

The Jordanian Coleophoridae, with description of two new species: *Coleophora iordanica* Baldizzone, sp. nov. and *C. ratamensis* Baldizzone, sp. nov. Contribution to the knowledge of Coleophoridae CLIV (Lepidoptera: Coleophoridae)

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Abstract

The publication deals with the Coleophoridae known for Jordan, a country of which very few species of this family are known. The study of undetermined specimens preserved in the NHMUK allowed the discovery of two new species, which are described in the publication: *Coleophora iordanica* Baldizzone, sp. nov. and *C. ratamensis* Baldizzone, sp. nov. Furthermore, on the basis of the examination of the male genitalia of the holotype of *C. ghorella* Amsel, 1955 it is hypothesized that it is probably a junior synonym of *C. hospitiella* Chrétien, 1915, but the conditions of the genital preparation made by Amsel do not allow to establish it with certainty.

Keywords: Lepidoptera, Coleophoridae, *Coleophora*, new species, Jordan.

Los Coleophoridae jordanos, con la descripción de dos nuevas especies: *Coleophora iordanica* Baldizzone, sp. nov. y *C. ratamensis* Baldizzone, sp. nov. Contribución al conocimiento de Coleophoridae CLIV (Lepidoptera: Coleophoridae)

Resumen

La publicación trata de los Coleophoridae conocidos para Jordania, país del que se conocen muy pocas especies de esta familia. El estudio de ejemplares indeterminados conservados en el NHMUK permitió descubrir dos nuevas especies, que se describen en la publicación: *Coleophora iordanica* Baldizzone, sp. nov. y *C. ratamensis* Baldizzone, sp. nov. Además, sobre la base del examen del examen de la genitalia del macho holotipo de *C. ghorella* Amsel, 1955, se plantea la hipótesis de que probablemente sea un sinónimo menor de *C. hospitiella* Chrétien, 1915, pero las condiciones de la preparación genital realizada por Amsel no permiten establecerlo con certeza.

Palabras clave: Lepidoptera, Coleophoridae, *Coleophora*, nuevas especies, Jordania.

Introduction

The current knowledge on the Coleophoridae of Jordan is very limited, as well as the material present in the museums. There are few reports of entomological expeditions in that region and all dating back to the twentieth century and not in recent years. There are also few publications dealing with Jordanian species (Amsel, 1935, 1955; Baldizzone, 1994) and only two species have been described from that country: *C. jordanella* Amsel, 1935 (junior synonym of *C. serinipennella* Christoph, 1872) and *C. ghorella* Amsel, 1955. The following publication aims to present the annotated list of known species for Jordan and the description of two new species: *Coleophora iordanica*

Baldizzone, sp. nov. and *C. ratamensis* Baldizzone, sp. nov. based on specimens found in the undetermined material of the NHMUK. Following the study of the holotype of *C. ghorella* Amsel, 1955 preserved in the RBINS, it is hypothesized that it is probably a junior synonym of *C. hospitiella* Chrétien, 1915, but the conditions of the genital preparation made by Amsel do not allow to establish it with certainty. In all, therefore, the species of Coleophoridae known for Jordan are only 13, a very low number compared to its faunal potential. It is hoped that new research in the field will finally make it possible to increase the knowledge.

Material and methods

The Euparal slide mounts of dissected genitalia of the new species were photographed with a Bresser 5.0 camera attached to a Bresser BioScienze 40-1000x trinocular microscope, using a Leitz PL Fluotar 6.3 / 0.20 objective. The slide of the male genitalia of *C. incultella* Toll, was photographed with an old Miranda camera body fitted with an adaptor tube to an old "Galileo" microscope equipped with Aus Jena 3:1-0.10 and 6.3:1-0.18 objectives. Black-and-white Ilford PAN F film was used to obtain images with high contrast between the structures and the background. Film negatives were digitized with a scanner. The images were edited in Corel PaintShop Pro. The habitus of the two new species was photographed with a Canon EOS 5D Mark II digital camera equipped with a Canon MP-E 65 mm objective, with lighting provided by two circular neon lamps OSRAM L 32W / 8400 C (cool white).

The species are listed in alphabetical order. In the geographical distribution, after the word "Jordan" the bibliographic reference relating to the citation of its presence in the country is indicated. Morphological terms follow Baldizzone (2019).

Abbreviations

- Bldz = Giorgio Baldizzone
 GP = genitalia preparation
 MfN = Museum für Naturkunde, Berlin, Germany
 NHMUK = The Natural History Museum, London, U.K. (formerly British Museum of Natural History = BMNH)
 RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium

Taxonomy

Coleophora aleramica Baldizzone & Stübner, 2007

Distribution: France, Italy, Austria, Croatia, Slovakia, Hungary, Montenegro, Macedonia, Greece, Turkey, Jordan (Stübner, 2007).

