

# The South American Coleophoridae of the Zoological Museum of Copenhagen. Contribution to the knowledge of the Coleophoridae. CXLIII (Lepidoptera: Coleophoridae)

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## Abstract

The work presents the results of the study of the South American Coleophoridae of the Zoological Museum, University of Copenhagen. Ten species have been identified, of which *Coleophora pulchricornis* Walsingham, 1897 is new for South America, and four are new for science: *C. andina* Baldizzone, sp. n., *C. aconcaaguae* Baldizzone, sp. n., *C. rasmusseni* Baldizzone, sp. n., *C. peruana* Baldizzone, sp. n. Two species, *C. breyeri* Pastrana, 1963 and *C. haywardi* Pastrana, 1963 are redescribed and information is provided on the host plant and larval case of *C. intexta* Meyrick, 1917. The new synonymy *C. breyeri* Pastrana 1963 = *C. argentinae* van der Wolf, 1999, syn. n., is established.

KEY WORDS: Lepidoptera, Coleophoridae, *Coleophora*, new species, new synonymy, South America.

## Los Coleophoridae suramericanos del Museo Zoológico de Copenhague. Contribución al conocimiento de los Coleophoridae. CXLIII (Lepidoptera: Coleophoridae)

## Resumen

El trabajo presenta los resultados del estudio de los Coleophoridae suramericanos del Museo Zoológico, de la Universidad de Copenhague. Diez especies han sido identificadas, de las cuales *Coleophora pulchricornis* Walsingham, 1897 es nueva para Suramérica y cuatro son nuevas para la ciencia: *C. andina* Baldizzone, sp. n., *C. aconcaaguae* Baldizzone, sp. n., *C. rasmusseni* Baldizzone, sp. n., *C. peruana* Baldizzone, sp. n. Se describen dos especies, *C. breyeri* Pastrana, 1963 y *C. haywardi* Pastrana, 1963 y se proporciona información de la planta nutricia y del saco larvario de *C. intexta* Meyrick, 1917. Se establece la nueva sinonimia *C. breyeri* Pastrana 1963 = *C. argentinae* van der Wolf, 1999, syn. n.

PALABRAS CLAVE: Lepidoptera, Coleophoridae, *Coleophora*, nuevas especies, nueva sinonimia, Suramérica.

## Introduction

The Coleophoridae family, with 1467 species (6-II-2020), widespread in most of the world, is poorly represented in South America. Currently only 17 species are known, of which two

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introduced, *Coleophora versurella* Zeller, 1849 and *C. mayrella* (Hübner, [1813]). Of these, seven were described in 1999 by van der Wolf for Argentina. The last species described was *C. cisoriella* Landry, 2005, known from Brazil and *C. darwini* Landry, 2006, known from Galápagos. From personal experience in Ecuador and Costa Rica and according to the testimonies of various colleagues, the Coleophoridae are also absent in many biotopes rich in biodiversity or always very scarce, while other well-represented families in the Palearctic Region are equally present in South America with a great number of species and specimens.

The following publication intends to provide further knowledge on the basis of the material present in the Zoological Museum, University of Copenhagen (ZMUC), largely resulting from research expeditions of some Danish lepidopterologists.

## Material and methods

The Danish expedition to Argentina and Chile in 1978-79 was called “Misión Científica Danesa”. A number of Danish scientists participated and among them Ebbe S. Nielsen, Ernst Traugott-Olsen and Bent. W. Rasmussen collected Lepidoptera. The expedition travelled through most of Argentine and also into parts of Chile. Two years later Ebbe S. Nielsen returned to Patagonia with Ole Karsholt and they stayed four and a half months in the Andes Mountains, mostly between Bariloche in Argentine and Valdivia in Chile, mainly searching for *Heterobathmia*, but collecting all Lepidoptera. In 1987 O. Karsholt joined an ornithological expedition that lasted three months on the High Andes of Peru; during this expedition, collections were also made at lower altitudes during transfers from one mountain to another.

The collected material had been partially studied by B. W. Rasmussen, a ZMUC technician, who also carried out research on Lepidoptera, in particular on Coleophoridae, intending to produce a publication on them. For this purpose he had also obtained important material for the identification of the species, including Pastrana paratypes and also undetermined specimens.

After Rasmussen’s premature death in 1993, Ole Karsholt proposed that I study the material he sent me along with Rasmussen’s genitalia preparations. This material amounted to exactly 100 specimens.

Unfortunately, Rasmussen’s genitalia preparations are of poor quality because the genitalia have undergone excessive maceration, the males sometimes have been broken and dismembered into various pieces that cannot be put together, while the female ones have not been extracted from the abdomen. Rasmussen probably would have presented drawings of the genitalia instead of photographs, which would have allowed him to provide a fairly adequate representation.

However, I was able to personally carry out the genitalia preparations of many specimens that still had the abdomen, both of the species on which Rasmussen had already worked, and those that had not yet been examined. I have not tried to remount the female genitalia of unique specimens, to avoid damage, but I have tried to provide a good photographic representation through photo editing.

I was able to identify ten species, of which two were introduced to the continent (*C. versurella* and *C. mayrella*), four already described (*C. pulchricornis* Walsingham, 1897, *C. intexta* Meyrick, 1917, *C. breyeri* Pastrana, 1963, *C. haywardi* Pastrana, 1963) and four new to science (*C. andina* Baldizzone, sp. n., *C. aconaguae* Baldizzone, sp. n., *C. rasmusseni* Baldizzone, sp. n., *C. peruana* Baldizzone, sp. n.). The adult, genitalia, and larval case of *C. pulchricornis* are illustrated for the first time. In addition, the larval case is illustrated and information is provided on the host plant of *C. intexta*. As for the two species described by Pastrana, *C. breyeri* and *C. haywardi*, a new description is provided and the genitalia are illustrated with detailed photographs. Among the material studied I identified two other undescribed species, but further studies and hopefully other specimens will be needed to describe them.

## Abbreviations

- BWR = Bent W. Rasmussen.  
 GP, PG = genitalia preparation.  
 MHNG = Muséum d'Histoire Naturelle, Geneva, Switzerland.  
 NHMUK = Natural History Museum, London, U.K. (formerly BMNH British Museum of Natural History).  
 NHMW = Naturhistorisches Museum, Wien, Austria.  
 RMNH = Naturalis Biodiversity Centre, Leiden, The Netherlands (formerly Rijksmuseum van Natuurlijke Historie).  
 ZMUC = Zoological Museum, Natural History Museum of Denmark, Copenhagen, Denmark.

### *Coleophora pulchricornis* Walsingham, 1897 (Figs 1-2)

Original material examined: Holotype ♀: "TYPE" [round, printed, red edged]; "ST. THOMAS | Danish W. Indies | ex. 15.iv.1894 | Güdman 7191"; "B.M. | Genitalia Slide ♀ 12229"; "COLEOPHORA PULCHRICORNIS | Wlsm. | TYPE ♀"; "Walsingham | Collection | 1910-427", coll. NHMUK. Paratypes: 1 ♂ "Paratype 1/2"; "West. Ind. | Hedemann '94. | WLSM 2072-1895" "PG Bldz n° 2909 ♂", coll. NHMW; 1 ♀ "St. Thomas | e. l. 15.4.94"; "PG Bldz 2910 ♀", coll. NHMW.

New material examined: 1 ♀ "PERU, Dept. Lima | 2: 8 km E Chosica | San Bartolomé | 1900 m | 20-23-I-1987 | O. Karsholt leg."; 2 ♂♂, 2 ♀♀ "PERU, Dept. Lima | 29: 10 km S Paramonga | Barranca | sea level | 22-23-II-1987, O. Karsholt leg."; 1 ♂ "PERU, Dep. Ancash | 25: 15 km N Caras | Río Salta Valley | ca. 2000 m | 19-21-II-1987 | O. Karsholt leg."; "1 ♀ "PERU, Dept. Lima | 30 m | Miraflores | 1-4-III-1987 | O. Karsholt leg."

Diagnosis: Small-sized species of dark brown habitus. The male genitalia are somewhat similar to those of *C. willinki* van der Wolf, 1999, a species described from Argentina on the male only. The most obvious differences are: in *C. pulchricornis* the sacculus is narrower and the protuberance on the dorsal corner is longer and less pointed and regular in shape; the phallosome is more curved and dorsally sclerotized; the cornutus is different in the shape of the dilated and asymmetrical base. The female genitalia do not resemble those of any other neotropical species.

Original description: "*Antennae white, beautifully ringed throughout with black; basal joint not tufted. Palpi dusky whitish, shaded externally with fawn-colour; second joint with a slight projecting point of scales beneath its apex. Head and thorax dull fawn-grey. Fore wings dull fawn; with a whitish ochreous costal streak throughout, widening toward the apex, and including the costal cilia; joining this from the end of the cell are three whitish-ochreous streaks following the veins; along the cell from before the middle and extending a little beyond its outer end is a longitudinal streak composed of mixed whitish-ochreous and black scales running parallel with the costa; beneath it, commencing at the base and terminating before the end of the fold, is a similar slender streak in which black predominates; some whitish ochreous scales lie around the dorsum and termen at the base of the greyish cilia. Exp. al. 10 mm. Hind wings and cilia dark brownish grey. Abdomen brownish grey. Legs whitish*".

Remarks: The species was described based on three specimens from the Danish West Indies, now Virgin Islands of the United States of America. The original description is very accurate and corresponds well to the specimens from Peru. However, there are some notable individual differences both in the coloration of the antennae and in those of the forewings: in two specimens the antennae are ringed white and dark brown as in the specimens of the original series, while in others the antennae are ringed brown and dark brown with little evident limits between the two colours. Some specimens have wings such as those described by Walsingham, while one has a wider and more nuanced whitish band in the costal area and one has a light brown forewing.

Male genitalia (Figs 16, 18-21): Gnathos knob globular. Tegumen short and stocky, restricted in middle; pedunculus dilated externally. Transtilla short and thin. Valvula small, subtriangular. Cucullus short ear-shaped. Sacculus narrow, ventrally curved, with a triangular tip sclerotized in dorsal corner.

Phallosome short, curved, symmetrical juxta rods, more sclerotized in basal half. Cornutus sharply thorn-shaped, dilated at base asymmetrically.

Female genitalia (Figs 22, 24, 25): Papillae anales elongated oval. Apophysis posterioris twice as long as anterioris. Sterigma trapezoidal, finely corrugated anteriorly, deeply hollowed out by sinus vaginalis. Ostium bursae broad. Colliculum cup-shaped, restricted to base, with more thickly sclerotized edges. Ductus bursae short, transparent, slightly wider in distally. Corpus bursae small, oval with wedge-shaped signum.

Abdominal structures (Figs 17, 23): Without latero-posterior struts, transversal strut straight with thin proximal edge and not sclerotized medially at distal edge. Tergal disk (3<sup>rd</sup> tergite) about twice as long as wide, with about 25 conical spines.

Bionomy: According to the original description, the host plant is not known because the case was found fixed on stone fences. The larval case (Figs 13a, b) has been described by Walsingham: "Case cylindrical, mouth bent over but not projecting beyond the level of its lower side, apex triangular, its three angles somewhat flattened, the whole dull greyish ochreous; long. 13 mm". The description corresponds well to the morphology of the larval case which is with the holotype; the oral opening is inclined by about 5°.

The specimens of the original series were collected in mid-April and those from Peru in the last ten days of February and early March.

Distribution: Virgin Islands of the United States (Central America) and Peru (Department of Lima and Ancash). The species is new to South America.

#### *Coleophora intexta* Meyrick, 1917 (Figs 3-4)

Original material examined: Lectotype ♂ "Lima, 500 ft., | Peru | Parish 8-14", "B.M. ♂ | Genitalia Slide | No. 12224". Paralectotype ♀: same label, but GP B.M. 12225 ♀, coll. NHMUK.

New material examined: 2 ♂♂ "PERU: Dept. Lima | 2: 8 km E Chosica | San Bartolomé | 1900 m | 20-23-I-1987 | O. Karsholt leg."; 1 ♂, 1 ♀ "PERU: Dep. Ancash | 25: 15 km N Caras | Río Salta Valley | ca. 2000 m | 19-21-II-1987 | O. Karsholt leg."; 1 ♂ "PERU: Dept. Lima | 36: 10 km E Imperial | 150 m | 8-III-1987 | O. Karsholt leg."

Remarks: The species was described by Edward Meyrick in 1917 from specimens collected in August 1914 in Lima, Peru (MEYRICK, 1917). Landry in 2006, when describing *Coleophora darwini* from the Galápagos Islands, also studied the remaining specimens of *C. intexta* in the NHMUK. He designated a lectotype and illustrated the adult and male and female genitalia (LANDRY, 2006).

