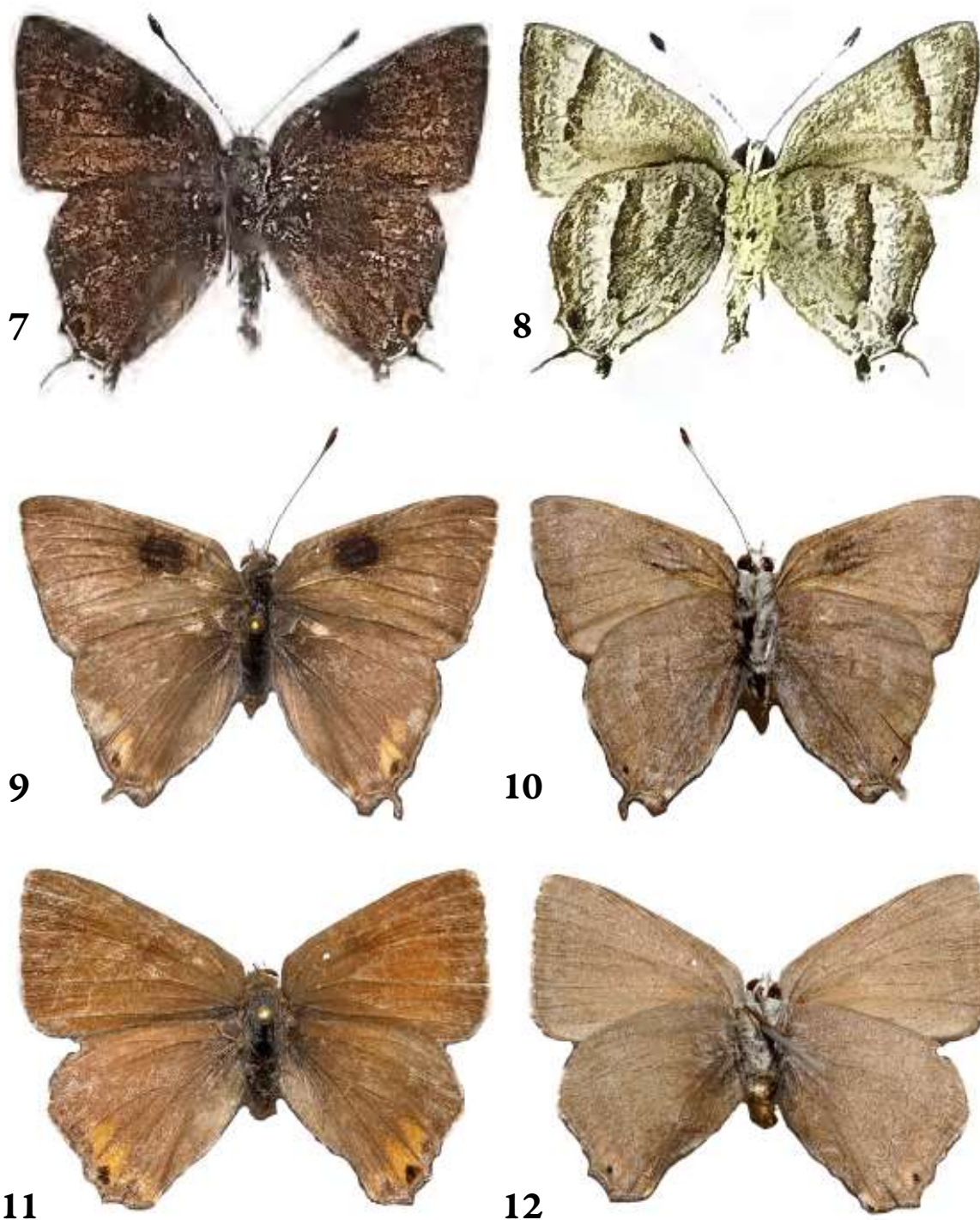
Type material – Holotype male (Figs 1– 2), deposited in the Benyamini collection (Beit Arye; will be deposited in the Steinhardt Museum of Natural History, Tel-Aviv, Israel), set ventrally in moderate condition (tornus in hindwings missing), abdomen dissected (in plastic microvial with glycerine, on the specimen's pin: gen. prep. Bálint no. 1694), originally labelled: "Peru, Ancash, [//] S. entrance to Huaylas [//] 2790m [//] 22/12/2018 [//] Leg. Dubi Benyamini" (white label, printed, "[//]" denotes line break). – Paratypes (nos 1–3): Peru: Ancash, 6km NE of Huaylas, 2420m, 9.XII.2016, leg. Ofir Tomer, 871 (paratype ("allotype") no. 1: female; dissected: gen. prep. Bálint no. 1695; in coll. Benyamini) (Figs 3–4); Peru, Ancash, Amancaes, 2800m, 6.V.1979, (paratype no. 2, male; dissected: Gen. No. 1999, 38M; in coll. MUSM) (Figs 9–10); Peru: Ancash: Caraz, 2400m, 2002 (paratype no. 3: female, in coll. MUSM) (Figs 11–12).