Coleophora amasiella Stainton, 1867

Distribution: North Macedonia, Turkey, Palestine, Syria, Jordan (Baldizzone, 1994), Iraq, Iran, Afghanistan.

Coleophora changaica Reznik, 1975

Distribution: Portugal, Spain, Ukraine, Crimea, Russia (Southern Ural), Turkmenistan, Turkey, Morocco, Algeria, Jordan (Baldizzone, 1997), Afghanistan, Mongolia, China.

Coleophora derbendella Baldizzone, 1994

Distribution: Iran, Syria, Jordan (Baldizzone, 1994).

Coleophora dubiella Baker, 1888

Distribution: France, Spain, Bulgaria, North Africa, Caucasus, Russia (Lower Volga), Turkey, Azerbaijan, Jordan (Baldizzone, 1994), Iraq, Iran, Afghanistan.

Note: Under the name of *C. dubiella* there is probably a complex of species (Tabell com. pers.) which it is hoped to be able to clarify with genetic and morphological studies, restoring the status of bona species to some species considered junior synonyms in the World Catalogue of Coleophoridae (Baldizzone et al. 2006).

Coleophora galligena Falkovitsh, 1970

Distribution: Turkmenistan, Uzbekistan, Jordan (Baldizzone, 1994), Pakistan.

Coleophora ghorella Amsel, 1955 (Figures 1-2, 5-6)

Holotype ♂ “TYPE” [pink label]; “Ain Etturaba | Mer Morte, alt. 390 m. | 16-III-1953 | Ph. Lippens”; “R. I. Sc. N. B. I. B.”; “GU 2257”; “*Coleophora ghorella*” [red label]; “*Coleophora ghorella* Ams. | det. H. G. Amsel 1954”, coll. RBINS.

The species was described by Amsel from a single male specimen collected in Ain Etturaba near the Dead Sea. The description is rather short and not complete according to the current standard. The adult is not represented in the publication in which there is only a schematic drawing of the genitalia. Thanks to the kind collaboration of Willy de Prins and Stefan Kerkhof, curator of the RBINS, I was able to study the specimen through some good photographs of the adult (Figure 1) and the genitalia slide that was sent to me. The specimen is in fair condition, while the genitalia were not perfectly prepared, with the abdomen full of opaque organic substance and the vesica is missing (Figures 2, 5-6). Amsel in the original description had written that his new species was close to *C. asiaeminoris* Toll, 1952, a species known only from Turkey, which belongs to the group of *C. fringillella* Zeller, 1839. The examination of the genitalia however revealed that the species is most probably a junior synonym of *C. hospitiella* Chrétien, 1915, species known from Canary Islands, North Africa, Saudi Arabia, Iran, Afghanistan, Uzbekistan (Baldizzone & Tabell, 2005). The genitalia of both sexes of *C. hospitiella* were first published by Baldizzone (1979) and subsequently by Nel (2001) and by Baldizzone & Tabell (2005). In an attempt to obtain a more adequate view of the genital preparation of the holotype of *C. ghorella*, I rearranged the photo with a photo editing program (Figure 5) and inserted it on a plate below the photo of the male genitalia of a specimen of *C. hospitiella* Chrétien, 1915 from Tunisia (Figure 3). The analogies are evident, but out of prudence I do not proceed to establish the new synonymy, hoping that in the future we can obtain other material of this species recently collected in Jordan, which will allow to obtain a definitive answer.

Coleophora jerusalemella Toll, 1942

Distribution: Spain, Greece, Crete, Cyprus, Turkey, Lebanon, Palestine, Syria, Jordan (Baldizzone, 1996), Iran, Algeria, Morocco, Oman, United Arab Emirates.

Coleophora parthenica Meyrick, 1891

Distribution: Romania, Greece, Crete, Cyprus, Lebanon, Egypt, Algeria, Morocco, Russia (Lower Volga), Caucasus (Armenia, Azerbaijan), Transbaikalia, Iran, Turkmenistan, Jordan (Baldizzone, 1994), Mongolia, U.S.A. (introduced).

Coleophora serinipennella Christoph, 1872 (= *Coleophora jordanella* Amsel, 1935)

Distribution: Portugal, Spain, France, Southern and Central Europe, Romania, Balkans, Caucasus, North Africa, Jordan (Baldizzone, 1994) to Japan, Australia.

Coleophora tamesis Waters, 1929

Distribution: Europe, Morocco, Turkey, Caucasus, Jordan (Baldizzone, 1994), Turkmenistan, Afghanistan, Russian Far East, China.