The specimens of the ZMUC show a fair variation in habitus and size, with smaller and almost uniformly brown specimens and larger specimens with evident clear stripes on the forewing.

Male genitalia (Figs 26-27): Cfr. LANDRY, 2006.

Female genitalia (Figs 28-29): Cfr. LANDRY, 2006.

Bionomy: Chris Snyers, who regularly visits Lima over the Christmas period, observed many larvae feeding on *Portulaca* sp. (Portulacaceae) leaves and managed to breed adults, allowing Hugo van der Wolf to identify the species. Data on the flight period (August for Meyrick specimens, December-January for Snyers specimens, from late January to early March for ZMUC specimens) suggest more than one generation. The larval case (Figs 14: a, b) is cylindrical, more expanded in the anterior part, 5.5 mm long, dark brown with a cottony aspect; the anal opening is triangular; the oral opening is small, circular and located on the ventral side and not at the anterior end, as in most Coleophoridae; the mouth angle is 0°-5°.

Distribution: The species is only known from Peru (Departments of Lima and Ancash).

#### *Coleophora andina* Baldizzone, sp. n. (Fig. 5)

Material examined: Holotype ♂: "PERU, Dept. Lima | 3:12 km SE Chosica | Zárate, 2200-2600 m | 23-25-i-1987 | O. Karsholt leg. | Zool. Mus. Copenhagen"; "Bldz PG n° 9793 ♂", Coll. ZMUC.

Diagnosis: Species of small size and greyish habitus. The male genitalia resemble those of *C.*

*intexta* Meyrick, 1917 and those of *C. darwini* Landry, 2006 with evident differences: the protuberance in the ventral corner of the sacculus is longer and thinner, that in the dorsal corner is longer, thinner and straight with the little tooth at the base much smaller and located more towards the outer edge. The phallosome is shorter and more sclerotized and apically tapered with characteristic ridges on the juxta rods. The cornuti are much thinner, less numerous and arranged in a row, while those of the other two species are bundled in the shape of a robust thorn.

Description: Wingspan 10 mm. Head dirty white, frons light brown. Antenna dirty white, scape without erect scales. Labial palp whitish, suffused with light brown on outside; the second article is 2.5 times as long as the third. Proboscis normally developed. Thorax whitish. Forewing of uniform brownish grey colour; darker fringes. Hindwing grey with fringes of the same colour. Abdomen whitish.

Male genitalia (Figs 31, 33, 34): Gnathos knob oval. Tegumen elongated, narrow in middle, pedunculus slightly dilated outside. Transtilla ribbon-shaped, dilated at apex. Valvula small, sclerotized on outer edge. Cucullus short, ear-shaped. Sacculus curved and thickened on ventral edge with short pointed tip in ventral corner and protrusion in shape of a straight horn in dorsal corner; tip of the protuberance reaching dorsal edge of cucullus with a rounded tooth at the base. Phallosome short, well sclerotized with juxta rods almost completely merged in the basal 2/3, with thin ventral crest in lower part of apical part. There are three elongate spine-shaped cornuti arranged in one row.

Female genitalia: Unknown.

Abdominal structures (Fig. 32): No latero-posterior struts, transversal strut thick, sclerotized on the proximal edge only in central part. Tergal disk (3<sup>rd</sup> tergite) about 8 times as long as wide, covered with about 20 spines.

Bionomy: The early stages and the foodplant are not known. The only known specimen was collected in late January.

Distribution: Peru (Andean area of the Department of Lima).

Etymology: The name derives from the Spanish word “andino-a” = adjective that indicates the origin from the Andes.

#### *Coleophora aconaguae* Baldizzone, sp. n. (Fig. 6)

Material examined: Holotype ♂ “CHILE: Aconagua | 67: Los Andes | Curimón, 700 m | 28.iii.1979 | Misión Científica Danesa”; “Genital no. 5123 | Bent W. Rasmussen”, coll. ZMUC.

Paratypes: Idem, 1 ♂ (PG Bldz 11623), 5 ♀♀ (PG BWR 5122, 5163, Bldz 12831, 12833, 12834), coll. ZMUC and coll. Bldz; 1 ♂ (PG Bldz 5392) “Argentina | Buenos Aires | V-1937 “coll. Cte Hartig”, coll. Bldz.

Diagnosis: Species of medium-small size and of light ochre habitus. The male genitalia are not similar to those of any other neotropical species due to the shape of the arched sacculus and with a long sharp protuberance in the dorsal corner and especially for the characteristic phallosome with dorsal teeth. The female genitalia resemble those of *C. saltae* van der Wolf, 1999, an Argentinian species known only from the female. The main differences are as follows: in *C. aconaguae* Baldizzone, sp. n. the colliculum is smaller and less sclerotized in the cup-shaped part while in the proximal part it is shorter, wider and sclerotized; the spinulate part of the ductus bursae is wider and longer and the medial line begins in a transparent stretch shortly after the central convolution while in *C. saltae* the ventral stretch is only in the spinulate part.

Description: Wingspan 10-12 mm. Head cream or light ochre. Antenna ringed white and light ochre; scape without erect scales. Labial palp white, ochre suffused on outside; second article about 1.5 times longer than third. Thorax light ochre. Forewing very clear ochre, slightly streaked with ferruginous along veins in apical area; costal fringes concolorous with a small darker apical tuft; dorsal fringes light grey. Hindwing light grey with fringes concolorous. Abdomen cream-colored.

Remark: As with other neotropical species, there is a discreet chromatic variation between specimens. Some are darker in colour with an ochre forewing and brown hindwing.

Male genitalia (Figs 35, 37-39): Gnathos knob globular. Tegumen short and stocky, narrowed in the middle, pedunculus slightly dilated outside. Transtilla straight, short and thin. Valvula small, few sclerotized. Cucullus short, and wide, narrower at the apex. Sacculus low, curved and thick ventral edge, dorsal corner with curved and pointed tip horn-shaped. Phallosome short, well sclerotized in 2/3 of the base and with evident division of the two juxta rods in the terminal part where they are surmounted each by two or three triangular teeth. Cornuti two closely united, long, pointed in the shape of a thorn with a wider base.

Female genitalia (Figs 40-42): Papillae anales long and oval. Apophysis posterioris twice the length of the anterioris. Sterigma trapezoidal hollowed from the sinus vaginalis. Ostium bursae wide, oval. Colliculum narrow cup-shaped in the proximal part where the medial line ends. Ductus bursae long, crossed by the medial line in the posterior part wrapped in conical spines arranged in two rows; anterior part of the ductus wider and more transparent, with two sclerotized spirals in correspondence of the insertion of the ductus seminalis. Bursa copulatrix large, corpus oval sac-shaped without signum.

Abdominal structures (Fig. 36): No latero-posterior struts, transverse strut straight, with a thin proximal edge and a thicker distal edge, except in the middle. Tergal disk (3<sup>rd</sup> tergite) about 6 times as long as wide, covered by about 25 spines.

Bionomy: The early stages and the foodplant are not known. The specimens from Chile were collected in late March and those from Argentina in May.

Distribution: Chile (Chilean side of Aconcagua) and Argentina (Buenos Aires).

Etymology: The name derives from Mount Aconcagua.

#### *Coleophora breyeri* Pastrana, 1963 (Figs 7-9)

Original material examined: Paratype: 1 ♀ “TIGRE | 10.1939 | J. A. Pastrana”; “*Coleophora breyeri* sp. n. | J. A. Pastrana det.”; “PARATYPUS” [pink label]; “Genital no. 5170 | Bent W. Rasmussen”, ex coll. Pastrana, coll. ZMUC.

New material examined: 1 ♂, 1 ♀ “ARGENTINA, Neuquén | 12: Río Limay | Arroyo | 22-XII-1978 | Misión Científica Danesa”; 3 ♂♂ “ARGENTINA: Río Negro | 7: S. C de Bariloche | Colonia Suiza | 610 m | 7-XI-1978 | Misión Científica Danesa”; 3 ♂♂, 1 ♀, ibidem, 6-XII-1978; 1 ♂, 1 ♀ ibidem, 10-XII-1978; ♀, 3 ♂♂, 2 ♀, ibidem, 12-XII-1978; 2 ♂♂, ibidem, 24-XII-1978; 2 ♂♂, 2 ♀♀, ibidem, 31-XII-1978; 1 ♂, 1 ♀ ibidem, 2-I-1979; 1 ♂, ibidem, 3-I-1979; 2 ♂♂, ibidem, 5-7-I-1982, Nielsen & Karsholt; 1 ♀ “ARGENTINA, Chubut | 13: El Bolsón | Lago Pueblo, 220 m | 21-XI-1978 | Misión Científica Danesa; 1 ♂ “CHILE, Prov. Cauquenes | 10 km NW Cauquenes | Río Tutuven, 300 m | 3-4-X-1983 | E. S. Niesen”; 1 ♂ “CHILE, Valdivia | 15: 20 km S Valdivia | Rincón de la Piedra | 180 m | 15-XI-1981 | Nielsen & Karsholt”, coll. ZMUC e coll. Bldz

Additional material: 1 ♀ “BR[AZIL], Bahia, transition forest next to marsh, ± 9 km E Boa Nova, GPS: 750 m elev. | S 14.413240°, W 040.13502° | 6 and 8-XII-2013 uvl | B. Landry & V. Becker”, coll. MHNG.

Diagnosis: Species of rather variable appearance both for the habitus and for the size. The genitalia resemble those of the Nearctic species *C. cratipennella* Clemens, 1864 and the related Palearctic species *C. tamesis* Waters, 1929 (BALDIZZONE & LANDRY, 1993) with evident differences in the shape of the sacculus, phallosome and cornuti in the male, and of sterigma, colliculum and ductus bursae in the female.

Remarks: The species was described from specimens collected in Argentina: Tigre (Prov. Buenos Aires) (PASTRANA, 1963). The original description is not easily accessible. Moreover, the illustration of the female genitalia does not reflect a *Coleophora* species, but a *Caloptilia* species (J.-F. Landry, pers. comm.). Therefore, it seems opportune to redescribe *C. breyeri*. Its identity is based on the figure of the male genitalia in the original description, and from my study of a paratype.

In 1999 van der Wolf described *C. argentinae*, illustrating the male genitalia which, according to the photo published, is identical to those of *C. breyeri*, while those of the female are very different. The adult description corresponds to the habitus of some specimens of *C. breyeri* found in the ZMUC

material. I think that *C. argentinae* was described on the basis of males and females of two different species and it is a junior synonym of *C. breyeri* Pastrana, 1963, **syn. n.**

Description: Pastrana's specimens and the one from Brazil have a wingspan of 10-12 mm. Head white suffused with light brown dorsally. Antenna ringed in white and light ochre, scape white without erect scales. Labial palp white, tinged with ochre outside; the second article is about 1.5 times longer than the third. Proboscis normally developed. Thorax whitish. Forewing light ochre, white streaked along the costa and veins; fringes light grey. Hindwing and fringes light grey. Abdomen whitish.

Specimens from ZMUC: Wingspan 12-15 mm. Head whitish to light brown. Antenna ringed white and brown, scape whitish or light ochre without erect scales. Labial palp white on the internal side, ochre outside; second article about twice as long as third. Proboscis normally developed. Forewing from light ochre to brown, whitened in more or less extended way from anal fold to costa; fringes light ochre grey. Hindwing brown; fringes like those of forewing. Abdomen whitish to brown.

Male genitalia (Figs 43, 45-47): Gnathos knob globular. Tegumen very narrow in the middle, pedunculus slightly dilated outside. Transtilla thin and long, ribbon-like. Valvula small, curved on the ventral edge. Cucullus short and stocky, curved and sclerotized on the dorsal side. Sacculus small, ventral edge slightly curved, ventral corner with triangular protuberance, lateral edge linear or slightly concave. Phallosome with two symmetrical juxta rods terminated at the apex slightly sclerotized with an oval tip; in the distal half they are dorsally sclerotized and on each there are two triangular teeth. Cornuti divided into two groups: proximally with one pine needle-shaped cornutus, distally with four curved needle-shaped cornuti of progressive lengths, joined at base in a claw-like formation.

Female genitalia (Figs 48-50): Papillae anales narrow and long. Apophysis posterioris twice as long as anterioris. Sterigma narrow and elongated, curved on the distal edge, slightly followed by sinus vaginalis. Ostium bursae large, oval. Colliculum large, sclerotized, cup-shaped. Ductus bursae thin posteriorly, crossed by medial line, covered with small spines in section between insertion of ductus seminalis and distal half; anterior part of ductus wider, convoluted, almost completely covered with small plates. Corpus bursae oval, with leaf-shaped signum.