Generic classification and placement – All the species of the tribe Eumaeini possess the following three diagnostic characters: (1) ten forewing veins; (2) "greyhound shaped" male genitalia without a sclerotised juxta; (3) male foretarsus fused, used for walking, and stubby tipped (ELIOT 1973). All *Strymon* species have setae on the dorsal valva surface modified into anteriorly pointing teeth and most of them have brush organs on the dorsal vinculum (ROBBINS & NICOLAY 2002).

The new species is assigned to the *Strymon ziba* group because (1) male with a scent patch on the dorsal surface of the forewing, (2) no basal patch of white scales on the ventral surface of the hindwing, (3) aedeagus tip is up-turned with two terminal cornuti, (4) there is no brush-organ (Fig. 5), (5) ductus bursae slightly twisted without a sclerotised loop, and (6) ductus seminalis arises from the sclerotised posterior end of the ductus bursae (Fig. 6).



Figs 1–6. *Strymon dubileah* sp. n. type material: 1 = holotype, recto, 2 = idem, verso, 3 = paratype no. 1, female, recto, 4 = idem, verso, 5 = holotype genitalia in lateral view, 6 = paratype no. 1 female genitalia in dorsal view. Same scale, bars in 1 mm for Figs 1–4; scale bar = 0.2 mm for Fig. 5, 0.28 mm for Fig. 6 (photos by Gergely Katona (nos 1–4) and Zsolt Bálint (nos 5–6))



Figs 7–12. Various *Strymon* documentations: 7–8 = *Strymon abrenholzi* Nicolay et Robbins, 2005: 7 = holotype, recto, 8 = idem, verso (from NICOLAY & ROBBINS 2005); 9–12 = *Strymon dubileah* sp. n. specimens appearing as *S. abrenholzi* in WARREN *et al.* (2017): 9 = paratype no. 2 male, recto, 10 = idem, verso, 11 = paratype no. 3 female, recto, 12 = idem, verso (compiled by Gergely Katona)

Diagnosis – Like in *S. ahrenholzi* and *S. ziba* the aedeagus tip is slightly upturned and with terminal cornuti (Fig. 5). All other *Strymon* have the aedeagus conspicuously down-turned and the cornuti are subterminal; but (1) ventral wing surfaces of *S. ahrenholzi* are patterned by a conspicuous forewing postmedian and hindwing median band, which lack in the new species; and (2) ventral wing surfaces of *S. ziba* are also patterned by conspicuous forewing postmedian and hindwing median row of orange or light red dashes and spots.

Description of male – (N=2) (Figs 1–2, 5, 9–10) Forewing length 16 mm (holotype male), apex pointed, outer margin straight. Dorsal wing pattern: forewing dark brown with large ovoid black scent patch filling distal half of discal cell; veins standing out sharply, postmedian area lighter than basal and marginal region; hindwing with orange marginal spots in cells between the vein M3; rudimentary black tail at Cu1 and long slender white-tipped black tail at Cu2; fringes in both wings light brown. Ventral wing pattern: forewing pale gray in costal and marginal areas but brown below discalis, orange dashes of postmedian pattern almost invisible, apical and marginal area with lighter scaling. Hindwing pale gray, with faint orange dashes of submedian and postmedian pattern, marginal area darker than medial area. Head: frons with erect scales, primarily white, with a few dark ones intermixed; third segment of labial palps slightly longer than basal two, and covered with closely appressed scales; between antennal bases scales gray. Nudum black and confined to club. Genitalia (Fig. 5): typical of group with slightly upturned aedeagus tip with paired cornuti, no brush organ.

