

Notes on cochyline genus *Phtheochroa* STEPHENS (*Lepidoptera: Tortricidae*) with descriptions of new American species

Józef RAZOWSKI

Accepted for publication: 15 May, 1991

RAZOWSKI J. (1991). Notes on cochyline genus *Phtheochroa* STEPHENS (*Lepidoptera: Tortricidae*) with descriptions of new American species, *Acta zool. cracov.*, 34(1): 163- 187.

Abstract. The distribution and bionomic data on *Phtheochroa* are gathered and a new system is proposed. List of species is given. 13 new species are described from Mexico. *Ph. psaeoptera* is transferred to *Osmaria* gen. n. in *Euliini*.

Key words: *Lepidoptera*, *Tortricidae*, *Phtheochroa*, systematics, new species

Józef RAZOWSKI, Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, 31-016 Kraków, Poland

I. INTRODUCTION

The species of *Phtheochroa* have usually been described or placed under its junior synonym *Hysterosia* HAWORTH or *Trachysmia* GUENÉE. Full synonymy and comments on the genus are in my revision of the genera of *Tortricidae* (RAZOWSKI 1987). Since publication of the revision of the palaearctic fauna of *Cochylini* (RAZOWSKI 1970) only little new data have appeared in the literature. The only exception is a revision of the *Ph. rugosana* complex of species (HUEMER 1990) in which 5 new species are described. Further new data on the palaearctic cochyline moths are expected chiefly from Central Asia and Asia Minor but the material from those territories is very scarce.

The nearctic fauna requires a thorough revision and seems still insufficiently studied. It is better known in the southern parts of the continent, especially in the Sonoran area. The fauna of the northern part of the neotropical region seems rich, especially that of Mexico. There are no data on *Phtheochroa* from South America. In Central America only two species were found (*iodes* and *melasma* from Guatemala). Several neotropical species, externally resembling *Phtheochroa* and described in it, are transferable to *Aethes* BILLBERG.

The species of this genus are generally associated with the steppe-forest zone and prefer arid territories. Thus they do not penetrate tropical Asia or the humid territories of Central

and South America. This corresponds with the distribution type of some other genera of the tribe (RAZOWSKI 1991).

The larvae of *Phtheochroa* feed in seeds, fruits, stems or roots being probably oligophagous. Unfortunately knowledge on their bionomy is very limited. Of the best known palaeartic fauna 10 species of *Phtheochroa* are known to be associated with 15 plant species in the families *Berberidaceae*, *Chenopodiaceae*, *Compositae*, *Liliaceae*, *Rhamnaceae*, *Rosaceae*, *Salicaceae* and *Ulmaceae*. Of palaeartic species only 3 (*decipiens*, *sodaliana* and *schreibersiana*) feed on deciduous trees.

Only 2 species (*inopiana* and *vulneratana*) are holarctic in distribution, both being widespread in the palaeartic subregion but data on their distribution in the nearctic are scarce.

The palaeractic *Phtheochroa* species form some weakly differentiated groups described or occasionally treated as genera or subgenera which in my opinion do not warrant separation into distinct taxa. The New World species are rather similar to the palaeartic species and thus their characters only slightly widen the definition of the genus (e.g. the number of cornuti is often higher and the shape of the valva, uncus and socius are more or less specialised). There is also an interesting trend observed in some Mexican species which show more or less advanced asymmetry in the male genitalia. The left valva is slightly weaker than the right, also the sacculus is smaller and provided with a weaker, altered or completely atrophied free termination. The interpretation of some characters and their variation may require of reassessment after further study. The size and shape of the median part of the transtilla, uncus or cornutus are in some species inconstant and it is difficult to decide whether that is of infrasubspecific or subspecific importance. The species of the various groups within the genus are separable only by slight differences in external pattern and genitalia. The species of these groups are partly linked with geographical distribution and might indicate possible lines of speciation within the genus.

II. ACKNOWLEDGMENTS

I am greatly indebted Dr. D. FAULKNER, the San Diego Natural History Museum and Dr. J. W. BROWN, the Los Angeles County Museum for providing the valuable material for study. I also thank Dr. G. HANCOCK, the Glasgow Museum for correcting the English text.

III. SYSTEMATICS

Despite the occurrence of some differences observed in the most specialised representatives of the particular evolutionary lines, *Phtheochroa* is a compact genus. The species form only some more or less separable groups or subgroups. The most generalized is probably holarctic group of species closely related to *inopiana* (*inopiana*—*modestana*) characterised by a rather blunt free termination of sacculus. From its ancestors originated probably the large palaeartic branch of *farinosana* (*schreibersiana*—*rectangulana*), with

usually sharp free termination of the sacculus and rather uniform shape of the valva, aedeagus and uncus. The subgroup of *syrtana* (*jerichoana* – *exasperantana*) developed more or less distinct bifurcation of the uncus. The remaining species of this branch (*retextana* – *rectangulana*) have simple valva with completely atrophied free termination of the sacculus. The positions of some species such as *pistrinana* and *variolosana* that form a small subgroup and *decipiens* or *simoniana* are to some degree doubtful but they are probably related to the *inopiana* group. The group of *rugosana* is an offshot of the main branch developed seemingly earlier than the main palaearctic line. Its species are characteristic by strong reduction of the uncus, (the only progressive character) which in *rugosana* is still visible. The shape of the valva is rather uniform but that of the sacculus may be distinctly altered (*annae*). Another holarctic species, *vulneratana*, shows slight differences from *inopiana* and the New World *loricata* complex that has stronger development of the right valva. In the more advanced but closely related group of *quaesita* the sacculus lacks a free termination but its upper portion plays an important role during copulation as one can judge by its sclerotization and shape. In the species close to *piptmachaeria* the free end of the sacculus is absent also but on its dorsal part appears a sclerotic lobe. There are some species of insufficiently known positions (such as *hamartopenis*) and some other species that require a reconsideration on the basis of an additional material. The list of species included below will certainly need further corrections as in some parts is rather conjectural.