Description of new species:***Coleophora iordanica* Baldizzone, sp. nov.** (Figures 7, 10-12)

Holotype ♂ (GP Bldz 16966) “9.3.1955 | Jordan Valley | Zerqa R.[iver] Colony | c. 100 m. below S.[ea] L.[evel] at light | Trevor Trought””; “Brit.[ish] Mus.[eum] 1963-255””; “QR code NHMUK 010897653”, coll. NHMUK.

Diagnosis: Due to the structure of the male genitalia, *C. iordanica* is close to *C. incultella* Toll, 1952, a species known only from Algeria and to *C. hinnula* Baldizzone, 1995, species described from Morocco. Of both species only the male is known. In the original description of *C. incultella*, in French, Toll illustrated the male genitalia with a drawing, while in his posthumous volume of 1962 written in German, the head, the forewing and the abdominal structures were illustrated in addition to the male genitalia.

C. iordanica is a medium-sized species, with overall appearance brownish grey, with brown streaked veins. As for the differences with *C. incultella*, the difference in the habitus of the adult is evident: *C. iordanica* (Figure 7) is much darker than *C. incultella* (Figure 8) which has an overall white appearance, with white forewing streaked light ochre along the veins. In the abdominal structures the difference is evident in the transverse strut, which in *C. iordanica* (Figure 12) is much thicker and more curved, with the distal edge narrower and thicker than that of *C. incultella* (Figure 15), which is straight and wider. In the male genitalia of *C. iordanica* (Figures 10-11) the gnathos knob is more rounded, compared to those of *C. incultella* (Figures 13-14) the tegumen is a little shorter and robust, less constricted medially, the valvula is larger without a characteristic blunt triangular protuberance at the apex on the outer edge of *C. incultella*, the cucullus is more curved and robust, while that of *C. incultella* is straight and thinner, the sacculus has a more curved ventral edge, the phallosome is shorter than that of *C. incultella*, of which the apex extends beyond the upper edge of the valve. As for the differences with *C. hinnula* the most evident are the following: in *C. hinnula* the general colour is white and not brown; in the male genital the transtilla is shorter and more robust than that of *C. iordanica*, the cucullus is shorter and curved, the outer edge of the valvula is much more inclined in the part above the cucullus and more prominent at the base of the cucullus, the sacculus is wider and sharper.

Description (Figure 7): Wingspan 15 mm. Head dirty white, brown suffused on the dorsum. Antenna: scape white, ochre suffused on the outside, brown on the inner side, with a short tuft of erect scales; flagellum dirty white, brown ringed. Labial palpus brown, dirty white suffused dorsally; the second segment is about twice the length of the third. Proboscis of normal shape. Thorax and tegula brown. Forewing brownish grey, veins streaked with brown, cilia brownish grey. Hindwing light grey, cilia grey. Abdomen brown.

Abdominal structures (Figure 12): No posterior lateral struts. Transverse strut very thick, curved, more sclerified on the distal edge. Tergal discs (3rd tergite) length about 4.5 times their width, covered with about 45 conical spines. The abdomen was partially destroyed by parasites.

Male genitalia (Figures 10-11): Gnathos knob globular. Tegumen medially constricted, pedunculus slightly expanded externally. Transtilla straight, rather short, wider at the base. Valvula large suboval, with a narrow recurved fold on the outer edge that does not cross the valva margin. Cucullus robust, more expanded ventrally in the middle, slightly narrowed at the base. Sacculus narrow, its apex expands to about the middle of the cucullus, thick and slightly curved ventral edge and subtriangular dorsal angle with a small rounded tooth-like protuberance. Phallosome short, conical, completely sclerified in basal half and only dorsally in distal half. Vesica long and narrow, without cornuti.

Bionomy: Unknown.

Distribution: Jordan. The locality indicated in the original label is “Zerqa, Jordan R. Colony”, whose geographical location was indicated in a drawing by Amsel inserted in his 1955 publication as “Zerqa river colony” (op. cit.). The current name is Zarqa.

Etymology: The name derives from the Latin *iordanicus* (-a, -um) which indicates the correlation with the Jordan River.

***Coleophora ratamensis* Baldizzone, sp. nov.** (Figures 9, 16-19)

Holotype ♂ (GP Bldz 16961) “JORDAN: Wadi er Ratam. 24.iv.- 10.v.1966. D. S. Fletcher”; “International Jordan Exped[iti]o[n]. 1966. B. M. 1966-298”; “QR code NHMUK 010897746”, coll. NHMUK. Paratype ♂ (GP Bldz 17024) same labels, QR code NHMUK 010897743, coll. NHMUK.

