A review of the New World genera Alatuncusia Amsel, 1956 and Dichochroma Forbes, 1944 with new synonymies, new combinations, and description of two new species (Lepidoptera: Crambidae, Glaphyriinae)

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Abstract

The genus Alatuncusia Amsel, 1956 is reviewed, including three species A. canalis (Walker, [1866]) [= Dichogama bergii Möschler, 1890, syn. nov. = Lygropia gilvicostalis Hampson, 1918, syn. nov.)]; A. monochromatalis Becker, sp. nov.; and A. tornimaculalis Becker, sp. nov. The genus Dichochroma Forbes, 1944 is recognized with five species: D. atropos (Solis & Goldstein, 2013), comb. nov.; D. lachesis (Solis & Goldstein, 2013), comb. nov., D. muralis Forbes, 1944 [= S. clotho (Solis & Goldstein, 2013), syn. nov.], D. nyx (Solis & Goldstein, 2013), comb. nov., D. subductalis (Walker, 1866), comb. nov. [= Lygropia fulvescens Hampson, 1918, syn. nov. = Dichogama fernaldi Möschler, 1890, syn. nov.; = Schacontia themis Solis & Goldstein, 2013, syn. nov. = S. rasa Solis & Goldstein, 2013, syn. nov.].

Keywords: Lepidoptera, Crambidae, Glaphyriinae, *Alatuncusia*, *Dichochroma*, new species, new synonymies, new combinations, Neotropical.

Una revisión de los géneros del Nuevo Mundo Alatuncusia Amsel, 1956 y Dichochroma Forbes, 1944 con nuevas sinonimias, nuevas combinaciones y descripción de dos nuevas especies (Lepidoptera: Crambidae, Glaphyriinae)

Resumen

Se revisa el género Alatuncusia Amsel, 1956 incluyendo tres especies A. canalis (Walker, [1866]) [= Dichogama bergii Möschler, 1890, syn. nov. = Lygropia gilvicostalis Hampson, 1918, syn. nov.)]; A. monochromatalis Becker, sp. nov. y A. tornimaculalis Becker, sp. nov. Se reconoce el género Dichochroma Forbes, 1944 con cinco especies: D. atropos (Solis & Goldstein, 2013), comb. nov.; D. lachesis (Solis & Goldstein, 2013), comb. nov., D. muralis Forbes, 1944 [= S. clotho (Solis & Goldstein, 2013), syn. nov.], D. nyx (Solis & Goldstein, 2013), comb. nov., D. subductalis (Walker, 1866), comb. nov. [= Lygropia fulvescens Hampson, 1918, syn. nov. = Dichogama fernaldi Möschler, 1890, syn. nov. = Schacontia themis Solis & Goldstein, 2013, syn. nov. = S. rasa Solis & Goldstein, 2013, syn. nov.].

Palabras clave: Lepidoptera, Crambidae, Glaphyriinae, *Alatuncusia*, *Dichochroma*, nuevas especies, nuevas sinonimias, nuevas combinaciones, Neotropical.

Introduction

The genus Alatuncusia Amsel, 1956 was proposed in a new tribe (Alatuncusiini) in the

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Pyraustinae to accommodate *Lygropia gilvicostalis* Hampson, 1918 (Amsel, 1956, p. 280). A second species: *Dichogama bergii* Möschler, 1890 was added by Munroe (1961, p. 10). Currently it includes five species (Munroe, 1995, p. 45). The genus was treated in the Odontiinae (Munroe, 1961, 1972), in the Dichogaminae (Munroe, 1995, p. 45), and transferred to the Glaphyriinae by Munroe & Solis (1999, p. 234). Examination of the material in the author's collection and the type specimens revealed that two of the species names are synonyms, two were misplaced, and two species were undescribed, reducing the genus to three species. The two misplaced names are here transferred to *Dichochroma* Forbes, 1944 together with seven other names formerly included in *Schacontia* Dyar. Illustrations of both adults and genitalia are provided to allow their identification.