List of species

Synonymies of the Palaearctic species are in RAZOWSKI, 1970; abbreviations of Mexican and US states are after HEPPNER, 1991; other abbreviations used are:

hol. – holarctic	or. – oriental
nea. – nearctic	pal. – palaearctic
neo. – neotropical	t.t. – terra typica

- Ph. inopiana* (HAWORTH, 1811), pal., t.t.: British Islands
Ph. aegrana (WALSINGHAM, 1879) – comb. n., nea., t.t.: USA: Or
Ph. aureoalbida (WALSINGHAM, 1895) – comb.n., nea., t.t.: USA: Co
Ph. fulviplicana (WALSINGHAM, 1879) – comb.n., nea., t.t.: USA: Ca; (= *Hysterosia homonana* KEARFOTT, 1907, *H.refuga* MEYRICK, 1912, *H. komonana* KEARFOTT, 1907, *H. fermentata* MEYRICK, 1912, *H. canariana* BARNES & BUSCK, 1920)
Ph. villana (BUSCK, 1907) – comb.n., nea., t.t.: USA: Co
Ph. vitellinana (ZELLER, 1875) – comb.n., nea., t.t.: USA: Me
Ph. terminana (BUSCK, 1907) – comb.n., nea., t.t.: USA: Pe (= *Hysterosia merricana* KEARFOTT, 1907)
Ph. modestana (BUSCK, 1907) – comb.n., nea., t.t.: USA: Pa
Ph. baracana (BUSCK, 1907) – comb.n., nea., t.t.: USA: Mi; (= *Hysterosia tiscana* KEARFOTT, 1907)
Ph. birdana (BUSCK, 1907) – comb.n., nea., t.t.: USA: NY
Ph. schreibersiana (FRÖLICH, 1828), pal., t.t.: Germany

- Ph. gracilimana* (REBEL, 1910), pal., t.t.: Spain
Ph. cymatodana (REBEL, 1927), pal., t.t.: Spain
Ph. pulvillana (HERRICH-SCHÄFFER, 1851), pal., t.t.: Germany
Ph. thiana (STAUDINGER, 1899), pal., t.t.: Thian Shan (C. Asia)
Ph. simoniana (STAUDINGER, 1859), pal., t.t.: Spain
Ph. dodrantaria (RAZOWSKI, 1970), pal., t.t.: Lebanon
Ph. undulata (DANILEVSKIJ, 1962), pal., t.t.: Kazakhstan
Ph. sodaliana (HAWORTH, 1811), pal., t.t.: England
Ph. jerichoana (AMSEL, 1935), pal., t.t.: Israel
Ph. ochrobasa (CHRÉTIEN, 1915), pal., t.t.: Algeria
Ph. reisseri (RAZOWSKI, 1970), pal., t.t.: Crete
Ph. syrtana (RAGONOT, 1888), pal., t.t.: Tunisia
Ph. subfumida (FALKOVITSH, 1963), pal., t.t.: Armenia
Ph. exasperantana (CHRISTOPH, 1872), pal., t.t.: SE European USSR
Ph. retextana (ERSCHOFF, 1874), pal., t.t.: Kazakhstan
Ph. kenneli (OBRAZTSOV, 1944), pal., t.t.: SE European USSR
Ph. farinonsana (HERRICH-SCHÄFFER, 1856), pal., t.t.: ES European USSR
Ph. fulvicinctana (CONSTANT, 1893), pal., t.t.: France
Ph. ochralana (CHRÉTIEN, 1915), pal., t.t.: Tunisia
Ph. krulikovskiji (OBRAZTSOV, 1944), pal., t.t.: European USSR
Ph. chalcantha (MEYRICK, 1912), pal., t.t.: Anatolia
Ph. durbonana (LHOMME, 1937), pal., t.t.: France
Ph. purissima (OSTHELDER, 1938), pal., t.t.: Iran
Ph. procerana (LEDERER, 1863), pal., t.t.: Bulgaria
Ph. purana (GUENÉE, 1846), pal., t.t.: France
Ph. unionana (KENNEL, 1900), pal., t.t.: Caucasus
Ph. aureopunctana (RAGONOT, 1894), pal., t.t.: Syria
Ph. purana (GUENÉE, 1846), pal., t.t.: S.France
Ph. duponchelana (DUPONCHEL, 1843), Pal., t.t.: Italy
Ph. palpana (RAGONOT, 1894), pal., t.t.: Anatolia
Ph. lucentana (KENNEL, 1899), pal., t.t.: Syria
Ph. frigidana (GUENÉE, 1845), pal., t.t.: France
Ph. drenovskii (REBEL, 1916), pal., t.t.: Bulgaria
Ph. rectangulana (CHRÉTIEN, 1915), pal., t.t.: Algeria
Ph. vulneratana (ZETTERSTEDT, 1839), hol., t.t.: Laponia
Ph. decipiens (WALSINGHAM, 1900), pal., t.t.: Syria
Ph. pistrinana (ERSCHOFF, 1877), pal., t.t.: East Siberia
Ph. variolosana CHRISTOPH, 1887, pal., t.t.: Kazakhstan
Ph. gigantea (BARNES & BUSCK, 1920), neo., t.t.: Mexico: DF
Ph. loricata (RAZOWSKI, 1984) – comb.n., neo., t.t.: Mexico: Pue
Ph. noctivaga (RAZOWSKI, 1984) – comb.n., neo., t.t.: Mexico: NL
Ph. meraca (RAZOWSKI, 1984) – comb.n., neo., t.t.: Mexico: Pue
Ph. perspicuana (BARNES & BUSCK, 1920), neo., t.t.: USA: Az
Ph. faulkneri sp.n., neo., Mexico: Jal

- Ph. chaunax* sp.n., neo., t.t.: Mexico: Jal
Ph. melasma (CLARKE, 1968), neo., t.t.: Guatemala
Ph. iodes (CLARKE, 1968), neo., t.t.: Guatemala
Ph. quaesita (RAZOWSKI, 1984), neo., t.t.: Mexico: Zac
Ph. albiceps (WALSINGHAM, 1914), neo., Mexico: Gue
Ph. zacualpana (BUSCK, 1913), neo., t.t.: Mexico: DF
Ph. huachucana (KEARFOTT, 1907) – comb.n., neo., t.t.: USA: NM
Ph. haplidia RAZOWSKI, 1986, neo., t.t.: Mexico: Dur
Ph. ciona sp.n., neo., t.t.: Mexico: Nay
Ph. hybrista sp.n., neo., t.t.: Mexico: Jal
Ph. cistobursa sp.n., neo., t.t.: Mexico: Jal
Ph. hyboscia sp.n., neo., t.t.: Mexico: Jal
Ph. piptmachaeria RAZOWSKI, 1986, neo., t.t.: Mexico: Jal
Ph. hydnum sp.n., neo., t.t.: Mexico: Chih
Ph. circina sp.n., neo., t.t.: Mexico: Sin
Ph. chriacta sp.n., neo., t.t.: Mexico: Jal
Ph. chriodes sp.n., neo., t.t.: Mexico: Sin
Ph. ochodea sp.n., neo., t.t.: Mexico: Dgo
Ph. superbissima (RAZOWSKI, 1984), neo., t.t.: Mexico: Ver
Ph. descensa sp.n., neo., t.t.: Mexico: Jal
Ph. noema sp.n., neo., t.t.: Mexico: Jal
Ph. hamartopenis RAZOWSKI, 1986, neo., t.t.: Mexico: Dur
Ph. rugosana (HÜBNER, 1799); pal., t.t.: C. Europe
Ph. ecballiella HUEMER, 1989; pal., t.t.: Spain
Ph. ingridae HUEMER, 1990; pal., t.t.: Italy
Ph. sinecarina HUEMER, 1989; pal., t.t.: Morocco
Ph. annae HUEMER, 1989; pal., t.t.: Austria
Ph. larseni HUEMER, 1989; pal., t.t.: Turkey: Anatolia
Ph. osthelderi HUEMER, 1989; pal., t.t.: Syria