Abdominal structures (Fig. 44): No latero-posterior struts, the transverse strut with thicker proximal edge and thinner distal edge in the middle. Tergal disk (3<sup>rd</sup> tergite) 6 times as long as wide, with about 30 conical spines.

Bionomy: The early stages and the foodplant are not known. The two related species *C. cratipennella* and *C. tamesis* develop on *Juncus* spp. (Juncaceae). At the collecting site Colonia Suiza is a small bog with *Juncus* sp. (Karsholt, pers. comm.) and the specimen of *C. breyeri* from Brazil was collected on the edge of a swampy area, where they are probably also some Juncaceae (B. Landry, pers. comm.). Pastrana's specimens were collected in October and those in the ZMUC in the months between October and January.

Distribution: Argentina, Brazil, Chile.

#### *Coleophora haywardi* Pastrana, 1963 (Fig. 10)

Original material examined: Paratypes: 1 ♂ "R. A.[rgentina], Prov. Salta | Cafayate | 1650 ml K. J. Hayward 1953"; "ex: *Gomphrena maritima* Gill"; "*Coleophora haywardi* sp. n. | 1963 | J. A. Pastrana det."; 1 ♂ "PARATYPUS" [pink label]; "Genital no. 5132 | Bent W. Rasmussen". 1 ♂, same labels (PG Bldz n° 11620 ♂), coll. ZMUC.

New material examined: 8 ♂♂, 19 ♀♀ "R. ARGENTINA | Salta - Dep. Anta | Salta - Forestal | 50 km E | J. V. González | 15-22-I-1980 | Col: R. Golbach".

Remarks: The species was described by Pastrana on 28 specimens bred by K. J. Hayward. The genitalia were illustrated with a drawing in the original publication and with photographs by VAN DER WOLF (1999). I believe it necessary to provide a redescription of the species.

Diagnosis: Medium-sized species with clear ochre habitus. The genitalia have some similarities with those of *C. kosteri* van der Wolf, 1999, a species known only from Argentina. In the male genitalia the most evident difference is the shape of the sacculus, which in *C. haywardi* is narrower and longer

with two characteristic teeth towards the apex; in the female genitalia the spinulate part of the ductus bursae is wider and much longer.

Description: Wingspan 13-15 mm. Head white. Antenna white or light ochre, scape white without erect scales. Labial palp white, tinged with light ochre outside; second segment about 1.5 times as long as third. Proboscis normally developed. Thorax white. Forewing white, sometimes streaked with very light ochre along veins; fringes white or light ochre; dorsal fringes light grey. Hindwing and fringes light grey. Abdomen white or cream.

Male genitalia (Figs 51, 53-55): Gnathos knob oval. Tegumen short, very narrow in the middle, pedunculus slightly dilated outside. Transtilla thin and elongated, united medially. Valvula small, subtriangular with rounded ventral part. Cucullus short and wide, ear-shaped. Sacculus with curved ventral edge, with two teeth of different sizes in distal half and a pointed triangular tip at dorsal corner. Phallosome long, curved with symmetrical juxta rods thinned distally, sclerotized only dorsally. Cornuti consisting of numerous thorns of different lengths gathered at base in long braid.

Female genitalia (Figs 56-58): Papillae anales narrow and oval. Apophysis posterioris twice as long as anterioris. Sterigma ogival. Ostium bursae small, V-shaped. Colliculum very sclerotized, shaped like narrow calyx; medial line ending in proximal narrower part. Ductus bursae wider and longer distally, crossed by medial line and completely covered with small spines; proximal part transparent, except in convolution at insertion of ductus seminalis. Corpus bursae elongated, piriform-shaped, with leaf-shaped signum.

Abdominal structures (Fig. 52): Latero-anterior struts about twice as long as the latero-posterior. Transverse strut straight, with distal edge thicker than the proximal edge sclerotized only in the middle. Tergal disk (3<sup>rd</sup> tergite) about 4.5 times as long as wide, covered by over 50 conical spines.

Bionomy: The host plant is *Gomphrena martiana* Gillies ex Moq. (Amaranthaceae). In the original description by Pastrana and on the labels of Hayward's specimens is written "maritiana". The larval case (Figs 15a, b), built with silk, is cylindrical, 14-16 mm long, ochre and parchment-like appearance with evident growth lines. The oral opening with wide edge, angled by about 10°-15°; the anal opening is triangular. In the ZMUC material there are numerous cases in various stages of development; the juvenile ones are whitish, covered with food frustules dorsally and in the mouth area and the anal opening they do not yet have a triangular shape. The construction of the case is probably the same as those of many Palearctic species such as *C. follicularis* (Vallot, 1802).

Distribution: The species is known only from Argentina (Department of Salta).

### *Coleophora rasmussenii* Baldizzone, sp. n. (Fig. 11)

Material examined: Holotype ♂: "ARGENTINA, Neuquén | 12: Río Limay | Arroyito | 16.xi.1978 | Misión Científica Danesa"; "Genital no. 5129 | Bent W. Rasmussen", coll. ZMUC.

Paratype ♀: Idem, (GP BWR 5128), coll. ZMUC.

Diagnosis: Medium-sized species characterized by a light brown forewing with white stripes along the veins. The genitalia are different from those of all other known neotropical species in the male by the unmistakable strongly curved shape of the sacculus with a long pointed extension at the dorsal corner; in the female genitalia the sterigma is characteristically wider than high, more strongly sclerotized in proximal 2/3.

Description: Wingspan 13 mm. Head white dorsally and light brown on the frons. Antenna: scape white without erect scales; flagellum light brown, except in basal 1/6 ringed white and light brown. Labial palp white, suffused with light brown outside; second article about twice as long as third. Proboscis very short. Thorax white. Tegula white suffused light brown outside. Forewing light brown, sharply striated white along costa and veins in costal half, almost completely brown between anal fold and dorsum; fringes light grey. Hindwing and fringes light grey. Abdomen not observed because dissected before my study.

Male genitalia (Figs 59, 61-62): Gnathos knob oval. Tegumen slightly constricted medially, pedunculus short, enlarged outside. Transtilla thin, sharp at the apex. Valvula small, with subtriangular



ventral section. Cucullus large, wide, ear-shaped. Sacculus strongly curved, thicker on ventral edge, ending at dorsal corner with long, thin and sharp projection. Phallosome with two juxta rods symmetrical, long, curved, tapered progressively in distal direction, with thin and sharp apex. Cornuti consisting of numerous spines of different lengths joined to form a long braid.

Female genitalia (Figs 63-65): Papillae anales small, oval. Apophysis posterioris twice as long as anterioris, more robust and strongly sclerotized. Sterigma trapezoidal, wider than long, distal edge curved, bristling with setae, much hollowed medially by sinus vaginalis, clearly more thickly sclerotized in proximal 2/3 and corrugated on each side of ostium bursae. Ostium bursae oval. Colliculum cup-shaped with proximal part narrower, tubular, transparent, sclerotized on outer edges. Ductus bursae without medial line, covered with small spines in distal half while proximal part almost transparent, lightly sclerotized. Corpus bursae oval; signum leaf-shaped.

Abdominal structures (Figs 60, 63): Without lateral-posterior struts; transverse strut slightly curved, with proximal edge very thin compared to distal one. Tergal disk (3<sup>rd</sup> tergite) about 7 times longer than wide, covered with about 25 spines in male; in female about 9 times longer than wide and covered with more than 50 spines.

Bionomy: The early stages and the foodplant are not known. The specimens were collected in November.

Distribution: Argentina (Province of Neuquén, near Arroyito, Río Limay).

Etymology: The species is dedicated to Bent Waldemar Rasmussen in recognition of his work on the South American Coleophoridae of ZMUC.

### *Coleophora peruana* Baldizzone, sp. n. (Fig. 12)

Material examined: Holotypus ♂: "PERU, Dep. Ancash | 25: 15 km N Caras | Río Salta Valley | 19.-21-ii-1987, ca. 2000 m | O. Karsholt leg. | Zool. Mus. Copenhagen"; "Bldz PG n° 9793 ♂", coll. ZMUC.

Diagnosis: Small species of light grey habitus. In male genitalia it resembles *C. lepyropis* Meyrick, 1921, a light ochre species known only from Brazil with faint streaks along the veins. Compared to the male genitalia of *C. peruana* Baldizzone, sp. n., the cucullus of *C. lepyropis* is larger, the transtilla smaller and thinner, the lateral edge of the sacculus is less jagged and the phallosome is shorter.

Description: Wingspan 11 mm. Head white with cream tinge on the frons. Antenna of uniform light ochre colour; scape without erect scales. Labial palp white, suffused with light brown outside; the second article is about 1.5 times longer than the third. Proboscis normally developed. Thorax shiny white. Forewing light grey, slightly shaded creamy at the apex; costal fringes creamy, dorsal fringes grey. Hindwing grey with concolorous fringes. Abdomen whitish.

Male genitalia (Figs 66, 68-69): Gnathos knob globular. Tegumen narrowed in the middle, pedunculus dilated outside. Transtilla short, curved, pointed at the apex. Valvula small, narrow and elongated. Cucullus small and short, wider in the central part. Sacculus, slightly curved on the ventral edge, very thick lateral outer edge, inclined, irregularly jagged, dorsal corner of irregularly triangular shape. Phallosome with two long juxta rods, sclerotized in the dorsal part, with a small tooth in the last 1/3 distal and a curved apical tooth. The cornuti are numerous spines united in a robust elongated formation.

Abdominal structures (Fig. 67): No latero-posterior struts; transverse strut straight with proximal edge thicker medially and distal edge thinner medially. Tergal disk (3<sup>rd</sup> tergite) about 6 times as long as wide, covered with about conical 25 spines.

Bionomy: The early stages and the foodplant are not known. The specimen was collected in February.

Distribution: Peru (Department of Ancash, Río Salta Valley).

Etymology: From the Spanish word "peruano-a" = adjective that indicates the origin from Peru.

*Coleophora versurella* Zeller, 1849

= *C. chiarelliae* Pastrana, 1963

Material examined: 1 ♂, 5 ♀♀ “CHILE: Aconcagua | 67: Los Andes | Curimón, 700 m | 28-III-1979 | Misión Científica Danesa”, coll. ZMUC.

Remark: Species introduced in South America. Pastrana in 1963 described it also under the name *C. chiarelliae*, a junior synonym, from specimens bred in Argentina. The species was subsequently collected also in Chile (FRÍAS *et al.*, 1996).

Distribution. Palearctic: Widely distributed. Oriental: India. Nearctic (adventive): Canada, U.S.A. Neotropical (adventive): Argentina, Chile (BALDIZZONE *et al.*, 2006).

*Coleophora mayrella* (Hübner, [1813])

Material examined: Many specimens from Argentina and Chile, studied by J.-F. Landry, who published a list of the material examined (LANDRY, 1994).

Distribution. Palearctic: Europe, North Africa, Turkey, Armenia, Central Asia, Russian Far East. Nearctic (adventive): Canada, U.S.A. Neotropical (adventive): Argentina, Chile. Australian (adventive): Australia, New Zealand (BALDIZZONE *et al.*, 2006).