Material and methods

This review is based on specimens in VOB, CMNH, USNM and NHMUK, and on the pertinent literature. Genitalia were prepared following the methods described by Robinson (1976). Terms for morphological characters follow Hodges (1971).

Abbreviations

CMNH	= Carnegie Museum of Natural History, Pittsburgh, USA
CNC	= Canadian National Collection, Ottawa, Canada
CUC	= Cornell University Collection, Ithaca, New York, USA
FW	= Forewing
g. s.	= genitalia slides
HW	= Hind wings
IES	= Instituto de Ecología y Sistemática, La Habana, Cuba
MNHU	= Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
NHMUK	= Natural History Museum, London, United Kingdom
USNM	= Smithsonian National Museum of Natural History, Washington DC, USA
VOB	= Vitor O. Becker collection, Serra Bonita Reserve, Camacan, Bahia, Brazil

Results and discussion

Examination of the large number of Pyraloidea specimens collected in the Caribbean Islands by the author (Cuba, Puerto Rico, British Virgin Islands and St. Thomas), as well as the abundant Neotropical material deposited in the collections mentioned above, revealed that several synonymies and two undescribed species are involved with the taxa examined.

Nomenclatural summary

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Alatuncusia Amsel, 1956
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canalis (Walker, 1866) (*Nephopteryx*), **comb. nov.** = *bergii* (Möschler, 1890) (*Dichogama*), **syn. nov.** = *gilvicostalis* (Hampson, 1918) (*Lygropia*), **syn. nov.** *monochromatalis* Becker, sp. nov. *tornimaculalis* Becker, sp. nov.

Dichochroma Forbes, 1944

atropos (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (*Schacontia*), **comb. nov.** *lachesis* (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (*Schacontia*), **comb. nov.** *muralis* Forbes, 1944

= clotho (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (Schacontia), syn. nov.

nyx (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (*Schacontia*), **comb. nov.** *subductalis* (Walker, 1866) (*Pyralis*), **comb. nov.**

= fernaldi (Möschler, 1890) (Dichogama), syn. nov.

- = fulvescens (Hampson, 1918) (Lygropia), syn. nov.
- = rasa (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (Schacontia), syn. nov.
- = themis (Solis & Goldstein, 2013, in Goldstein, Metz & Solis) (Schacontia), syn. nov.

Alatuncusia Amsel, 1956

Alatuncusia Amsel, 1956. Boln Ent. Venez., 10, 280

TS: Lygropia gilvicostalis Hampson, 1918. Ann. Mag. Nat. Hist., (9) 1, 272

Diagnosis: Small (FW length 8 mm) to medium size (FW length 15 mm) (20-34 mm wingspan). FW whitish, dusted gray scales along dorsum and termen, distad of postmedial band, a faint, small dot on cell. HW translucent white to slightly dusted gray scales. Male genitalia with valvae broadly expanded distad, deeply excavated before apex; uncus with a pair of large, triangular projections distally.

Remarks: The species of *Alatuncusia* resemble some of the species of *Dichogama* Lederer, 1863, to which they are presumably related, and some specimens might be confused with small specimens of *D. redtenbacheri* Lederer, 1863. The pair of projections at the tip of the uncus is unique in the Glaphyriinae.

Alatuncusia canalis (Walker, 1866) (Figures 1-3, 13-17, 22)

Nephopteryx canalis Walker, 1866. List Spec. Lepid. Insects Colln Br. Mus., 35, 1717

Holotype ^Q, DOMINICAN REPUBLIC, Tweedie (NHMUK) [examined].

= Dichogama bergii Möschler, 1890: Abh. Senckenb. naturforsch. Ges., 16, 297, syn. nov.

Holotype 9, PUERTO RICO, [no further data] (MNHU) [not traced].

= Lygropia gilvicostalis Hampson, 1918: Ann. Mag. Nat. Hist., (9) 1, 272, syn. nov.

Holotype &, PERU, [Loreto], R. Ucayali, Contamino (NHMUK) [examined].