Species requiring reexamination:

- Phitheochra arrhostia* CLARKE, 1968, neo., t.t.: Peru
Trachysmia obnubila RAZOWSKI, 1984, neo., t.t.: Mexico: Hid
Hysterosia primula WALSINGHAM, 1914, neo., t.t.: Mexico: DF
Phitheochroa tenerima RAZOWSKI, 1986, neo., t.t.: Mexico: NL
Phitheochroa veirsi RAZOWSKI, 1986, neo., t.t.: Mexico: Dur
Propira vicina WALSINGHAM, 1914, neo., t.t.: Guatemala

IV. DESCRIPTIONS OF NEW SPECIES

Abbreviations used:

- LACM – Los Angeles County Museum
SDNHM – San Diego Natural History Museum

Phtheochra faulkneri sp.n.

Alar expanse 21 mm. Labial palpus ca 5, whitish, scaled grey, front and upper side of palpus with scarce dark scales, antenna concolorous, with weak darker rings, remaining parts of head whitish scaled brownish grey. Forewing without costal fold, broadest postbasally, with costa distinctly convex, especially in basal third; apex rounded; termen weakly oblique, slightly concave postapically. Ground colour whitish, densely diffusely strigulated and suffused grey-brown, costal strigulation darker, more distinct; brown-grey fascia from base of dorsum to before middle of costa, edged white anteriorly, weaker fascia from costa to end of termen, with slight pale edge, a shade along first cubital vein. Fringes damaged, remainder of basal line brownish grey. Hindwing cream white; strigulation brownish: small group of delicate strigulae before apex, larger ones in anal area becoming gradually smaller towards second median vein. Fringes concolorous with wing, with brownish basal line developed in apical half of wing.

Male genitalia (Figs 1,2): Tegumen tapering apically; uncus fairly long, very slender; socius broad, slightly tapering terminally. Valva slender, slightly up-curved; sacculi broad, expanding dorsally in basal portion, asymmetrical: left sacculus with short distal part and small free termination, right sacculus longer, provided with fairly long, slender claw like free end. Transtilla typical of the genus, with broad, densely thorned median part; juxta simple. Aedeagus large, stout, with small, slender ventral termination and flat ventro-lateral lobe subterminally; two unequal cornuti in vesica present.

Holotype, male; "Mexico: Jalisco, Rio Verde, 17 mi Yahualica, Hwy 116, 14 Sept. 1966, FAULKNER"; genitalia slide 20164. Coll. SDNHM.

Comments. The new species is probably closest to *meraca* which is, unfortunately, known of the females only. The external differences are distinct as the new species is much smaller, with forewing not expanding distally and costa strongly curved outwards. It is placed at the beginning of the *loricata* group of species as its transtilla is of plesiomorphic type and the asymmetry of sacculi is rather slight. The species is named in honour of its collector Dr. David FAULKNER of San Diego.

Phtheochroa chaunax sp.n.

Alar expanse 28 mm; labial palpus ca 6, similar in shape to that in preceding species, brown, pale scaled laterally, grey dorsally; front greyish, scaled dark grey, lateral parts of head brown, antenna rather concolorous. Forewing somewhat expanding terminally; costa without fold, weakly bent basally, curved at 2/3; termen indistinctly oblique, hardly concave postapically. Ground colour brownish, dark brown towards edges of silver grey lines built mainly of erect scales (oblique submedian line as in preceding species, interrupted medially line from 2/3 of costa to tornus curved outwards submedially and near tornus, more posterior line parallel in costal half of wing, then almost perpendicularly to torsus and small lines or rows of spots both in subapical area in dorsal surface between two main lines). Ferruginous shade at base of costa. Fringes cream brown, basal line and

terminations dark brown. Hindwing rather cream, densely reticulated brownish. Fringes concolorous with wing, basal line and part of terminations brownish.

Variation. In one paratype dark suffusions of forewing strong, that in subapical area in from of fascia as in dark specimens of *noctivaga*.

Male genitalia (Figs 3-5): Uncus shorter than in preceding species, distinctly broadening posteriorly, with sharp apex; socius slender, broadest submedially, tapering apically. Valva strong; left sacculus broader and shorter than right one, without free termination; free end of right sacculus large, claw-shaped. Median part of transtilla very broad, short, concave medially, provided with strong thorns; dorsal edge of its lateral parts convex submedially. Aedeagus large, stout, with ventro-apical curved process accompanied by flat lateral lobe; single, very large cornutus in vesica.

Holotype, male: "Mexico: Jalisco, Nevado de Colima, 8200', Parque Nacional 10,7 mi N Hwy 54, 17 Sept. 1986"; genitalia slide 20162. Coll. SDNHM. Paratypes, two identically labelled males.

Comments. Externally the new species is similar to *loricata* and differs by strongly developed erect groups of refractive scales and ferruginous suffusion at base of forewing costa. The median part of the transtilla is broad, similar to that in the preceding species but the dorsal edges of its lateral portions are expanded as in remaining species of this group.

Phtheochroa albiceps (WALSINGHAM, 1914)

Propira albiceps WALSINGHAM, 1914, Biologia cent.-am. Lepid., *Heterocera*, 4: 297. Type-locality: Mexico: Guerrero: Amula.

The male genitalia of the lectotype of this species were illustrated by me (RAZOWSKI, 1964) and then (RAZOWSKI, 1984) some notes were added. The female figured in the latter paper represent, however, another species.