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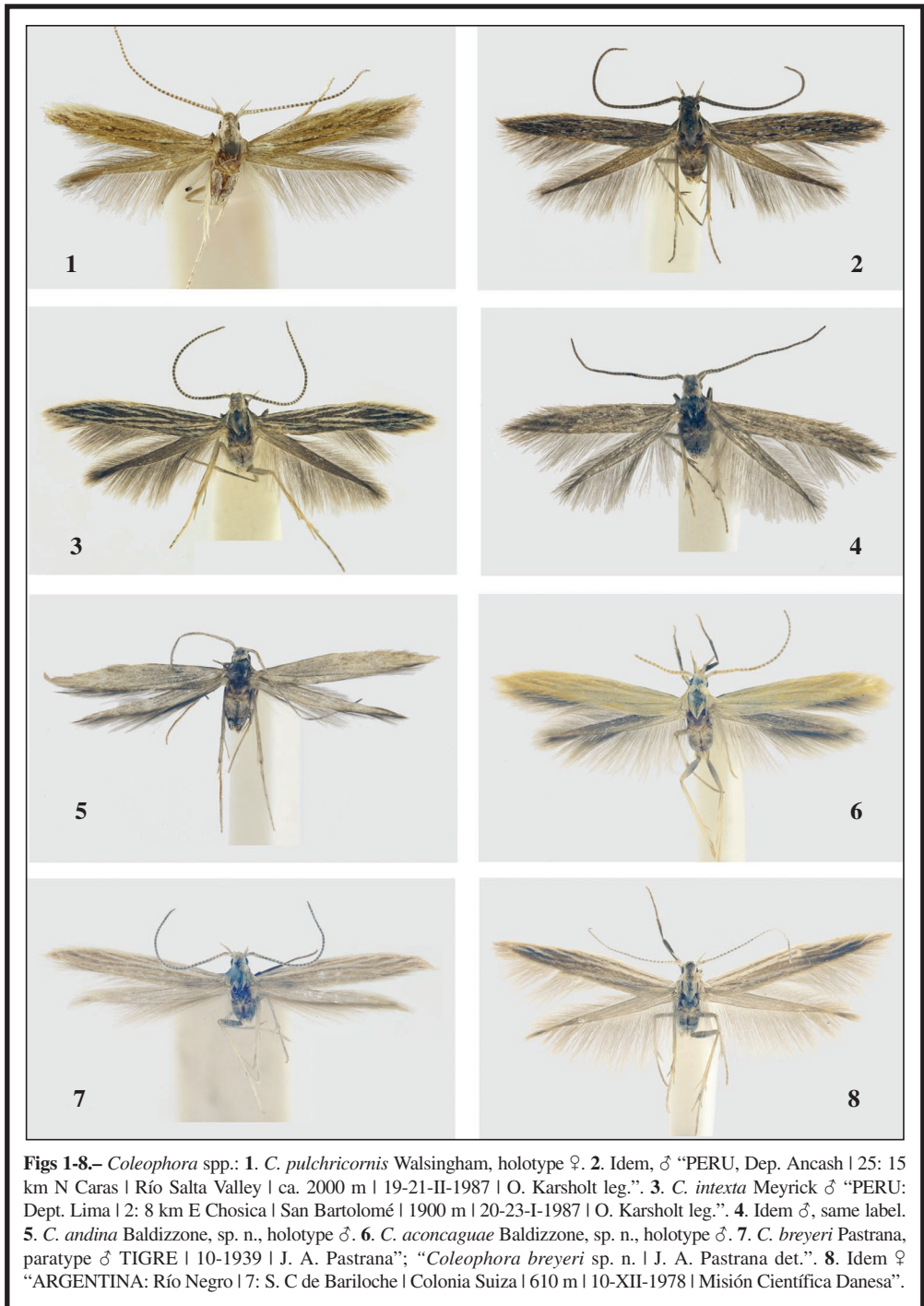
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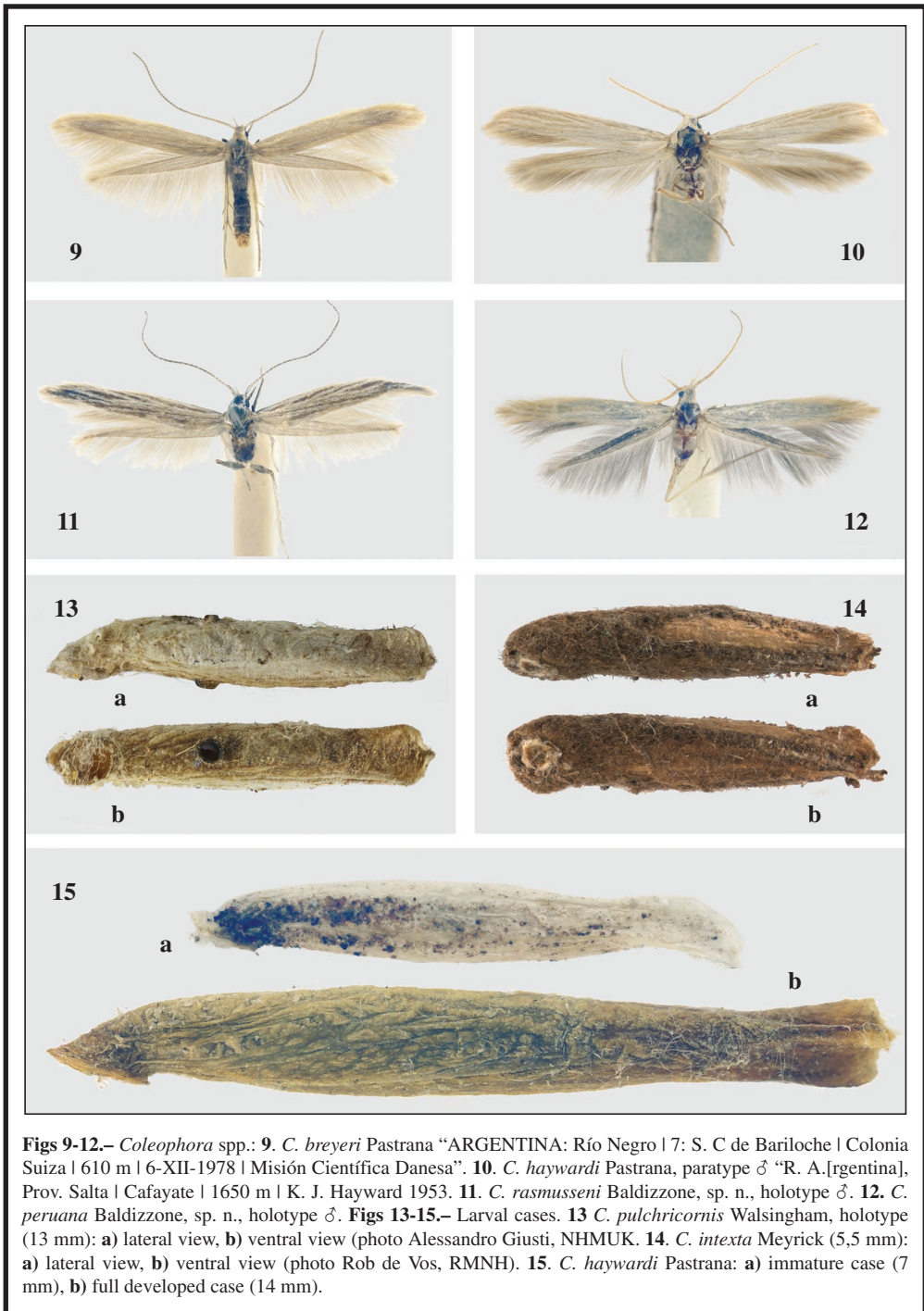
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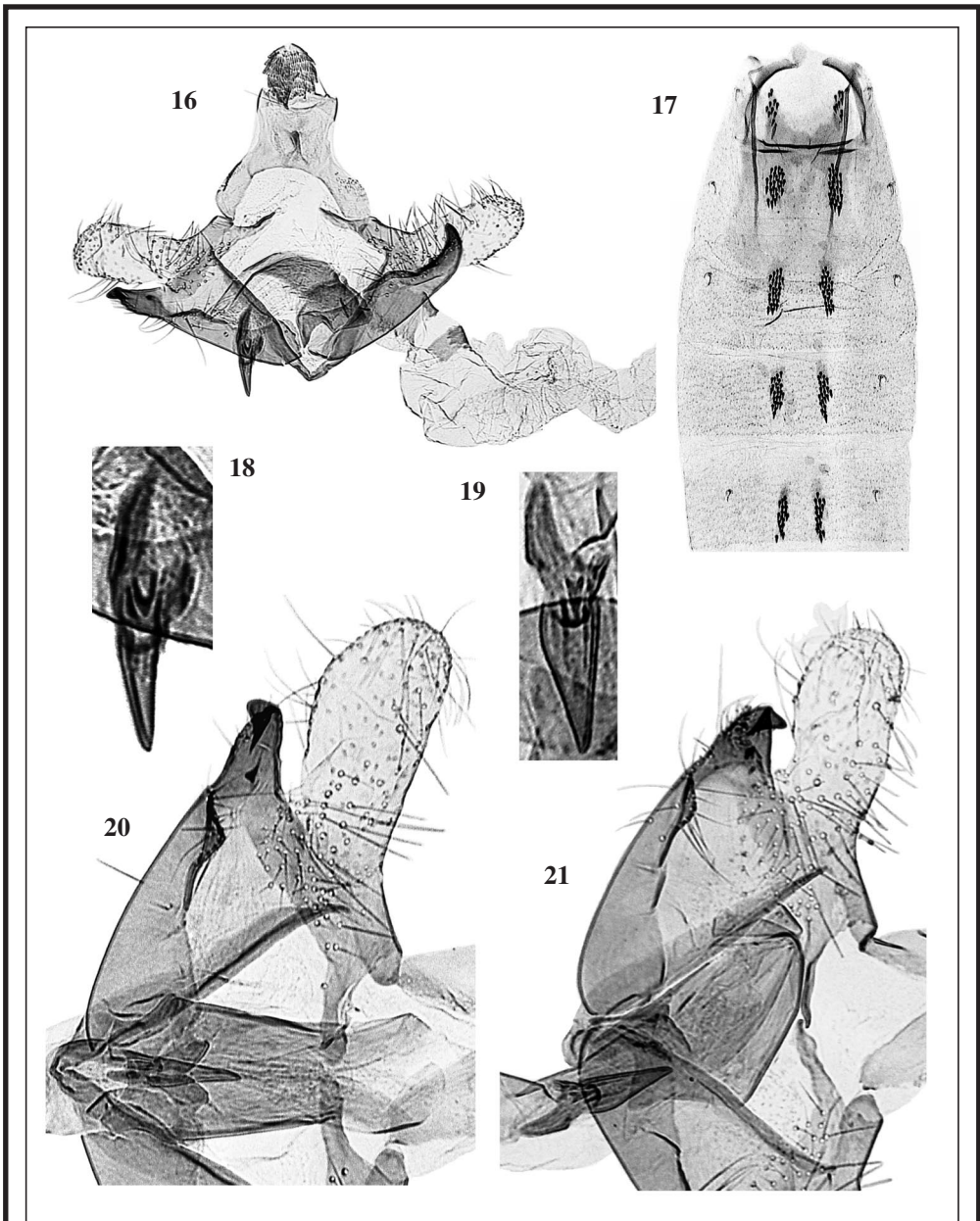
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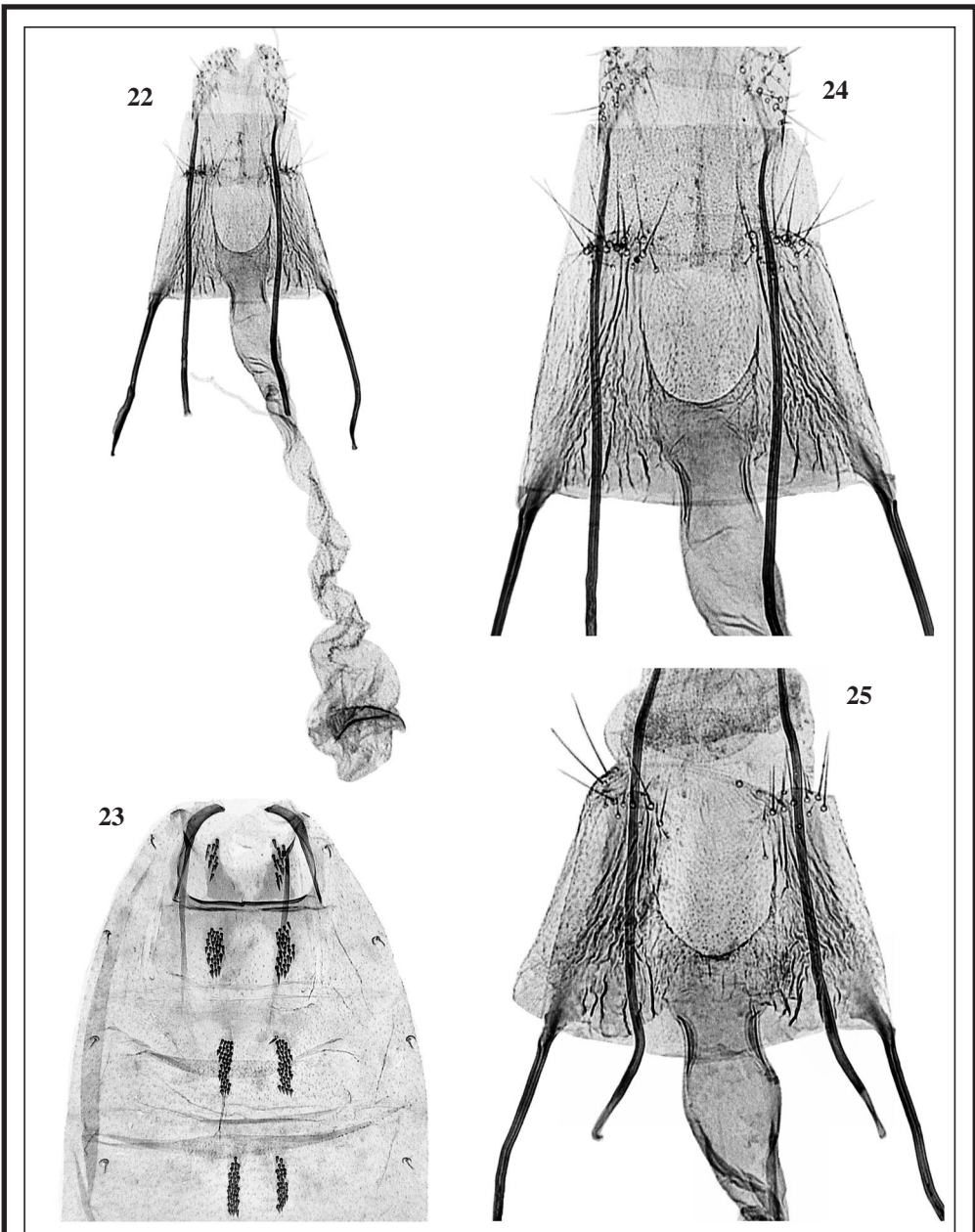
**Figs 1-8.**— *Coleophora* spp.: **1.** *C. pulchricornis* Walsingham, holotype ♀. **2.** Idem, ♂ “PERU, Dep. Ancash | 25: 15 km N Caras | Río Salta Valley | ca. 2000 m | 19-21-II-1987 | O. Karsholt leg.”. **3.** *C. intexta* Meyrick ♂ “PERU: Dept. Lima | 2: 8 km E Chosica | San Bartolomé | 1900 m | 20-23-I-1987 | O. Karsholt leg.”. **4.** Idem ♂, same label. **5.** *C. andina* Baldizzone, sp. n., holotype ♂. **6.** *C. aconaguae* Baldizzone, sp. n., holotype ♂. **7.** *C. breyeri* Pastrana, paratype ♂ TIGRE | 10-1939 | J. A. Pastrana”; “*Coleophora breyeri* sp. n. | J. A. Pastrana det.”. **8.** Idem ♀ “ARGENTINA: Río Negro | 7: S. C de Bariloche | Colonia Suiza | 610 m | 10-XII-1978 | Misión Científica Danesa”.