Diagnosis: The new species belongs to the group of *C. involucrella* Chrétien, 1905 and due to the habitus and structure of the male genitalia, *C. ratamensis* is close to *C. celsa* Baldizzone, 1994, a slightly smaller (wingspan 15 mm) species known only from Iran. In the male genitalia *C. ratamensis* (Figures 16-18), compared to those of *C. celsa* (Figures 20-21), the transtilla is more robust, the lateral edge of the valvula, covering the base of the cucullus, is shorter in the area between the lower edge of the cucullus and the dorsal edge of the sacculus. The sacculus is more inclined and longer on the outer edge, where it ends in the dorsal angle with a small tooth, smaller than that of *C. celsa*, and the ventral edge is thicker than that of *C. celsa* with a deeper incision. The cornuti are less numerous than in *C. celsa* and the claw-like structure in which they are gathered is inserted on a laminar base absent in *C. celsa*.

Description (Figure 9): Wingspan 17-18 mm. Head glossy white. Antenna glossy white, scape with long tuft of erect scales, slightly yellow-tinged. Labial palpus short, completely glossy white, the second segment is about twice the length of the third. Proboscis of normal shape. Thorax glossy white, yellow-tinged in middle. Tegula white, yellow-tinged on internal side. Forewing with four glossy white stripes: the widest along the costa, a short and slightly curved one on the lower edge of the cell, a thin one along the anal fold, and a short and thin one along the dorsum; the colour between the costal and anal stria is ochre, which becomes yellowish in the direction of the anal stria, and even lighter in the part between the anal and dorsal stria; costal cilia white, ochre at the apex, dorsal cilia yellowish grey. Hindwing grey, yellowish grey cilia. Abdomen white.

Abdomen (Figure 19): Posterior lateral struts about 2/3 length of the anterior. Transverse strut thick, straight on the proximal edge, with a small sclerified line only in the middle and slightly curved on the distal edge, which is thicker and more sclerified. Tergal discs (3rd tergite) length about 3 times their width, covered with about 50 small conical spines.

Male genitalia (Figures 16-18): Gnathos knob globular. Tegumen large and squat, pedunculus short. Transtilla curved and elongated, wider at the base. Valvula with rounded ventral edge and curved outer edge, protruding between the base of the cucullus and the dorsal part of the sacculus. Cucullus short, narrower at the base in the shape of an ear. Sacculus curved, very hollow on the inner side of the ventral edge, ends with a small triangular tooth-like protuberance in the dorsal corner. Phallosome conical, more sclerified in the basal part. About 10 cornuti shaped like spines of different length, gathered in a claw-like formation inserted on an irregular base of laminar shape.

Bionomy: Unknown.

Distribution: Jordan, Wadi ar Ratam [31°51'N 36°48'E]. Information on the geographic coordinates of this locality was obtained from a publication by Mahasneh & Katbeh-Bader on the Orthoptera, Tettigoniidae of Jordan (2004).

Etymology. The name derives from the place where the species was collected.