Phtheochroa zacualpana (BUSCK, 1913)

Commophila zacualpana BUSCK, 1913, Insec. inscit. Mens. Washington, 1 : 141. Type-locality: Mexico: Zacualpan.

According to Dr. V.O. BECKER (personal communication) the type of *Ph. zacualpana* is identical with the series of *albiceps*. However, in the examined material I have found two distinct species, one with the male genitalia corresponding with those of the type of *albiceps*, and the other similar to those in *johnibrowni* or *huachucana*. The latter may be either conspecific with *zacualpana*, *huachucana* or represent a new species, but the problem may only be solved by the examination of the type of the BUSCK species.

Phtheochroa johnibrowni sp.n.

Alar expanse 30 mm; labial palpus 3, brownish, slightly tinged rust terminally, whitish dorsally; front cream, vertex darker, antenna pale brownish; thorax pale brownish cream, tegula and a fascia along middle tinged brown. Forewing not expanding terminally, broadest at end of discal cell; apex broad, rounded; termen not oblique, tolerably straight beyond apex. Costal half of wing cream tinged pale yellowish brown, veins paler or white cream, base of costa brown; remaining area much darker, more olive brown except for base which is much paler, limited by ill-defined blotch slightly tinged rust; terminal area between end of discal cell and apex area darker than costal area, delicately sprinkled brown. Dense row of black dots along dorsum. Fringes brownish cream, tinged brownish yellow terminally, with dark grey basal and subterminal lines. Hindwing cream slightly brownish, reticulation delicate, brownish; fringes darker than wing, with brownish lines.

Male genitalia (Figs 6-8) as in *quaesita* but uncus broader, slightly expanding apically, socius much slender, not rounded apically, sacculus longer and aedeagus slenderer, with more delicate coecum penis, without dentate subdorsal sclerite and with sharp (not rounded) lateral process of anellus attached to aedeagus.

Holotype, male; "Mexico: Jalisco, Nevado de Colima 8200', Parque Nacional 10,7 mi Hwy 54, 18 Sept. 1986" ; genitalia slide 20181; coll. SDNHM.

Comments. This new species is very characteristically coloured and easily distinguished from *quaesita* by smooth, brownish cream costal part of forewing. The female is unknown. It is named in honour of Dr. John W. BROWN, Los Angeles.

Phtheochroa ciona sp.n.

Alar expanse 18 mm; labial palpus 3.5, broadest submedially, ferruginous, with cream scales, terminal joint and upper side pale yellowish white; remaining parts of head yellowish white, but scales beyond eyes rust, base of antenna tinged so, flagellum dirty cream; thorax yellowish white, with base of tegula ferruginous. Forewing hardly expanding terminally; costa distinctly convex; apex very short, broad, rounded; termen weakly oblique, slightly concave postapically; costa without fold, slightly up-curved at base. Ground colour yellow with indistinct dark yellow suffusions; costa suffused brownish, with groups of orange scales, dark brown in basal third; termen ferruginous brown with more orange colour among dark brown distal portions of some veins; m_3 and cu_1 completely suffused brown; orange suffusion beyond both veins reaching median cell; a few scattered ferruginous brown scales in median area of wing. Fringes dark brownish grey, paler at tornus. Hindwing cream basally, otherwise mixed brownish, diffusely strigulate brownish except for base; fringes pale brownish with grey-brown basal line, cream in anal area.

Male genitalia (Figs 9-11): Uncus short, broad basally, rounded apically; base of socius very broad, distal portion slender, tapering apically; Valva broadest postbasally, tapering terminally; sacculus broad in basal part, convex postbasally before deep concavity of

ventral edge, weakly sclerotized distally. Median part of transtilla large, elongate, tapering terminally; juxta simple, slightly convex in upper part posteriorly. Aedeagus short, stout with ventro-apical process situated asymmetrically (right side); one large, slightly bent cornutus in vesica.

Holotype male: "Mexico: Nayarit, 49.4 mi NE Venado, Mesa Naya, 5800', 18-25 Aug. 1987, Norris BLOOMFIELD. Genitalia slide 20187. Coll. SDNHM.

Comments. The new species strongly differs from other species of this genus in the external habitus. Only in *superbissima*, *noema* and *descensa* is the ground colour yellow but those species differ in having a sharp forewing apex. The genital differences as with the two following new species and *haplidia* are slight. Those species are characterised by the elongate median part of transtilla, convex postmedian portion of the sacculus and slender termination of the socius. The two last characters are the main differences to *quaesita*.

Phtheochroa hybrista sp.n.

Alar expanse 26 mm; labial palpus 4, white-grey, scaled grey laterally, more white dorsally; front, vertex and antero-median portion of thorax white-grey, remaining parts and antenna brownish grey. Forewing almost uniformly broad throughout; apex rounded; termen tolerably straight. Ground colour pale grey-brown, sprinkled white along costa beyond brown costal strigulation; distal third of wing paler, strigulated with brownish, similar strigulation near dorsum. Brownish white oblique lines postabasally and postmedially accompanied by shorter diffuse line extending towards apex and weak, darker markings at mid-dorsum. Dorsal portion of postmedian fascia broad. Fringes concolorous with suffusions. Hindwing pale brownish cream, suffused brownish, diffusely strigulated with similar, darker colour. Fringes pale yellowish brown with brownish basal line.

Variation. Male paratype darker, more brown, with weak lines. Female (expanse 32 mm) forewing slightly broadening terminally; ground brownish white, densely strigulated brownish except in costal area which is paler; lines less visible than in male.

Male genitalia (Figs 12,13): Uncus slender, fairly long, slightly expanding basally; basal portion of socius broad, almost as long as its slender, distal part. Valva slenderer than in *ciona*, sacculus longer, rather well sclerotized beyond ventral concavity. Median part of transtilla very long; distinct process in dorsal portion of juxta. Aedeagus short, stout, distinctly bent in posterior portion, tapering towards curved downwards termination; subtriangular ventro-lateral (right side) lobe in middle of distal half; single, strong cornutus in vesica.

Female genitalia (Fig. 35): Ovipositor normally developed, rather short but apophyses long; postvaginal portion of sterigma well sclerotized medially and distally (lateral arms), ventral sclerite suspending ostium bursae broad; ductus bursae broad, membranous; longitudinal sclerotic fascias accompanying weakly sclerotized flat surfaces mainly in posterior half of corpus bursae, ventrally; dorsal sclerites more posterior, weaker; accessory bursa originating in middle area of latero-ventral portion of ductus bursae.