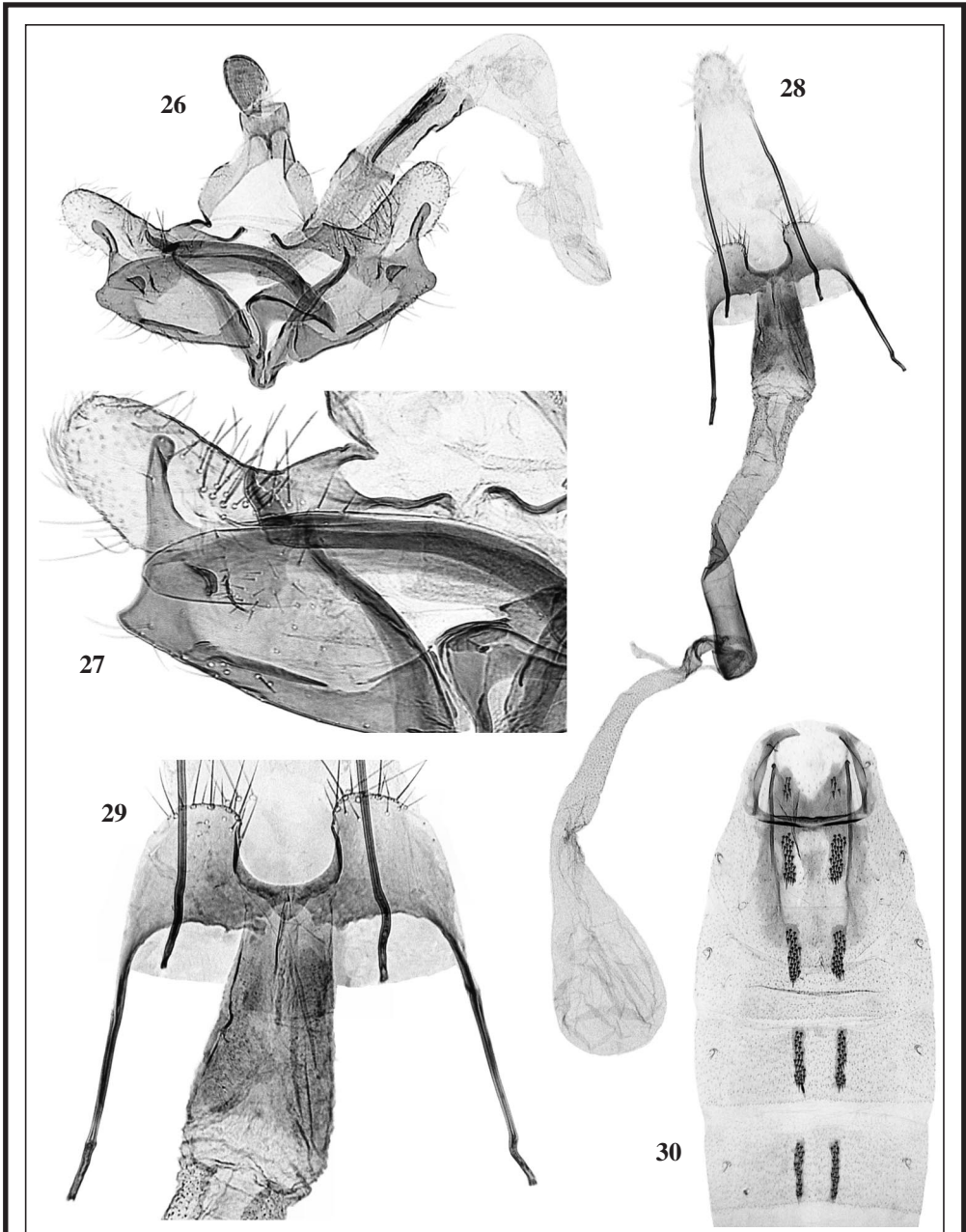
**Figs 9-12.**– *Coleophora* spp.: **9.** *C. breyeri* Pastrana “ARGENTINA: Río Negro | 7: S. C de Bariloche | Colonia Suiza | 610 m | 6-XII-1978 | Misión Científica Danesa”. **10.** *C. haywardi* Pastrana, paratype ♂ “R. A.[rgentina], Prov. Salta | Cafayate | 1650 m | K. J. Hayward 1953. **11.** *C. rasmusseni* Baldizzone, sp. n., holotype ♂. **12.** *C. peruana* Baldizzone, sp. n., holotype ♂. **Figs 13-15.**– Larval cases. **13** *C. pulchricornis* Walsingham, holotype (13 mm): **a)** lateral view, **b)** ventral view (photo Alessandro Giusti, NHMUK. **14.** *C. intexta* Meyrick (5,5 mm): **a)** lateral view, **b)** ventral view (photo Rob de Vos, RMNH). **15.** *C. haywardi* Pastrana: **a)** immature case (7 mm), **b)** full developed case (14 mm).



**Figs 16-21.**– *C. pulchricornis* Walsingham. **16.** Male genitalia (GP Bldz 2909, paratype). **17.** Abdomen. **18.** Detail of cornutus. **19.** Same detail (GP Bldz 9790) “PERU, Dept. Lima | 29: 10 km S Paramonga | Barranca | sea level | 22-23-II-1987, O. Karsholt leg.”. **20.** Detail of cucullus, sacculus, phallosome (GP Bldz 9798) “PERU, Dep. Ancash | 25: 15 km N Caras | Rio Salta Valley | ca. 2000 m | 19-21-II-1987 | O. Karsholt leg.”. **21.** Same detail (GP Bldz 9790).

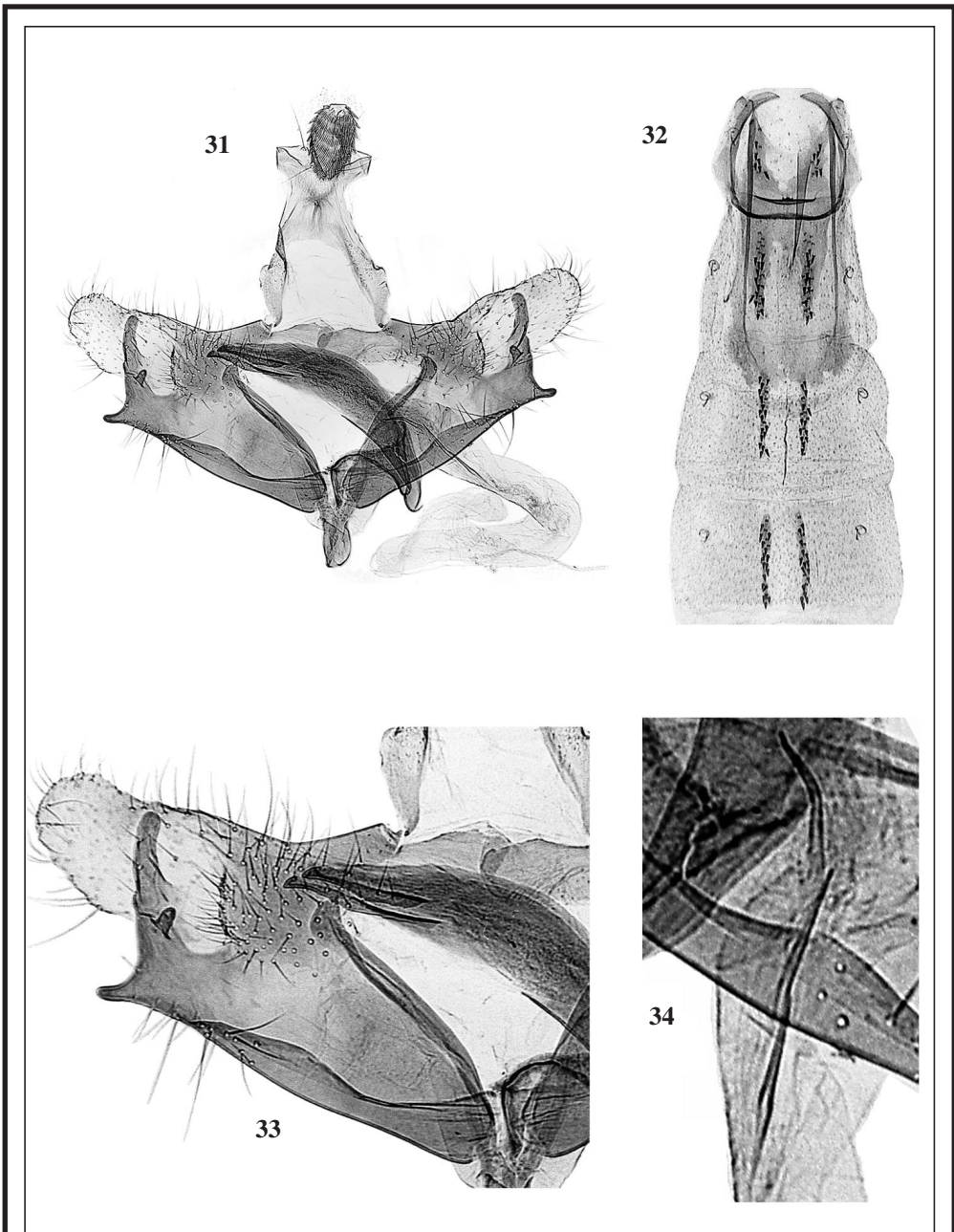


**Figs. 22-25.** - *C. pulchricornis* Walsingham. **22.** Female genitalia (GP Bldz 9801) "PERU, Dept. Lima | 30 m | Miraflores | 1-4-III-1987 | O. Karsholt leg". **23.** Abdomen. **24.** Detail of sterigma, ostium bursae, colliculum. **25.** Same detail (GP Bldz 9791) "PERU, Dept. Lima | 29: 10 km S Paramonga | Barranca | sea level | 22-23-II-1987, O. Karsholt leg."