Material studied: 41 specimens, 8 g. s. (VOB 5783-5790) (Brazil: 21, Ecuador: 5, Costa Rica: 2, Cuba: 2, Dominican Republic: 1, Puerto Rico: 1, British Virgin Islands (Guana): 9).

Description Male (Figures 1-2): FW length 10-12 mm (23-28 mm wingspan), whitish, dusted gray scales along dorsum and termen, distad of postmedial band. Female (Figure 3) FW length 8-9 mm (19-22 mm wingspan) dusted gray or fuscous scales; some specimens with white area along costa, other wholly gray or fuscous. HW transluscent white in both sexes, females with dusted gray scales along termen.

Male genitalia (Figures 13-17). Uncus thin, long, slightly indented distally, expanded distally into pair of long projections; valva longer than uncus, densely haired, strongly excavated distally, costal margin thin, strongly sclerotized; sacculus almost as long as costa, costal margin thin, sclerotized, ending as a sharp spine. Juxta an ill-defined, elongate plate. Vinculum round to broadly shallow triangular. Phallus short, half as long as valva; vesica with numerous spines.

Female genitalia (Figure 22): Ostium narrow; ductus shorter than corpus bursae, thin, slightly sclerotized along one side, wrinkled before corpus bursae; ductus seminalis wrinkled, sclerotized near corpus bursae; corpus bursae globose, partially sclerotized and wrinkled; three signa: a lateral one bearing three, strong spines; second opposite, bearing a strong spine; third an ill-defined triangular plate.

Host plant: Capparis cynophallophora L. (Munroe, 1972) (Capparidaceae).

Distribution: Southern Florida, throughout the Antilles, Mexico, and Central America, south to the coast of Rio de Janeiro, Brazil.

Remarks: Munroe (1961, p. 12) stated: "For the present I consider this specifically distinct from the South American A. gilvicostalis (Hampson), which is larger and more robust, and which appears to have somewhat more pointed valves ...". Munroe was correct that some specimens are slightly larger. However, most of the South American specimens are the same size as, or even smaller than those from the Antilles. The same applies to the shape of the valva: some specimens have a broader valva, as shown in the specimen illustrated by Amsel (1957, pl. 58, Figure 1), whereas others, for example from Brazil and Ecuador (Figure 13), have valva even narrower than those of specimens from the Dominican Republic, the type locality of *A. canalis*, and from Guana Island (Figure 17). This widespread species is associated with dry habitats. In Brazil, where the author has carried out intensive collecting for over 50 years it was found only in the Caatinga and Cerrado biomes, as well as in dwarf vegetation on sand dunes on the coast of Rio Grande do Norte, and north of the town of Rio de Janeiro. The gray FW, white along costa to before postmedial band distinguishes this species from the others in the genus.

Alatuncusia monochromatalis Becker, sp. nov. (Figures 4, 10-12, 23)

Material examined: Holotype δ , Brazil: Rondônia, Cacaulândia, 140 m, XI-1994 (Becker 95650) (VOB). Paratypes: 7 $\delta \delta$, 1 \Im , same data as holotype, except: XI-1991, X-1993, XI-1994, g. s. 5794-5798 (Becker 70603, 88542, 95650) (VOB); 1 \Im , Bahia, Camacan, Reserva Serra Bonita, 15°23'S - 39°33'W, 800 m, XI-2011 (Becker 147525) (VOB).

Description: Medium size, FW plain shiny gray. HW pale yellow slightly smoked gray. Male genitalia with distal margin of valva less indented than that of *A. canalis;* ventral margin of uncus projections deeply excavated. Sexes similar (Figure 4). Head yellowish fuscous. Legs, thorax and abdomen below whitish yellow. FW length 13-15 mm (29-34 mm wingspan), plain shiny gray; antemedial and postmedial bands ill-defined, pale yellow; reniform small, hardly visible, slightly darker than ground color. HW pale yellow, smoked gray.