Holotype, male: "Mexico: Jalisco, 14.7 mi SW Yahualica, El Aguacate 7700', 12 Sept. 1986, FAULKNER"; genitalia slide 20160; coll. SDNHM. Paratypes, one male with identical label and one female labelled "Mexico: Jalisco, Nevado de Colima 8200', Parque Nacional 10.7 mi N Hwy 54, 17 Sept. 1986"; genitalia slide 20161.

Comments. Despite this species being externally quite distinct from two preceding species the genital differences between them are slight (slenderer uncus and valva, longer sacculus and median part of transtilla, curved tip of aedeagus).

Phtheochroa cistobursa sp.n.

Alar expanse 24 mm; labial palpus ca 5, brownish, scarcely scaled whitish, remaining parts of head similar in colour, but vertex paler; thorax concolorous with palpus. Forewing not expanding terminally; costa convex; apex rounded; termen oblique, slightly sinuate. Ground colour ferruginous ochreous, strigulation browner, diffuse; costal strigulae brownish divided by groups of whitish scales. Pattern as in *hyboscia*, weak, in distal area of wing refractive. Fringes white, brown terminally, with black basal line. Hindwing cream, densely strigulate brownish; fringes concolorous with wing, basal line brownish.

Female genitalia (Fig. 36): Papillae anales slender; apophyses long. Sterigma delicate; ventral sclerite protecting ostium bursae fairly long, remaining part of ductus bursae membranous; corpus bursae with sclerotic fascias entering ductus bursae and membranous anterior half; ductus seminalis dorsal, originating in before middle of corpus; ductus of accessory bursa ventral, extending from middle of basal portion of ductus bursae.

Holotype, female: "Mexico: Jalisco, Nevado de Colima 8200', Parque Nacional 10.7 mi N Hwy 54, 17 Sept. 1986"; genitalia slide 20166; coll. SDNHM.

Comments. This new species is distinguished by glossy ochreous the shade of the forewing. It is closely related to both *hyboscia* and *hybrista* but easily separated by the female genitalia. The male remains unknown.

Phtheochroa hyboscia sp.n.

Alar expanse 28 mm; labial palpus as in *cistobursa* but blackish brown with some scattered whitish scales and yellowish tip of apical joint. Remaining parts of head and thorax concolorous, with more whitish scales, but antenna brownish. Forewing weakly expanding terminally; termen weakly oblique, tolerably straight. Ground colour blackish brown with numerous refractive whitish erect scales at the edges of almost atrophied (traces of two anterior lines present) pattern elements, along costa and in terminal third of wing. Fringes concolorous with wing. Hindwing dirty cream, densely reticulate brownish, blackish grey on periphery; fringes concolorous with wing, basal line brown, terminal and subterminal lines brownish.

Variation: Pattern in some specimens better visible than in holotype but diffuse, shades among its elements very dark. Alar expanse of female 34 mm.

Male genitalia (Figs 14-16): Uncus shorter than in preceding species, basal portion of socius broader, shorter than distal, tapering part; valva broader, sacculus shorter, weakly concave postbasally. Median part of transtilla slenderer; posterior process of juxta almost completely reduced. Aedeagus expanding posteriorly, with small, rather straight termination and densely spined lateral edge; coecum penis slender; cornutus large.

Female genitalia (Figs 37, 38): Apophyses long; sterigma similar to that in *hybrista* but larger, with posterior edge of postvaginal part convex sublaterally and sclerite protecting part of ostium bursae much broader; ductus bursae broad, with transverse, median fold from middle of which extends distinct sac being a basis of ductus of accessory bursa; another, larger, partially sclerotic, provided with dorsal membranous fold lobe near middle of ventral surface of corpus bursae; rather delicate sclerotic belts in lateral and posterior areas of corpus present.

Holotype, male: "Mexico: Jalisco, Nevado de Colima 8200', Parque Nacional 10.7 mi N Hwy 54, 17 Sept. 1986"; genitalia slide 20165; coll. SDNHM. Paratypes, 3 males and 3 females with indential labells, but one dated 18th of September.

Comments. Closest to *ciona* but easily distinguished by very dark coloration of the forewing.

Phtheochroa descensa sp.n.

Alar expanse 22 - 24 mm; labial palpus ca 6, orange or ochreous yellow, yellow dorsally, ferruginous ventro-laterally; front and vertex pale lemon yellow, scales beyond eye tinged ochreous; antenna brownish ochreous; thorax darker than head. In both sexes forewing expanding terminally; costa weakly convex, without fold in male; apex short; termen distinctly oblique, slightly sinuate. Ground colour yellow; proximal third of costa ferruginous, mixed brown basally, a few pale ochreous spots towards apex, some darker spots along dorsum; a few orange spots in dorsal area along discal cell, some similar spots marked with dark brown scales on two last median veins; pale orange ochreous fascia marked near end of discal cell with dark brown group of scales and a group of refractive silver grey scales extending from dorso-terminal part of discal cell to tournus; narrow, rust brown fascia with scattered orange scales along termen except for apex area. Fringes brownish grey, white before brown basal line. Hindwing opalescent grey-white, distinctly reticulate with pale brownish; fringes cream white with pale brownish lines.

Variation. There are paler and darker specimens with more or less distinct fascia along first cubital vein and with variably developed, partially reduced spots.

Male genitalia (Figs 17,18) as in *superbissima* but uncus a little longer, median part of transilla tapering terminally, concave apically, valva longer and slenderer and aedeagus much smaller, more bent.

Female genitalia (Fig. 40) as in *superbissima* but antevaginal lobe much slenderer, indistinctly concave ventro-anteriorly, sac of ductus bursae with slender terminal portion and sclerotized folds of ductus bursae much smaller.

Holotype, female: "Mexico: Jalisco, Nevado de Colima 8200', Parque Nacional 10.7 mi N Hwy 54, 17 Sept. 1986", not dissected, coll, SDNHM; paratypes 2 males and 6 females with indentical labels.

Comments. This species is extremely similar to *superbissima* described from Veracruz, Mexico and differs from it in absence of a dorsal blotch in the forewing, development of disco-tornal fascia, much shorter terminal fascia not reaching apex area, more oblique termen and somewhat longer labial palpus. The differences in the genitalia are very slight, as mentioned above.

Phtheochroa noema sp.n.