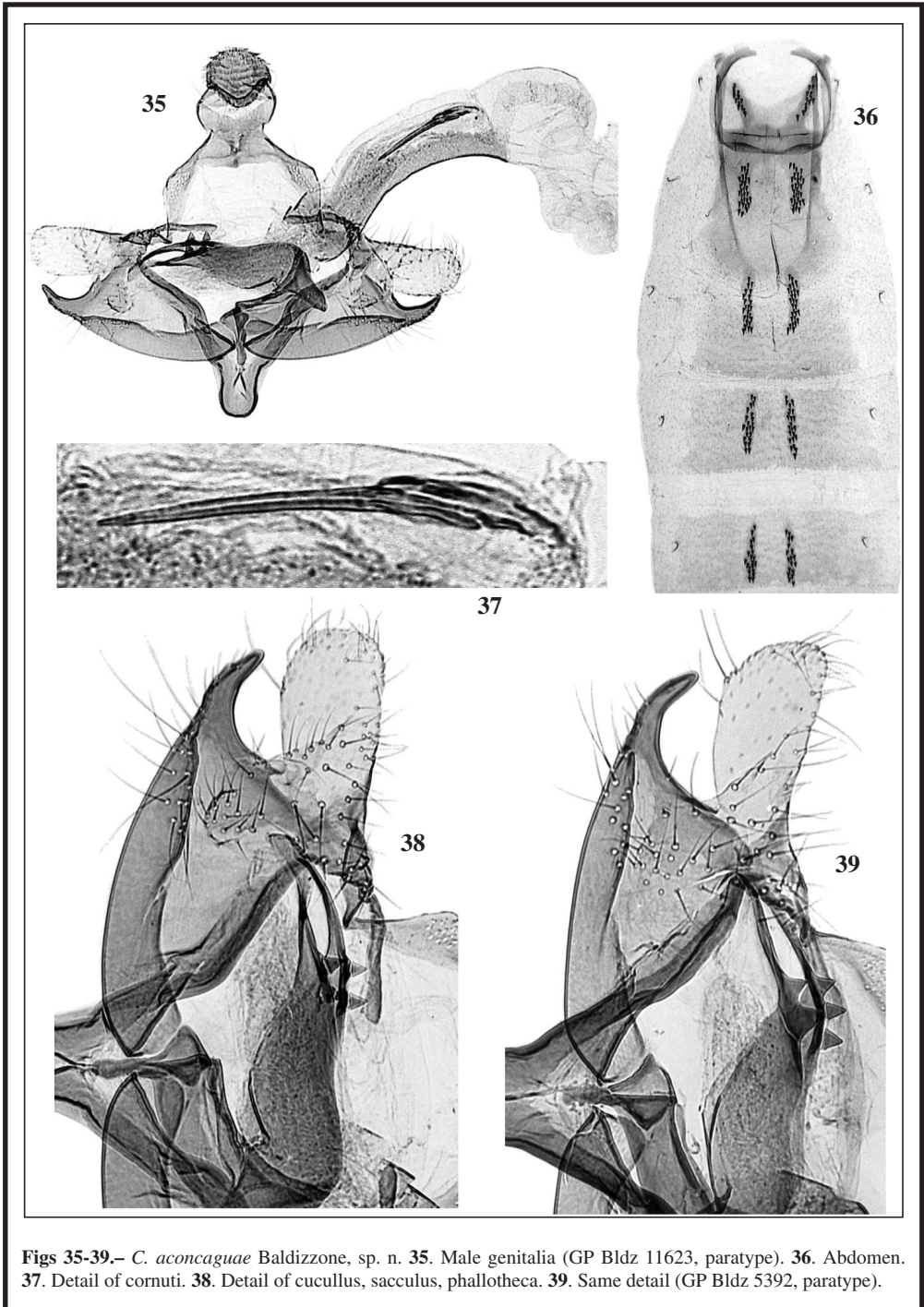


**Figs 26-30.** - *C. intexta* Meyrick. **26.** Male genitalia (GP Bldz 9796) "PERU: Dept. Lima | 2: 8 km E Chosica | San Bartolomé | 1900 m | 20-23-I-1987 | O. Karsholt leg.". **27.** Detail of cucullus, saccus, phallosome. **28.** Female genitalia (GP Bldz 9800) "PERU: Dep. Ancash | 25: 15 km N Caras | Río Salta Valley | ca. 2000 m | 19-21-II-1987 | O. Karsholt leg.". **29.** Detail of sterigma, ostium bursae, colliculum. **30.** Abdomen.

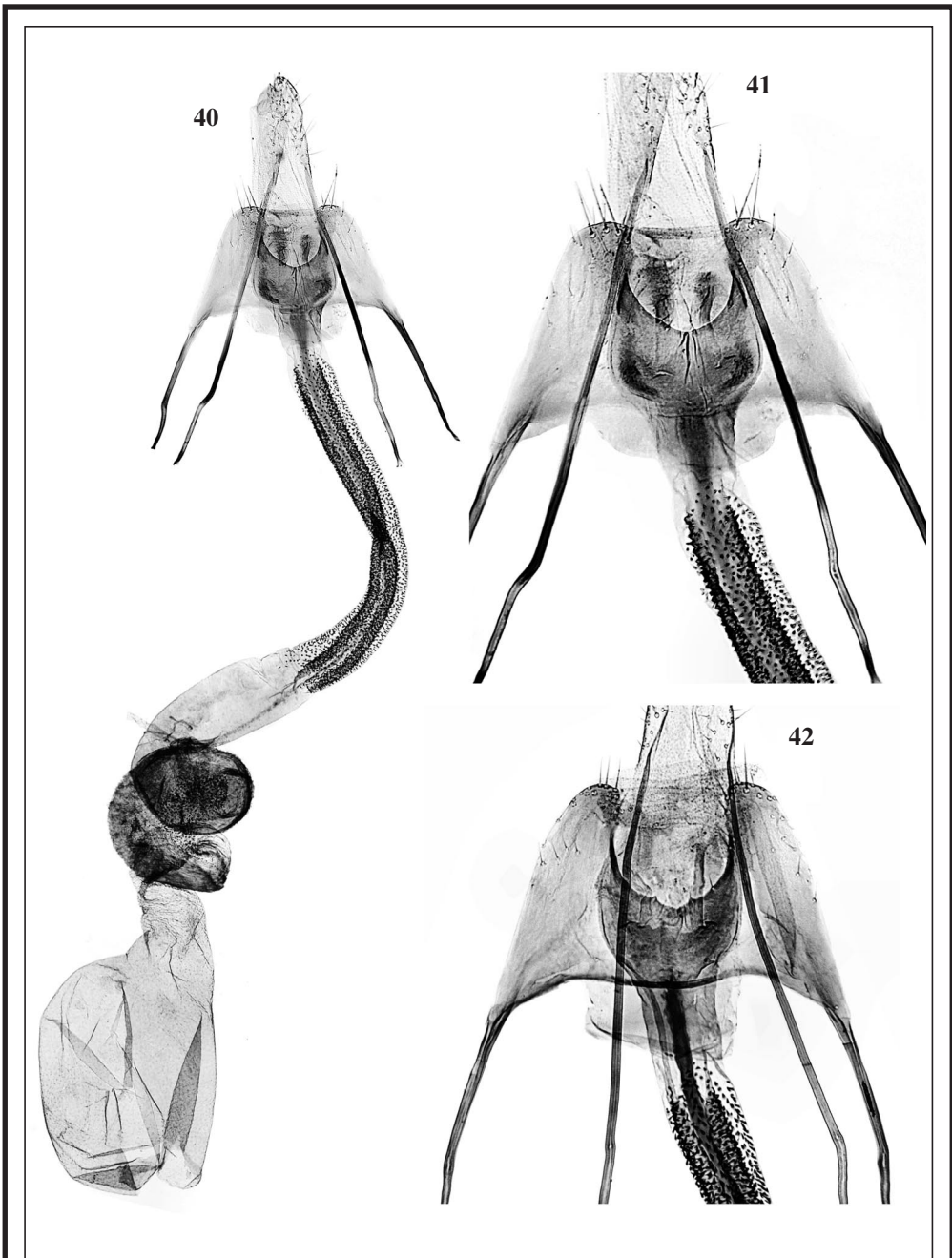




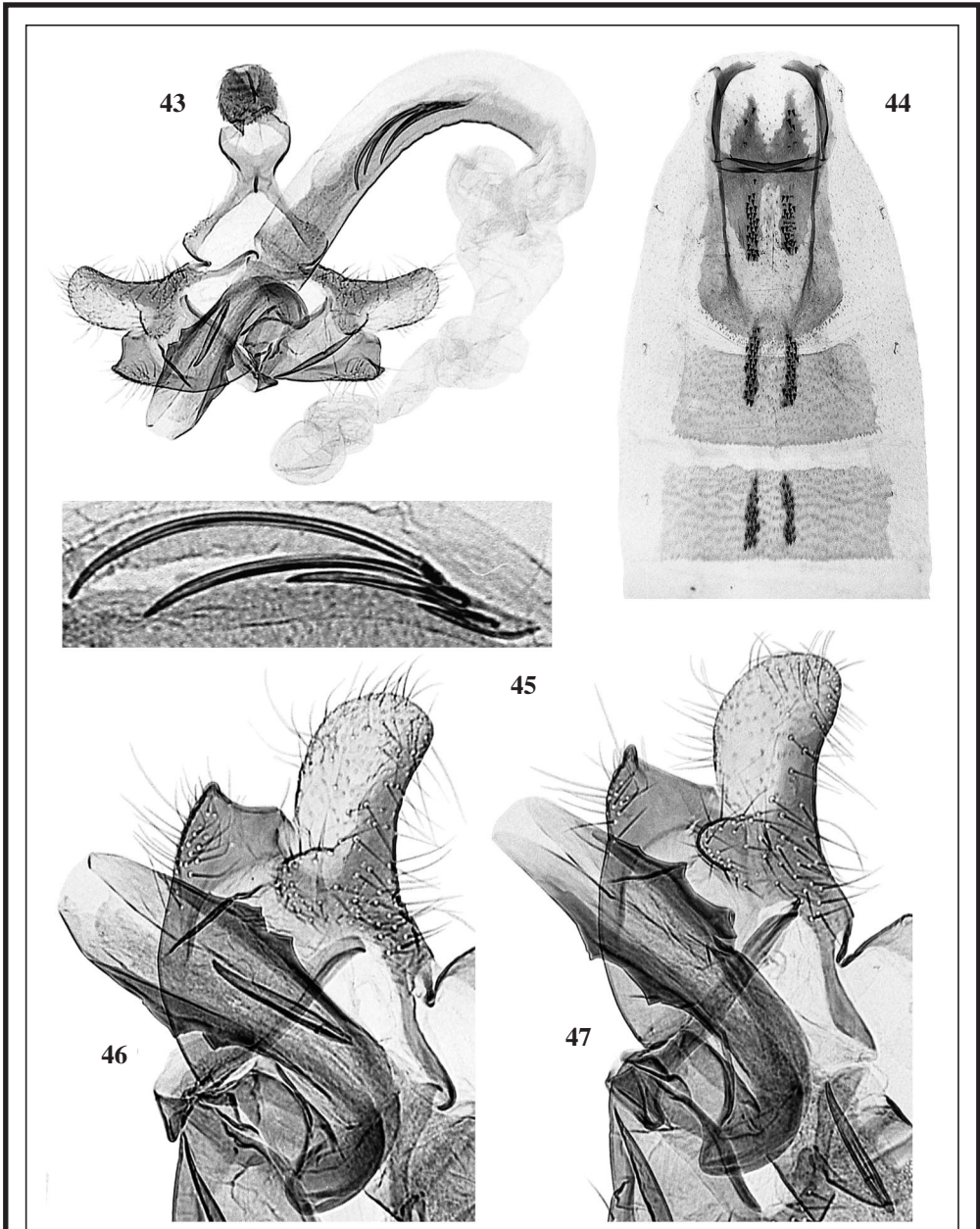
**Figs 31-34.**– *C. andina* Baldizzone, sp. n. **31.** Male genitalia (GP Bldz 9793, holotype). **32.** Abdomen. **33.** Detail of cucullus, saccus, phallosome. **34.** Detail of cornuti.