Male genitalia (Figures 10-12): Similar to those of *A. canalis*: uncus projections larger; valva with distal excavation less deep; phallus longer.

Female genitalia (Figure 23): Ostium broad; ventral margin expanded distad; ductus bursae shorter than corpus bursae, thin, sclerotized along one side; ductus seminalis membranous, coiled next to corpus bursae; corpus bursae oblong; two signa: a long, densely spined ridge next to ductus bursae and an ill-defined, minutely spined plate opposite.

Etymology: From the Greek $\chi \rho \dot{\omega} \mu \alpha \zeta =$ one, $\chi \rho \omega \mu \alpha$, $\chi \rho \omega \mu \alpha \tau \sigma \zeta =$ color, neuter.

Distribution: Known from the type locality and from southeast Bahia, on the opposite side of the country.

Remarks: This monochromatic species is larger than *A. canalis*, almost the same size as *A. tornimaculalis*, but readily recognized by its plain pattern. All specimens were collected in rain forest biomes.

Alatuncusia tornimaculalis Becker, sp. nov. (Figures 5, 24)

Material examined: Holotype ♀, Brazil: Rondônia, Cacaulândia, 140 m, XI-1994, g. s. 5799 (Becker 95651) (VOB).

Description: Medium size. FW pale yellow, lightly smoked gray with a large gray patch near tornus. Body pale fuscous (Figure 5), whitish ventrally. FW length 15 mm (34 mm wingspan), pale yellow, slightly smoked gray; antemedial and postmedial bands whitish, diffusely bordered gray; reniform gray, bordered whitish. HW semitransluscent white, veins and margins marked gray.

Female genitalia (Figure 24): Ostium narrow; ductus bursae half as long as corpus bursae, thin; ductus seminalis membranous, coiled; corpus bursae oblong, partially sclerotized, densely wrinkled; signum an elongate, minutely spined plate.

Etymology: From the Latin *tornus* + *macula* = dot, patch.

Distribution: Known from the type locality only.

Remarks: Easily recognized by the large gray patch near tornus of FW. The FW venation, as well as the characters of the female genitalia, are homologous to those of the other two species of the genus.

Dichochroma Forbes, 1944

Dichochroma Forbes, 1944. J. N. Y. ent. Soc., 52, 82

TS: D. muralis Forbes, 1944, 82, by monotypy.

Description: Small; body stout; sexes similar; FW length 5-10 mm (13-24 mm wingspan); pale

yellow to pale fuscous with bands and marks well marked or faded too almost absent. Male genitalia with uncus short, broad; valva complex, with costa and sacculus well differentiated; vinculum round. Female genitalia with ductus bursae thin, short; corpus bursae large spherical, or oblong, signum absent.

Remarks: *Dichochroma* Forbes, 1944 (1944, p. 82) was described in the Pyraustinae, transferred to Cybalomiinae by Munroe (1995, p. 42), and to the Glaphyriinae by Solis (2009, p. 500). Goldstein et al. (2013) revised *Schacontia* Dyar, 1914, and divided the genus into two species groups: the *S. medalba* group, and the *S. ysticali-themis* group, as shown in the cladogram they presented (2013, p. 75). The second group includes exactly all the species related to *D. muralis*, which are here transferred to *Dichochroma* Forbes: *D. atropos* (Solis & Goldstein, 2013, in Goldstein et al.), comb. nov., *D. lachesis* (Solis & Goldstein, 2013, in Goldstein et al.), syn. nov.], *D. nyx* (Solis & Goldstein, 2013, in Goldstein, Metz & Solis), comb. nov., *D. subductalis* (Walker, 1866), comb. nov. [*E. Lygropia fulvescens* Hampson, 1918, syn. nov. *E. Dichogama fernaldi* Möschler, 1890, syn. nov. *Schacontia themis* Solis & Goldstein, 2013, in Goldstein et al. syn. nov. *S. rasa* Solis & Goldstein, 2013, in Goldstein, Metz & Solis, syn. nov.].