Alar expanse 26 mm. Externally very similar to *descensa* but upper side of palpus and remaining parts of head whitish, thorax paler, forewing pale yellow, whiter along costa and at end of discal cell, with a few dark brown dots in discal cell occasionally and weak brownish basal suffusion of costa. Pattern absent except for very slender row of dark, rust brown dots along termen except for apex portion. Fringes pale pink cream, with brownish basal line beyond terminal pattern. Hindwing pale greyish cream with weak grey strigulation; fringes cream.

Variation slight; there are some pale specimens with variably developed terminal line.

Male genitalia (Figs 19,20) as in preceding species but terminal portion of socius longer, slenderer, median part of transtilla much longer, slenderer, deeply incised apically and sacculus much longer, provided with long, sharp free termination. Differences in aedeagus slight, but size and proportions similar to those in *superbissima*.

Female genitalia (Fig. 42) as in *superbissima* but antevaginal lobe slenderer, not depressed antero-ventrally, ventro-lateral sac of ductus bursae situated above it, longer, slender terminally and sclerotized folds of ductus bursae larger.

Holotype, female: "Mexico: Jalisco, Nevado de Colima 8.200, Parque Nacional, 10.7 mi N Hwy 54, 17 Sept. 1986"; genitalia slide 20192. Paratypes, 6 males and 1 female with indentical labels.

Comments. This species is extremely similar to *descensa* and looks as its colour form with strongly atrophied pattern (analogous forms found in some similarly coloured species, e.g. in palaearctic *Agapeta hamana* LINNAEUS).

Phtheochroa hydnum sp.n.

Alar expanse 26 mm; labial palpus 3 in male, 4 in female, pale ochreous, tinged rust laterally, more cream dorsally and apically; remaining parts of head concolorous with palpus, antenna a little darker; thorax more brown than head. Forewing slender, weakly expanding posteriorly, less so in female than in male in which costa is more convex; termen fairly oblique, convex; no costal fold in male. Ground colour pale ochreous cream, suffused pale ochreous brown among veins and along costa; broad, diffuse cinnamon

brown suffusion at dorsum marked with subsquare brown blotch at 1/3; brownish dots along costa, dorsum, and at end of discal cell, some spots at termen, innumerable paler dots in discal cell and a row of spots from end of it to termen between first median veins. Fringes concolorous with ground colour, divisions rust brown. Hindwing cream, suffused brownish especially on periphery; fringes cream.

Variations. There are paler and darker specimens; dorsal blotch more or less large, dorsal suffusion in one specimen atrophying. One female (expansion ca 30 mm) with distinct divisions of forewing fringes.

Male genitalia (Figs 21, 22): Uncus long, slender; socius large, rounded apically; sacculus convex, with small postbasal fold of dorsal edge followed by a large thorn. Median part of transtilla broad, rounded apically; juxta simple. Aedeagus small, curved to the left terminally; no cornuti in vesica.

Female genitalia (Fig. 41): Papilla analis large; sterigma weakly sclerotized, with lateral parts membranously connected with apophyses; ostium broad, protected by weak sclerite; ductus bursae short, slightly asymmetrical, provided with small sac at base of the right side dorsally of which ductus seminalis originates; corpus bursae membranous with indistinct sclerites at ductus bursae, with some spines ventrally.

Holotype, male: "Mexico: Chihuahua, Sierra de la Catarina, 7900 ft., 81 rd mi SW Buenaventura, 21 August 1976, J.P. & K.E. DONAHUE"; genitalia slide 20120; coll. LACM. Paratypes: 2 males and 2 females with same data.

Comments. This and the following species (*circina*) differ from remaining species of *piptamachaeria* complex of species in the presence of dorsal thorn of sacculus and its weak postabasal emargination which corresponds with large postabasal lobe of the remaining species of this group.

Phtheochroa circina sp.n.

Alar expanse 26 mm; labial palpus ca 4, similar in colour to that in preceding species, thorax browner; ground colour of forewing strongly suffused ochreous among veins, with admixture of brownish scales; spots along wing edges brown-black, row of spots beyond disc concolorous; dorsal suffusion brown, blotch black, followed by ferruginous shade. Fringes concolorous with ground, mixed ochreous on terminations, grey at tornus, with blackish divisions or parts of basal line. Hindwing dirty cream, densely suffused with grey-brown, with darker strigulation, distinct in anal area; fringes cream, basal line weak, brownish.

Male genitalia (Figs 23-25) as in *hydnum* but uncus somewhat broadening subterminally, median part of transtilla delicately concave apically, dorsal thorn of sacculus shorter, aedeagus longer, slightly convex to the left terminally, with large carina penis.

Holotype, male: "Mexico: Sinaloa, El Palmito, 8 August 1986, FAULKNER", genitalia slide 20177; coll. SDNHM. Paratypes, 2 males with identical labels.

Phtheochroa chriacta sp.n.

Alar expanse 22 mm (in paratype 26 mm); labial palpus 4, whitish, with brownish lateral suffusion postbasally, remaining parts of head concolorous with palpus, thorax slightly darker. Forewing not expanding posteriorly, costa weakly convex, without fold, apex part very short, termen weakly oblique, rather straight. Ground colour white cream suffused pale ochreous yellow in discal cell and beyond it, base of wing suffused brownish yellow, costa at base browner, dorsum as far as to discal cell pale brownish with indistinct violet hue; dorsal blotch brown, rust towards costa; dots along dorsum and at end of discal cell almost black. Fringes damaged, probably concolorous with ground colour, grey at tornus. Hindwing white cream suffused and delicately strigulated brownish; fringes whitish.

Male genitalia (Figs 26,27): Uncus very slender; socius broad, rounded apically. Valva broad basally, tapering towards the end; ventral edge of sacculus convex postbasally; large, almost perpendicular lobe near dorsal base present. Median part of transtilla short, slightly concave apically; juxta provided with minute dorso-posterior prominence. Aedeagus long, slender, with long coecum penis and rather short, bent distal part; apical part of aedeagus directed ventro-posteriorly.

Holotype, male: "Mexico: Jalisco, Rio Verde, 17 mi S Yahualica Hwy 116, 14 Sept. 1986, FAULKNER". Genitalia slide 20180; coll. SDNHM. Paratype, also male with label "Mexico: Jalisco 14.7 mi SW Yahualica, El Aguacate 7700', 12 Sept. 1986, FAULKNER".

Comments. The female remains unknown. Similar to *piptmachaeria* but distinguished by pale ground colour of the forewing and absence of the suffusions among veins at least in the costal and terminal parts of the forewing.

Phtheochroa chriodes sp.n.