Description of female – (N=2) (Figs 3–4, 6, 11–12) Forewing length 18 mm (“allotype”), apex pointed, outer margin straight; otherwise as male, but with more extensive dorsal wing surface orange lunulation. Genitalia (Fig. 6): ductus bursae arises from a sclerotised plate situated on bursa, straight without loop but slightly twisted laterally, ostium widely and deeply divided centrally.

Individual variation – Based on the known specimens (N = 4) there is no significant variation in wing shape, colouration or pattern.

Distribution – Geographical: known only from the Peruvian department Ancash (localities: Amacaes, Caraz, Huaylas) (Fig. 13). Spatial: known from elevations 2400, 2420, 2790 and 2800 m. Temporal: specimens were collected in May and December.

Type locality – Peru, department of Ancash, southern entrance to Huaylas, 2790 m (coordinates: 8°53'4.09”S, 77°52'20.10”W, elevation 2790 m) (Figs 13–14).

Bionomics – The male holotype was collected while it was hilltopping on the edge of a ridge along a paved mountain road to Huaylas (Fig. 14). It perched on a bush. The female paratype (no. 1) was recorded on a hill slope (Fig. 15), nectaring on an orange cactus flower (*Opuntia* sp.). The following Lycaenidae species were collected in the habitats of *S. dubileah* near Huaylas: *Eldoradina cyanea* (Balletto, 1993), *Kurtaria elvira* (Johnson, 1992), *Leptotes andicola* (Godman et Salvin, 1891), *Ministrymon azia* (Hewitson, 1873), *Nabokovia faga* (Dognin, 1895),

S. crambusa (Hewitson, 1874), *S. daraba* (Hewitson, 1867), *S. heodes* (Druce, 1909) and *S. sapota* (Hewitson, 1877).

Etymology – The species is dedicated to the Benyamini family, especially to Dubi and Leah Benyamini, the driving force of lepidopterology in Israel. The name is a Latinised feminine noun arbitrarily formed from the words “Dubi” and “Leah” in weak rhyme with the species-group name of the similar congener *Strymon ziba* (Hewitson, 1868).