As noted by Goldstein et al. (2013, p. 63), the author had already proposed these synonymies to them before the publication of their work. Little new information has surfaced in the last nine years (one additional female of *Dichochroma muralis*, Figure 6), so this alternative classification, is being published for the reasons discussed below, because the information is needed to finish a manuscript on the Pyraloidea of Guana Island (Becker & Miller, in preparation). It is also noteworthy that the material from VOB collection, including the types collected by Becker in Brazil were actually on loan to USNM and were mistakenly listed as being deposited in USNM, and so they need to be returned to a Brazilian collection.

Dichochroma muralis Forbes, 1944 (Figure 6)

Dichochroma muralis Forbes, 1944. J. N. Y. ent. Soc., 52, 82

Holotype ^Q, PERU, [Piura], Amotape Mts. (H. & D. L. Frizell) (CUC) [examined].

=Schacontia clotho Solis & Goldstein, 2013. ZooKeys, 251, 66, syn. nov.

Holotype ♂, ECUADOR: Loja, Catamayo, 1300 m, 20-XII-1992 (Becker, 102660) (USNM) [examined].

Description: Small (Figure 6), light gray, whitish ventrally, including legs. FW length 6-8 mm (15-19 mm wingspan), with antemedial and postmedial bands diffuse. HW semitransluscent white, dusted gray towards margins. Male genitalia (Goldstein et al. 2013, figures 58-59) with distal expansion of sacculus thin and long. Female genitalia with ductus bursae short, half the size of corpus bursae, corpus bursae oblong (Solis, 2009, figure 24; Goldstein et al. 2013, figure 60).

Distribution: Northwest Peru and West Ecuador, in dry, semi desertic habitats. It is the only species of the genus known from the Western coast of South America.

Remarks: Known from the female type only, the species was collected by this author twice, in Ecuador, Loja, Catamayo, 1300 m, $3 \ \delta \ \delta$, $1 \ Q$, 20-XII-1992 (Becker 102660; type series of *D. clotho*); Guayas, Safando, 05°87' S - 79°35' W, 12 m, 05,87°S - 79,35°W, $1 \ Q$, 17-20-VI-2019 (Becker, 158682) (Figure 12). The type of *D. muralis* was treated by Solis (2009, p. 500, figures 6, 23, 24). It resembles a small, half as large, *Alatuncusia monochromatalis* Becker with narrower FW (see above). The size, pattern, and female genitalia of *S. clotho* fit those of *D. muralis* holotype, what is corroborated by the geographical distribution.

Dichochroma subductalis (Walker, 1866) (Figures 7-9, 18-21), **comb. nov.** Pyralis subductalis Walker, 1866. List Spec. Lepid. Insects Colln Br. Mus., 34, 1229 Holotype ♀, VENEZUELA, [No further data] (Dyson) (NHMUK) [examined]. =Lygropia fulvescens Hampson, 1918. Ann. Mag. Nat. Hist., (9) 1, 271, syn. nov. Holotype ♀, COLOMBIA, Las Parlutas (Smith) (NHMUK) [examined]. =Dichogama fernaldi Möschler, 1890. Abh. Senckenb. naturforsch. Ges., 16, 297, syn. nov.

Holotype ^Q, PUERTO RICO: [No further data] (MNHU) [not traced].

=Schacontia themis Solis & Goldstein, 2013. ZooKeys, 251, 54, syn. nov.

Holotype &, DOMINICAN REPUBLIC, La Altagracia, 2 km N Bayahibe, 18-23N - 68-51 W, 10 m, 3-VIII-1992 (Young, Davidson, Thomson, Rawlins); dry seasonal forest on limestone (USNM) [examined].

=Schacontia rasa Solis & Goldstein, 2013, ZooKeys, 251, 61, syn. nov.

Holotype &, MEXICO, Tam, San Fernando, 50 m, 28-VI-1997 (Becker 110514) (USNM) [examined].