Alar expanse 32 mm; labial palpus ca 4, cream, tinged pale ochreous at base, whitish dorsally; remaining parts of head whitish, thorax darker, with tegula and posterior tuft mixed brown. Forewing weakly expanding posteriorly, with costa convex, apex short, rounded, termen weakly oblique, somewhat sinuate beyond apex. Ground colour whitish, ochreous suffusions among veins, and in basal and dorsal parts of wing; spots along costa, dorsum, in distal half of discal cell and posteriorly to it black, similar but smaller spots beyond last radial vein and cubital arm of vein cu_1 . Basal blotch blackish with grey suffusions, extending almost from wing base. Fringes cream with ochreous divisions and black scales beyond rows of spots and at tornus. Hindwing and fringes dirty cream, suffusions and strigulation of wing brownish.

Male genitalia (Figs 28-30) as in *chriacta* but uncus broader, socius much slenderer, valva shorter, with longer sacculus and more marginal dorsal lobe. Median part of transtilla broader; distal part of aedeagus much longer, less curved ventrally, with lateral edges minutely dentate, carina penis long, expanding terminally; two groups of thorns on ventral surface; one short cornutus in vesica.

Holotype, male: "Mexico: Sinaloa, El Palmito, 8 August 1986, FAULKNER"; genitalia slide 20179; coll. SDNHM.

Comments. Externally similar to *piptmachaeria*; in the genitalia the new species differs from it in less complicated lateral parts of the aedeagus, shorter uncus and in the shape of the valva.

Phtheochroa ochodea sp.n.

Alar expanse 27 mm; labial palpus as in preceding species, head whitish, thorax slightly darker, mixed pale ochreous yellow anteriorly. Forewing similar to that in *chriodes* but termen slightly more oblique. Ground colour whitish; suffusions among veins yellowish with rows of black scales on entire surface of wing; pale ochreous shade in distal half of discal cell and in costal portion of grey, ill-defined dorsal blotch; dorsal suffusion indistinct, greyish. Fringes whitish; divisions brownish. Hindwing slenderer, paler and more strongly strigulated than in preceding species.

Male genitalia (Figs 31-33) as in *chriodes* but valva longer, not tapering terminally; in distal part of aedeagus distinct protuberance and ventral serrate process similar to that in *piptmachaeria*. Shape of valva as in the latter. Two cornuti in vesica.

Holotype, male: "Mexico: Durango, El Salto, Rancho Nuevo, 30 July - 3 Aug. 1987, N. BLOOMFIELD"; genitalia slide 20178; coll. SDNHM.

V. APPENDIX

Osmaria gen.n.

Type-species: *Phtheochroa psaeoptera* RAZOWSKI & BECKER, 1986

Labial palpus short (ca 1); antenna distinctly ciliate. Forewing uniformly broad throughout; apex rounded, broad; costa slightly convex, without fold. Venation: In forewing all veins separate, r_5 to termen beyond apex; in hindwing $rr - m_1$ long stalked. Scale pencil of foreleg tibia not realized.

Male genitalia (figured in the above mentioned paper) are characterized by simple, slender, hairless uncus, small socius and slender, simple vinculum. Valva fairly long, up-curved; sacculus strong, with stout free termination. Transtilla a delicate band, well sclerotized dorsally, provided with minute thorns on dorsal surface of lateral broadenings; juxta large, strongly concave anteriorly. Aedeagus small, submembranous posteriorly, provided with subterminal process of right side and large coecum penis; cornuti absent.

Female genitalia unknown.

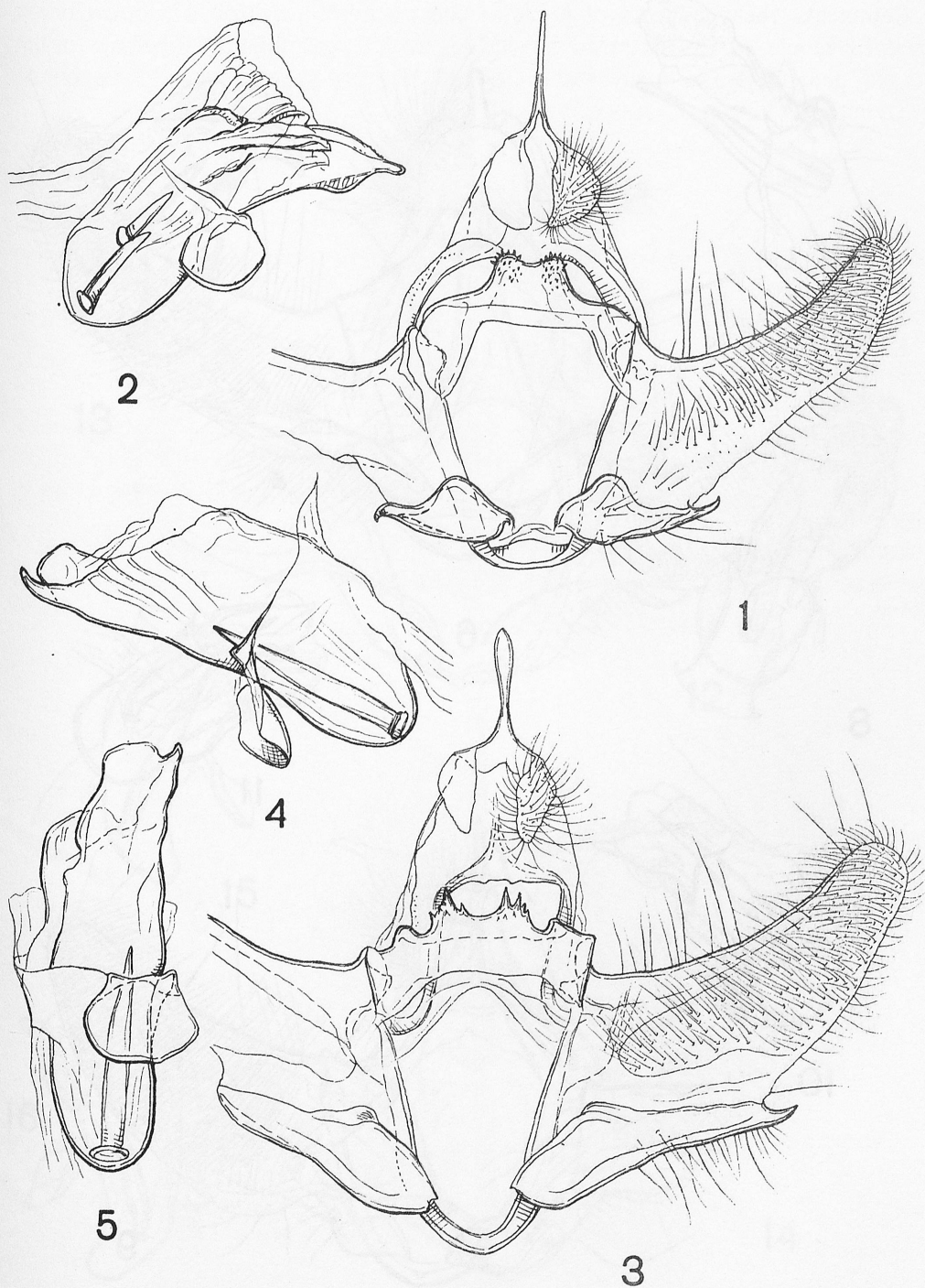
Bionomics: No data except for collection of the moths: VII.