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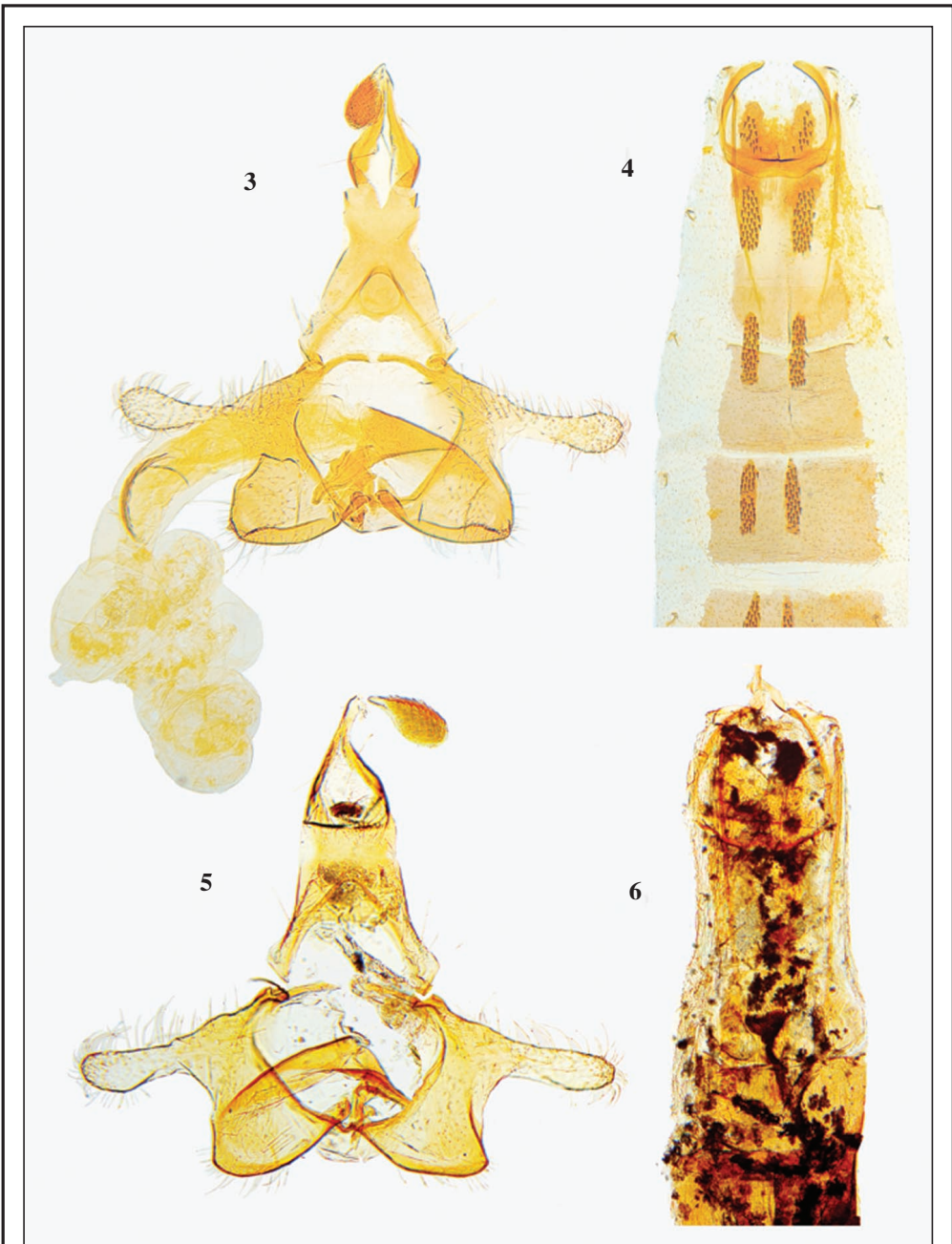
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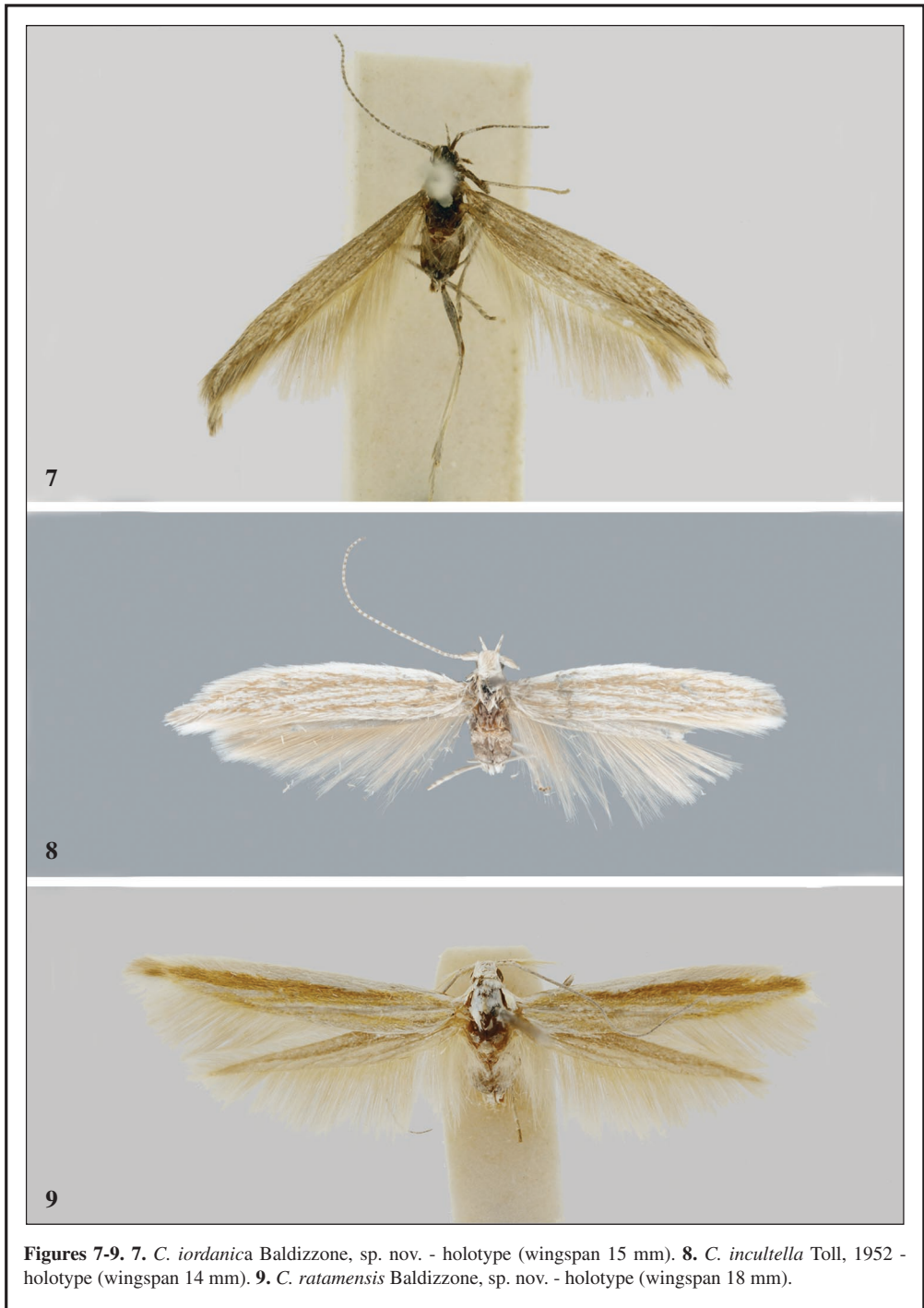