Description: Pale yellow dusted gray; whitish ventrally (Figures 7-9). FW length 5-10 mm (13-24 mm wingspan). Male genitalia (Figures 18-20), with distal expansion of sacculus short. Female genitalia (Figure 21) with ductus bursae tapering towards corpus bursae; corpus bursae nearly spherical.

Distribution: From Florida, the Cayman Islands, throughout the Caribbean, Mexico, Central America, south to Brazil. This is the only *Dichochroma* species collected in Puerto Rico so far (Goldstein et al. 2013, p. 58).

Remarks: This species resembles *Achyra rantalis* (Guenée, 1854), including in the variation of color, but is distinguished from it by the stouter body and appendages, and by the absence of orbicular spot on \Im FW. Males have a pair of conspicuous black dots at tip of abdomen and some specimens present a large pocket of scales on hind tibia (Figure 20), which is absent in *A. rantalis*. All specimens collected by the author came from dry, scrubby, open areas.

The type of *D. fernaldi* has not been located. Munroe (1961) stated that he had examined the type material of both *D. amablis* and *D. bergii*, but did not mention anything about examining *D. fernaldi*. Several years ago, Dr. Mey, then curator of Lepidoptera at the MNHU was contacted with the purpose to locate and send an image of *D. fernaldi*. Dr. Mey (pers. comm.), informed that the types of the species of *Dichogama* described by Möschler, were, unfortunately, not located, "only the pin holes remain in the drawer, indicating that the types existed but had been removed". Following Munroe's statement that he had examined the types of both *D. amabilis* and *D. bergii*, Dr. J.-F. Landry, curator of Lepidoptera at the CNC, was consulted and informed that he could not find any of the types there either. Mr. M. Schaffer (NHMUK) (pers. comm.), who examined and took pictures of the types at this institution in the 60's, did not find it either. In the main collections of all the museums examined there is no material under this name either.

Schaus (1940, p. 346) listed specimens of *D. fernaldi* from Vieques Island, and Ramos (1947, p. 49), lists a specimen from Mona Island identified by W. Forbes. Wolcott (1951, p. 658), repeats this information and adds "Adults doubtfully identified as this species by Mr. Carl Heinrich were reared by Dr. Luiz F. Martorell from larvae on leaves of "palinguán" (Capparis flexuosa) at Salinas in the summer of 1940." Unfortunately, none of these specimens were located and the species has remained unrecognized in all collections.

Möschler (1890, p. 297) described all the similar species of Pyraloidea with stout body in *Dichogama*, including his *D. bergii*, now in *Alatuncusia*. As no *Dichogama* species fits the small size of the type of *D. fernaldi* (FW length 9.45 mm), and no other stout crambid species that could fit the description has been collected in Puerto Rico, it is fairly likely that the series of specimens belonging to this common and widespread species, collected by this author at several tropical American places (Goldstein et al. 2013, pp. 54-59), includes *D. fernaldi* and undoubtedly are congeneric with *Dichochroma muralis* Forbes, the type species of *Dichochroma* Forbes (1944, p. 82). This series presents much variation, in size and in colour. More peculiar is the pair of coremata on the abdominal sternite IVth Goldstein et al. (2013, figure 34), present in some males but absent in others. Despite this difference, their genitalia look almost identical. Goldstein et al. (2013, figures 49, 52) described the form with coremata as *S. themis* and regarded the form without coremata as a distinct species (*D. rasa*), which is not corroborated by the characters of genitalia and the sympatric distribution. Listed in Becker & Miller (2005, p. 307) as *Schacontia* new species. Interesting to note that Forbes (1944, p. 82)

apparently had material of *D. fernaldi* and had identified the species correctly as he mentioned that: "save for the stalked instead of approximate M2 and M3 in fernaldi", a character that is confirmed by Goldstein et al. (2013, p. 48, figures 15-17). The genitalia of both the types of *P. subductalis* [abdomen missing], and of *L. fulvescens* Hampson were not examined. However, their pattern, color and size agree, what is corroborated by the geographical distribution of this common species, which range overlaps with those of the types.

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