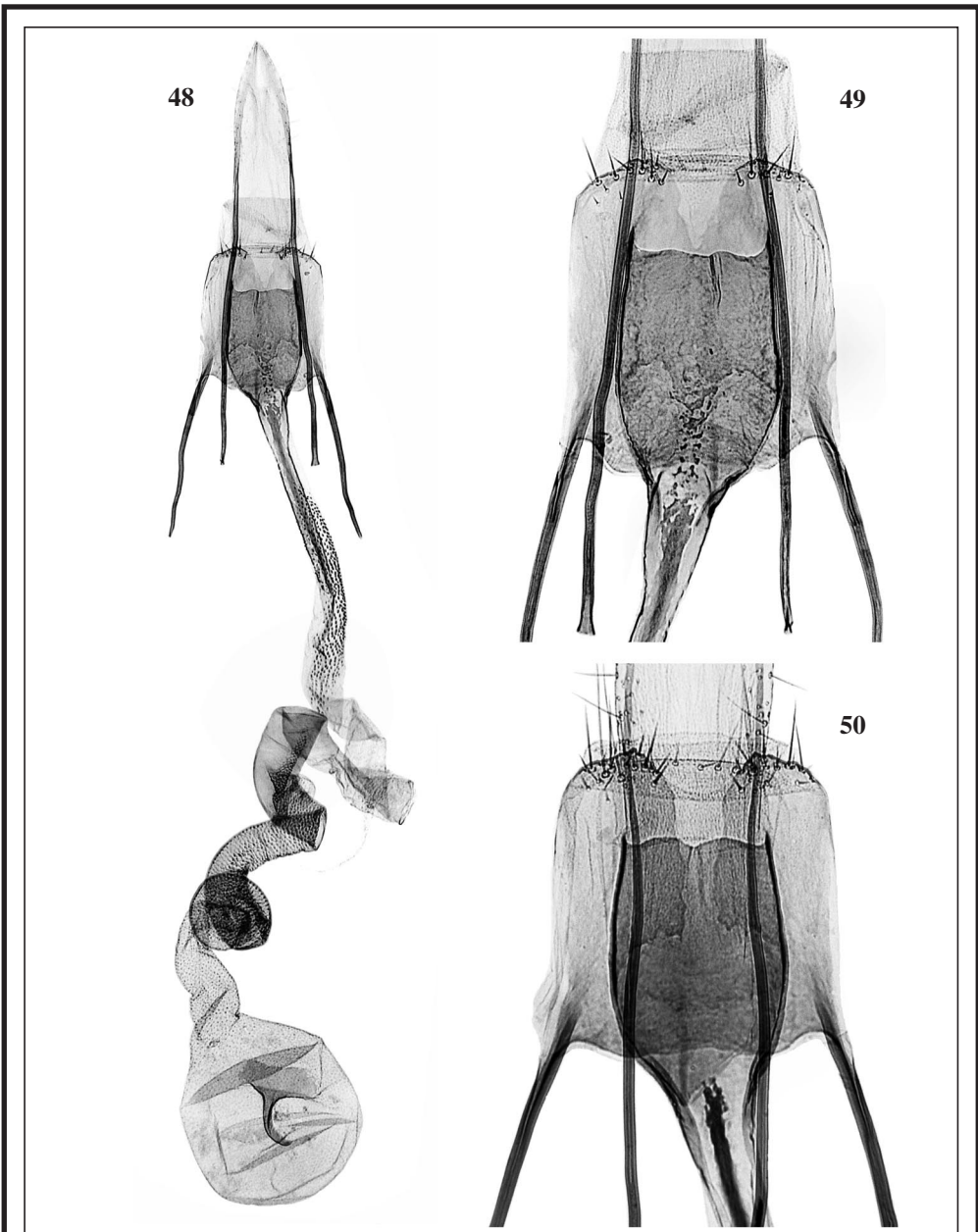
**Figs 35-39.**– *C. aconcaguae* Baldizzone, sp. n. **35.** Male genitalia (GP Bldz 11623, paratype). **36.** Abdomen. **37.** Detail of cornuti. **38.** Detail of cucullus, saccus, phallosome. **39.** Same detail (GP Bldz 5392, paratype).



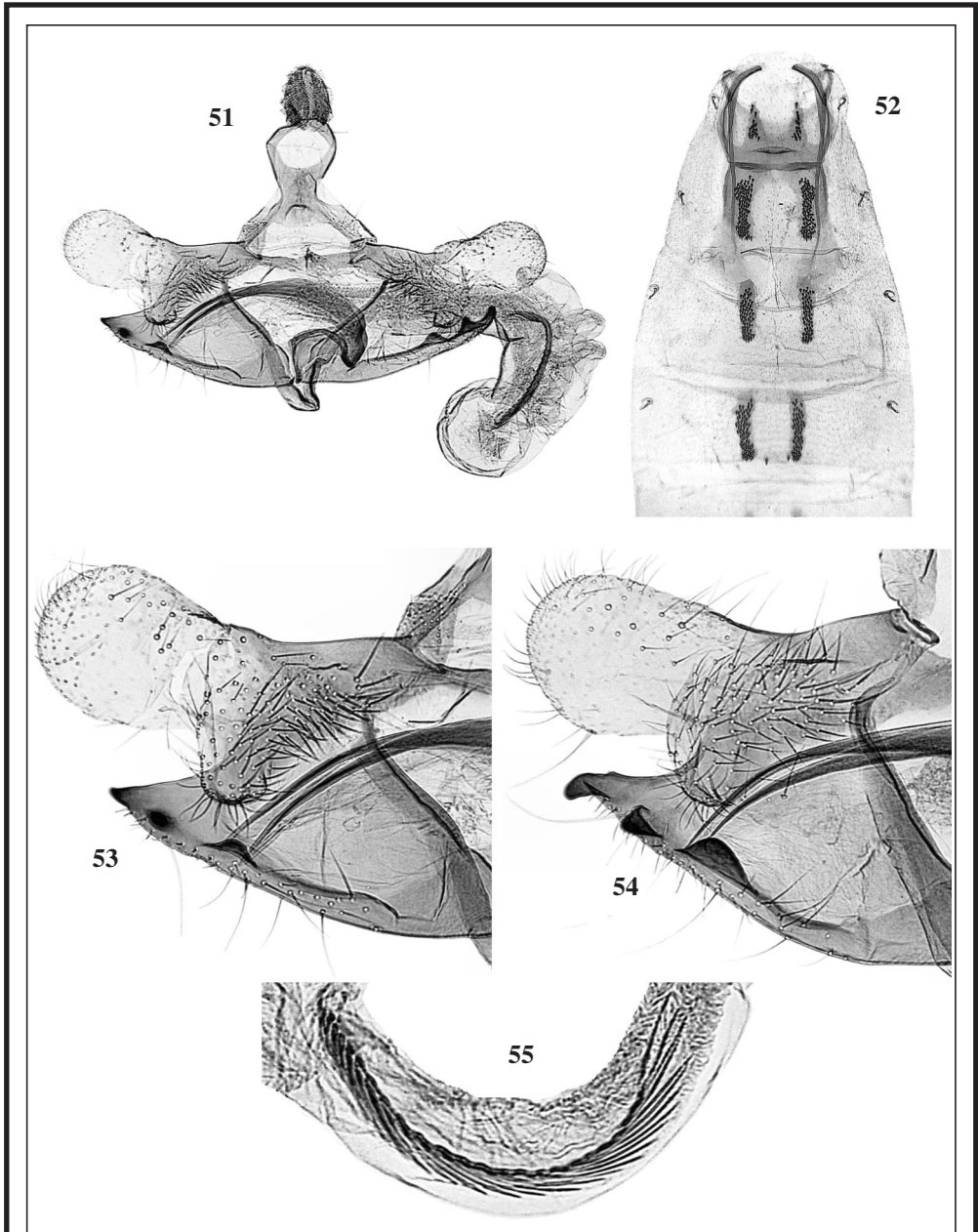
**Figs 40-42.**– *C. aconcaguae* Baldizzone, sp. n. **40.** Female genitalia (GP Bldz 12831, paratype). **41.** Detail of sterigma, ostium bursae, colliculum. **42.** Same detail (GP Bldz 12834, paratype).



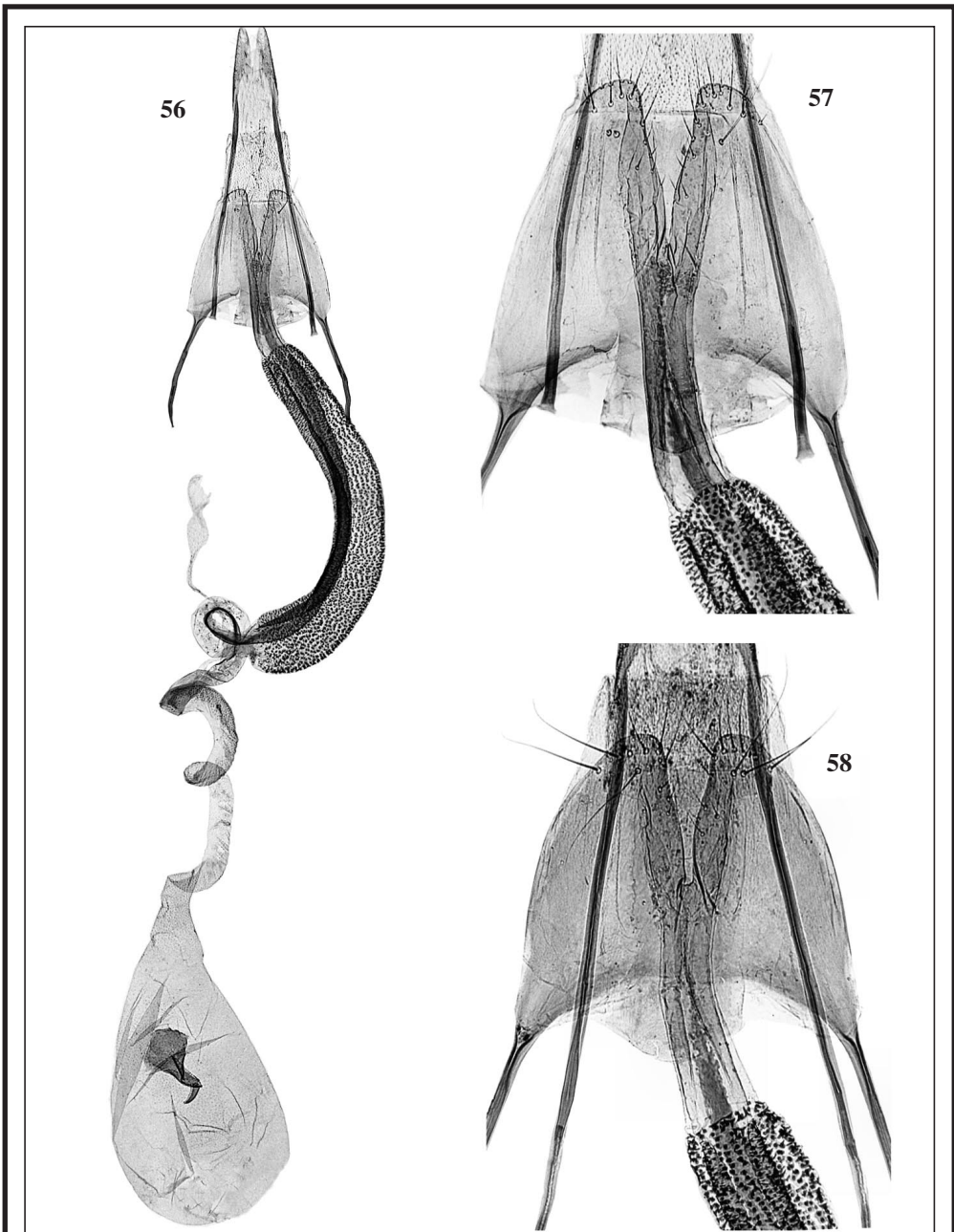
**Figs 43-47.**– *C. breyeri* Pastrana. **43.** Male genitalia (GP Bldz 11616). “ARGENTINA: Río Negro | 7: S. C de Bariloche | Colonia Suiza | 610 m | 24-XII-1978 | Misión Científica Danesa”. **44.** Abdomen. **45.** Detail of distal cornuti. **46.** Detail of cucullus, sacculus, phallosome and proximal cornutus. **47.** Same detail (GP Bldz 11621), *ibidem*, 5-7-I-1982.