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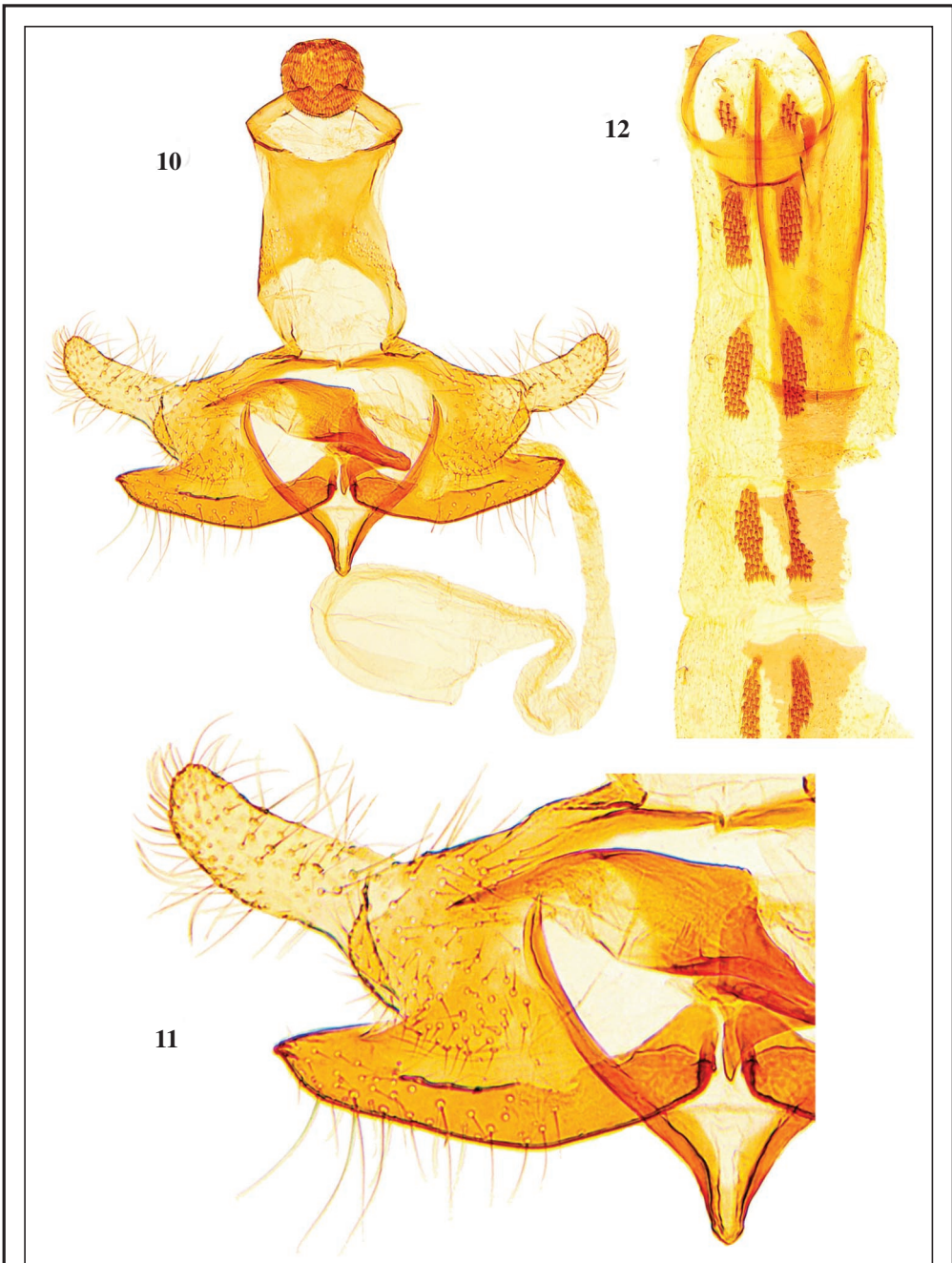
Figures 1-2. 1. *Coleophora ghorella* Amsel, 1955 - holotype (wingspan 19 mm). 2. Male genitalia (GP Amsel 2257).