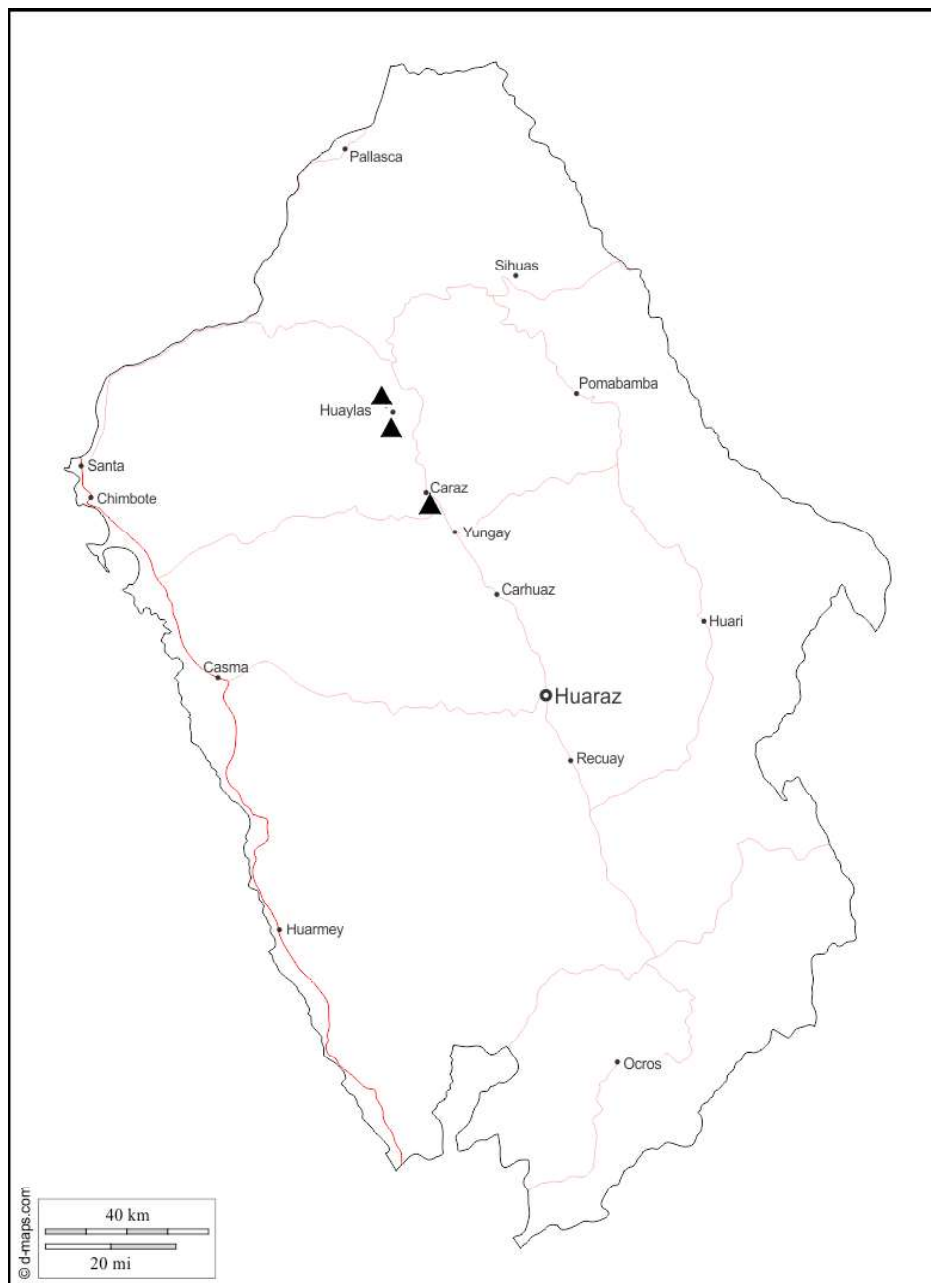


Fig. 13. Known occurrences of *Strymon dubileah* sp. n. (black triangles) in department of Ancash, Peru



Figs 14–15. Habitats of *Strymon dubileah* sp. n.: 14 = the type locality, southern entrance to Huaylas (photo by Dubi Benyamini), 15 = 6 km NE of Huaylas ($8^{\circ}50'29.33''\text{S}$, $77^{\circ}52'9.24''\text{W}$, 2420 m), where the paratype no. 1 female was collected (photo by Ofir Tomer)

DISCUSSION

Former identifications

NICOLAY & ROBBINS (2005), discussing the wing pattern variation of *S. ahrenholzi*, mentioned a male specimen from Ancash (Peru), deposited in MUSM. They considered the specimen as conspecific with *S. ahrenholzi*, described from southern Ecuador (Figs 7–8) (type locality: “Loja, Loja-Catamayo Rd, Km 26, 1800 m”, situated approximately 600 km north from Ancash) (Fig. 13). This action was based on the undifferentiated genitalia and on the observation that the “ventral wings are markedly rubbed, and its pattern cannot be ascertained”. Consequently, the specimen was not designated as paratype of *S. ahrenholzi*. In the website “Butterflies of America” (WARREN *et al.* 2017) under the name *S. ahrenholzi* a male and a female specimen are shown from Ancash (Peru) (Figs 9–12). The male is dissected and most probably, that is the specimen discussed by NICOLAY & ROBBINS (2005). These two specimens are identical with the recently collected *S. dubileah* specimens; therefore, they are designated as *S. dubileah* paratypes.

Relationships

We suggest that *S. ziba* and *S. dubileah* are “closest relatives” because they share genitalia and wing characters otherwise unique in the genus (see above Generic classification and placement). The terminal morphology of the aedeagus and the morphology of the ductus bursae especially support this statement (Figs 5–6). ROBBINS & NICOLAY (2002) formed the *S. ziba* species group that included a single, but widespread and common titular species. With the inclusion of *S. dubileah* the species group seems to be more diverse. After careful revisionary work some of the taxa considered as synonyms of *S. ziba* in the “Butterflies of America” website (WARREN *et al.* 2017) may turn to be representing biological species.

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