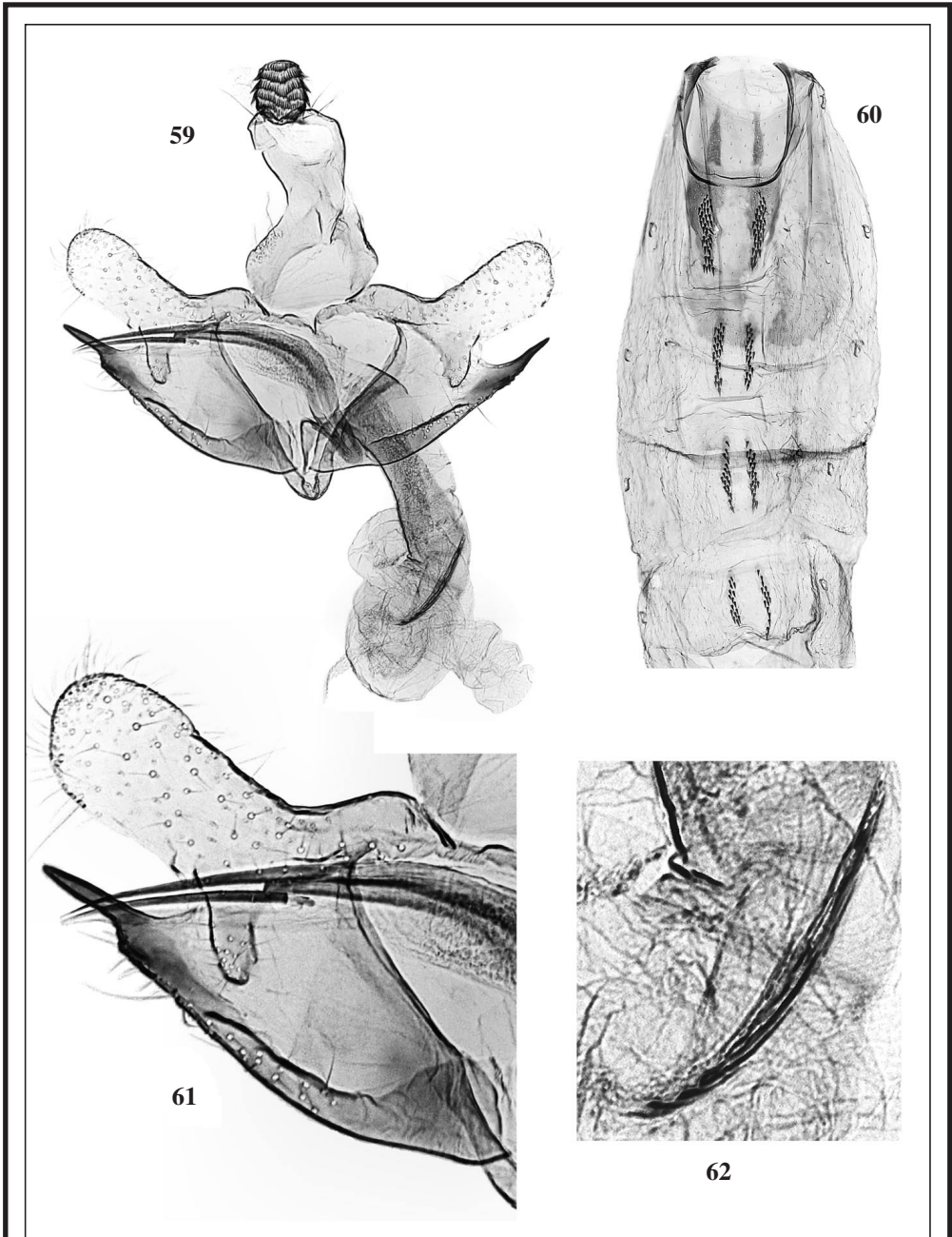
**Figs 48-50.**– *C. breyeri* Pastrana. **48.** Female genitalia (GP Bldz 11622) “ARGENTINA, Neuquén | 12: Río Limay | Arroyo | 22-XII-1978 | Misión Científica Danesa”. **49.** Detail of sterigma, ostium bursae, colliculum. **50.** Same detail (PG Bldz 11617) “ARGENTINA: Río Negro | 7: S. C de Bariloche | Colonia Suiza | 610 m | 10-XII-1978 | Misión Científica Danesa”.



**Figs 51-55.**– *C. haywardi* Pastrana. **51.** Male genitalia (GP Bldz 11625) “R. ARGENTINA | Salta - Dep. Anta | Salta - Forestal | 50 km E | J. V. González | 15-22-I-1980 | Col: R. Golbach”. **52.** Abdomen. **53.** Detail of cucullus, sacculus, phallosome. **54.** Same detail (GP Bldz 11628, paratype). **55.** Detail of cornuti (GP 11626) same label as GP Bldz 11625.

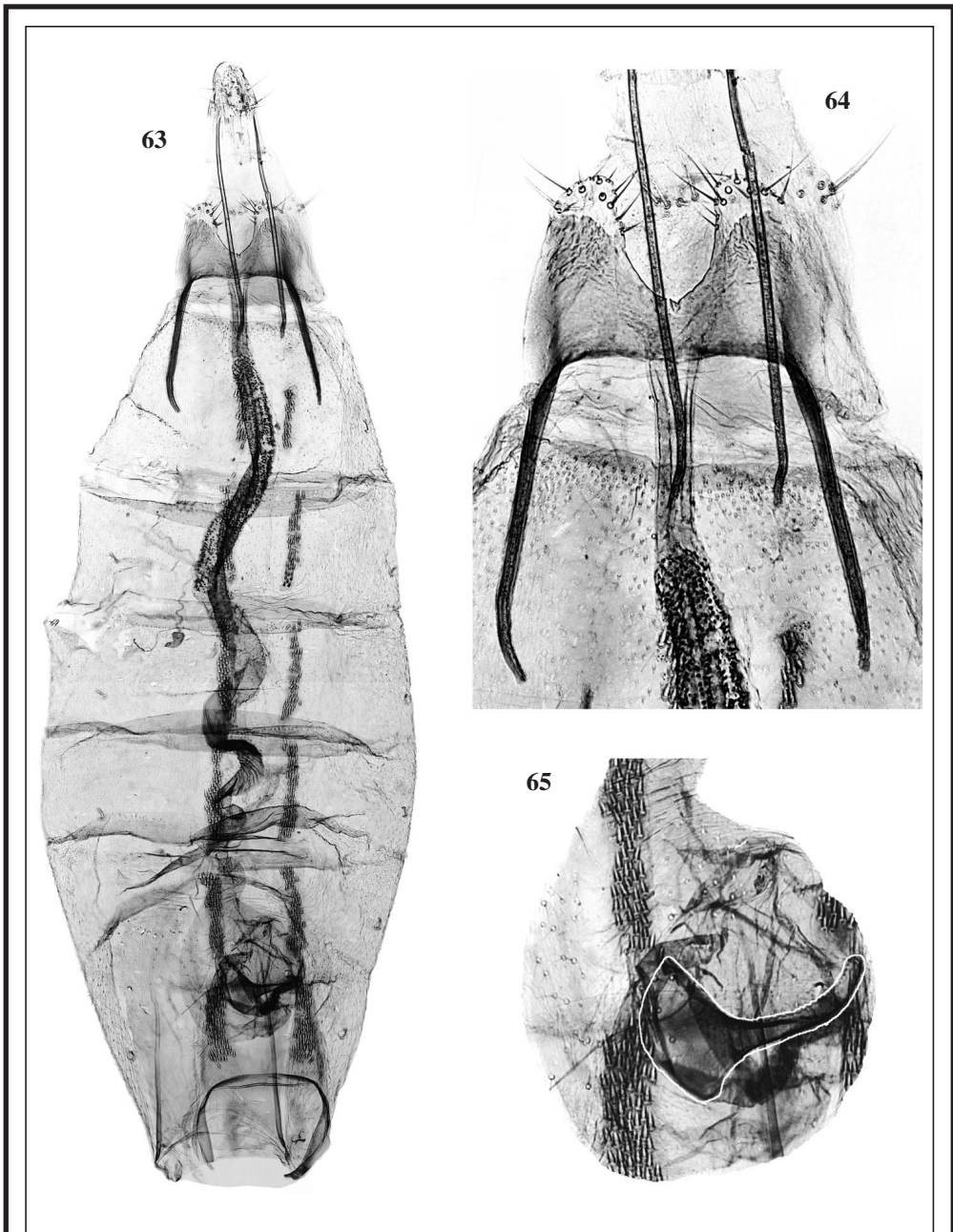


**Figs 56-58.**— *C. haywardi* Pastrana. **56.** Female genitalia (GP Bldz11624) “R. ARGENTINA | Salta - Dep. Anta | Salta - Forestal | 50 km E | J. V. González | 15-22-I-1980 | Col: R. Golbach”. **57.** Detail of sterigma, ostium bursae, colliculum. **58.** Same detail (GP Bldz 11627) same label.

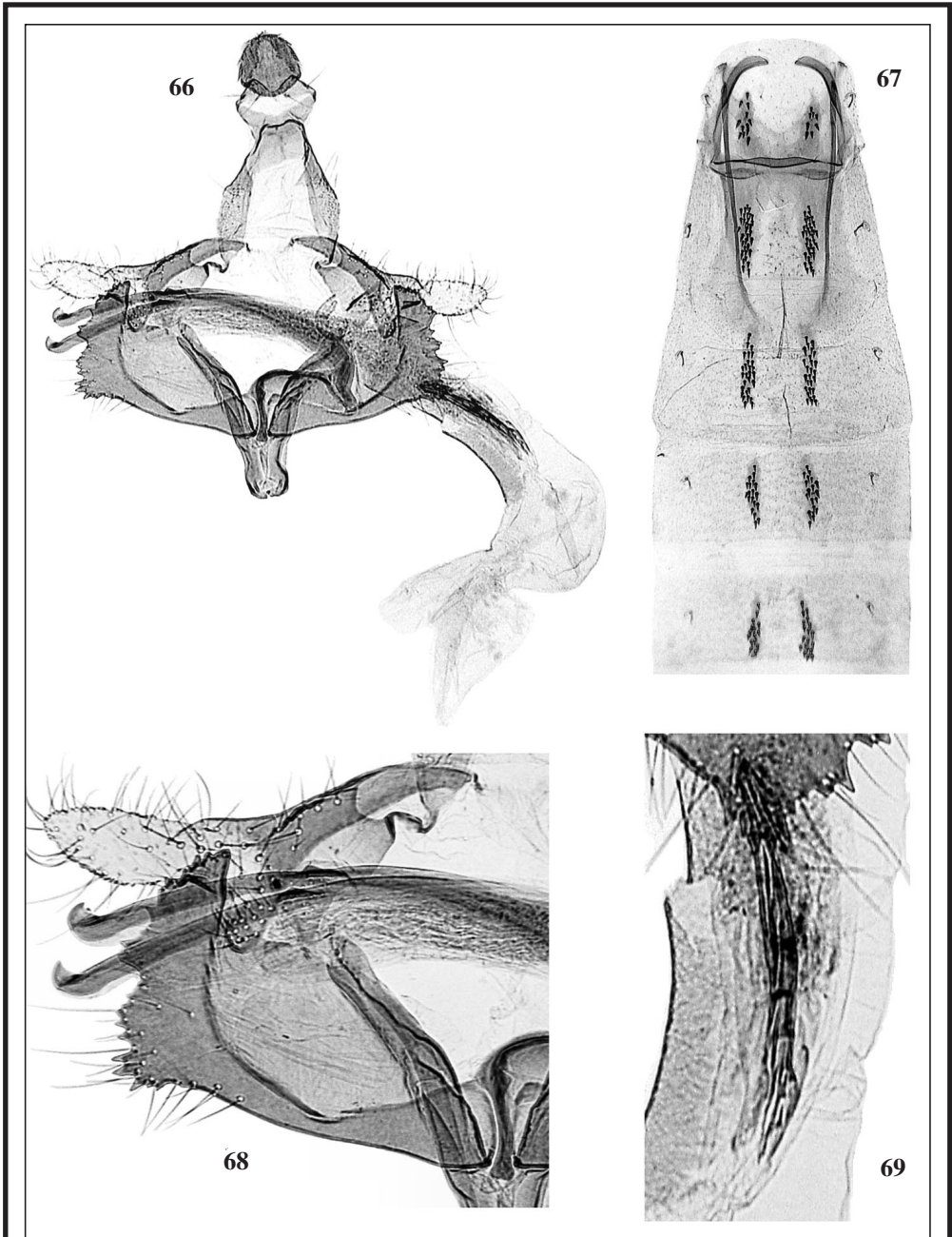


**Figs 59-62.**– *C. rasmusseni* Baldizzzone, sp. n. **59.** Male genitalia (GP BWR 5129, holotype). **60.** Abdomen. **61.** Detail of cucullus, sacculus, phallotheca. **62.** Detail of cornuti.





**Figs 63-65.**– *C. rasmusseni* Baldizzone, sp. n. **63.** Female genitalia and abdomen (GP BWR 5128, paratype). **64.** Detail of sterigma, ostium bursae, colliculum. **65.** Detail of corpus bursae and signum.



**Figs 66-69.**– *C. peruana* Baldizzone, sp. n. **66.** Male genitalia (GP Bldz 9792, holotype). **67.** Abdomen. **68.** Detail of cucullus, sacculus, phallotheca. **69.** Detail of cornuti.