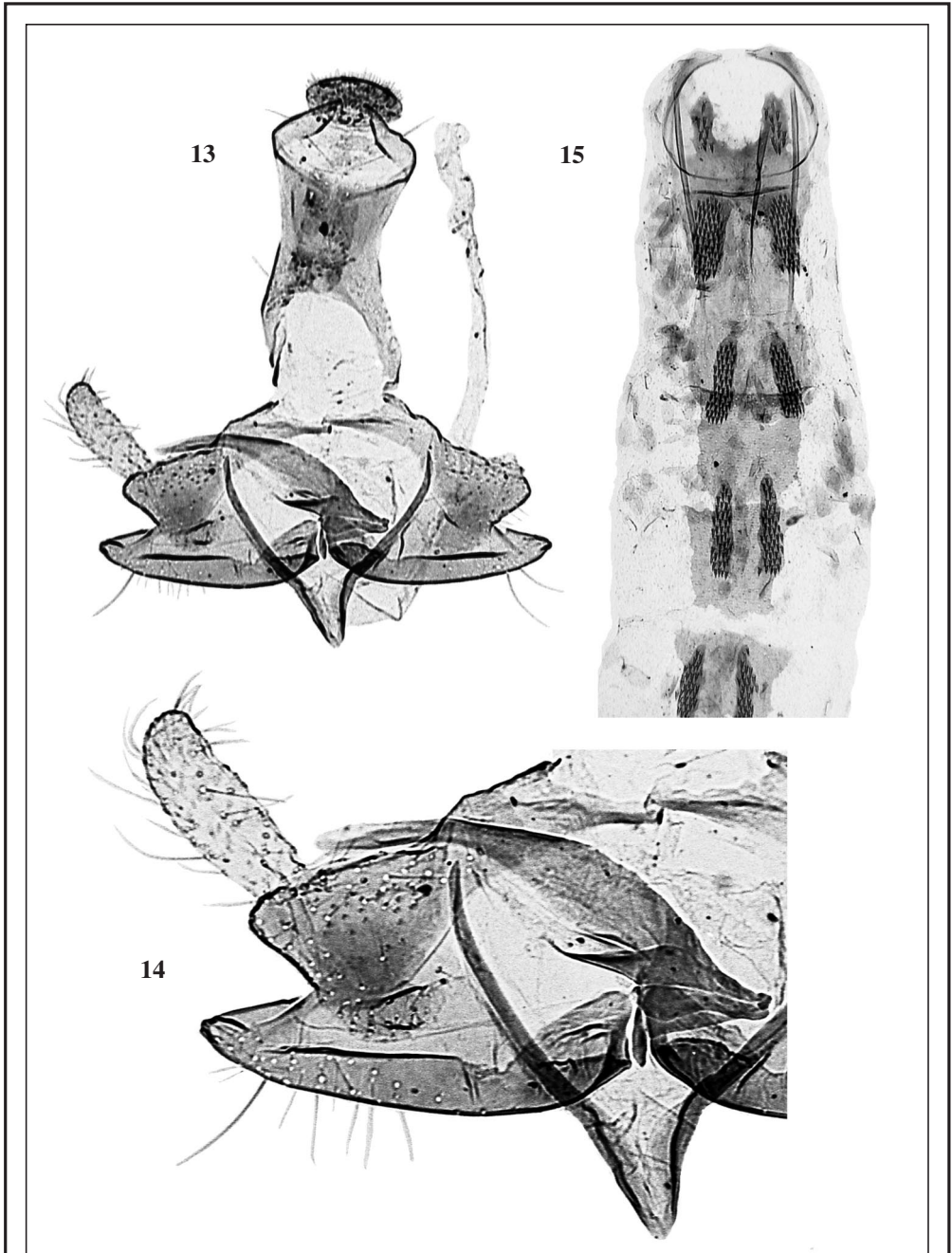
Figures 3-6. 3. *C. hospitiella* Chrétien, 1915 - male genitalia (GP Bldz 13659) Tunisia, Bou Hedma, 28-II-1929, C. Dumont leg., coll. Baldizzone. 4. Abdomen. 5. *Coleophora ghorella* Amsel, 1955 - photo of male genitalia rearranged with photo editing program. 6. Abdomen.



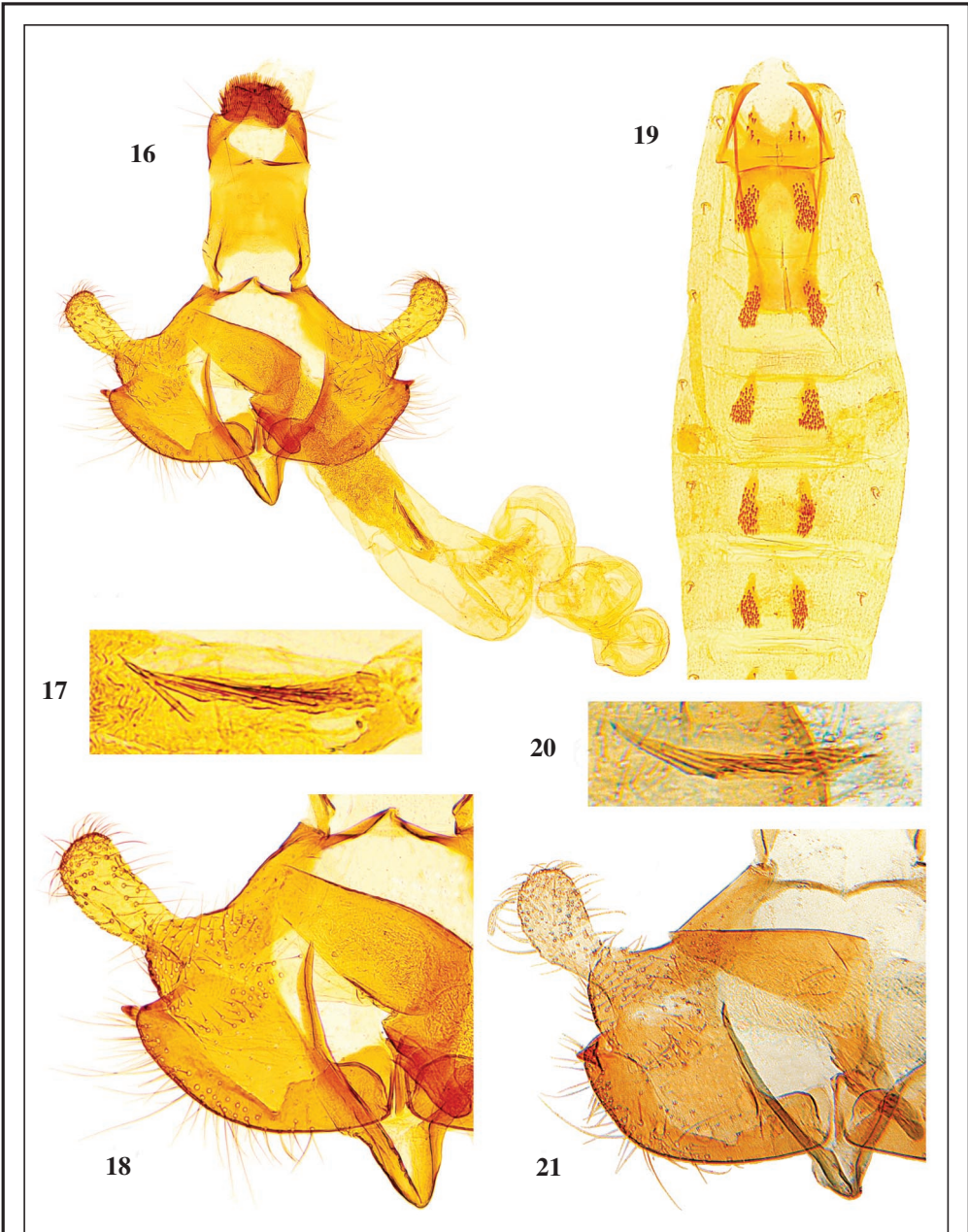
Figures 7-9. 7. *C. iordanica* Baldizzone, sp. nov. - holotype (wingspan 15 mm). 8. *C. incultella* Toll, 1952 - holotype (wingspan 14 mm). 9. *C. ratamensis* Baldizzone, sp. nov. - holotype (wingspan 18 mm).



Figures 10-12. 10. *C. iordanica* Baldizzzone, sp. nov. - male genitalia, holotype (GP Bldz 16966). 11. Enlarged detail of valva and phallosome. 12. Abdomen.



Figures 13-15. 13. *C. incultella* Toll, 1952 - male genitalia, holotype (GP Toll 431). 14. Enlarged detail of valva and phallosome. 15. Abdomen.



Figures 16-21. 16. *C. ratamensis* Baldizzzone, sp. nov. - male genitalia, holotype (GP Bldz 16961). 17. Enlarged detail of cornuti. 18. Enlarged detail of valva and phallosome. 19. Abdomen. 20. *C. celsa*, Baldizzzone, 1994 - male genitalia, holotype (GP Bldz 5749) enlarged detail of cornuti. 21. Enlarged detail of valva and phallosome.