Repartition: Mexico (Veracruz).

Comments. The type species of this new genus was mistakenly placed in the cochyline genus *Phtheochroa*. The systematic position is unclear, but probably it belongs in the group of genera close to *Popayanita* RAZOWSKI. The new genus is named in honour of my friend Vitor Osmar BECKER of Planaltina, Brazil.

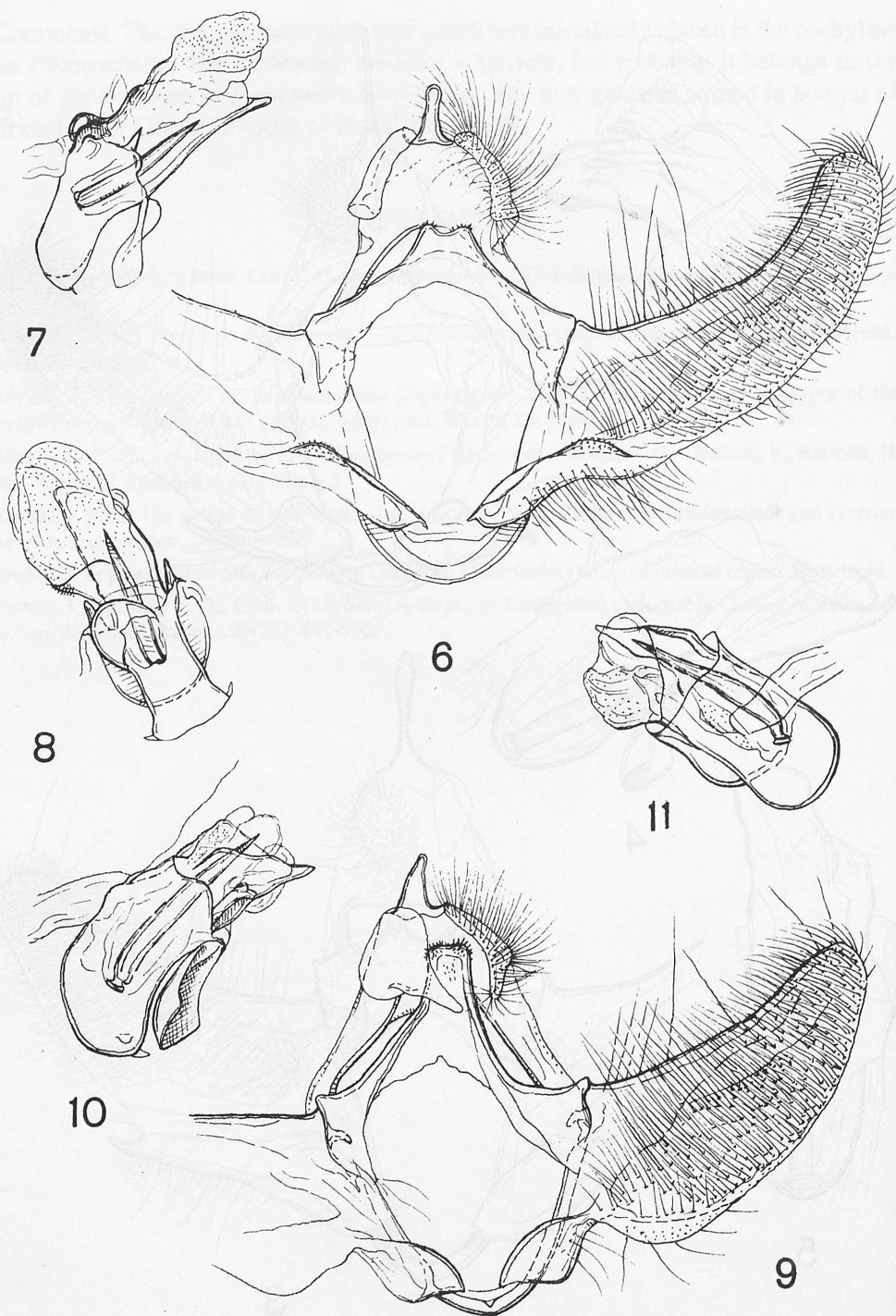
REFERENCES

- HEPPNER, J.B. (Editor), in press. Checklist. Part 2: *Pyraloidea* – *Tortricodea*. Atlas of Neotropical *Lepidoptera*.
- HUEMER, P. 1989. *Phtheochroa rugosana* auct. – ein Artenkomplex (*Lepidoptera: Tortricidae*). *Nota lepid.*, 12(4): 269-289.
- RAZOWSKI, J. 1964. Studies on the *Cochylidae* (*Lepidoptera*). Part X. The genitalia of the types of the *Cochylidae* described by WALSINGHAM. *Annls zool. Warsz.*, 22: 355-385.
- RAZOWSKI, J. 1970. *Cochylidae*. In: *Microlepidoptera Palaearctica*, AMSEL, H. G., GREGOR, F., REISSER, H. /Ed./, Verlag G. FROMME & Co., Wien, 3.
- RAZOWSKI, J. 1987. The genera of *Tortricidae* (*Lepidoptera*). Part I: Palaearctic *Chlidanotinae* and *Tortricinae*. *Acta zool. cracov.*, 30: 141 - 355.
- RAZOWSKI, J. In press. Palaearctic elements in *Cochylini* (*Tortricidae*) fauna of oriental region. *Nota lepid.*
- RAZOWSKI, J., BECKER, V. O., 1986. *Cochylini* (*Lepidoptera: Tortricidae*) collected in Central America and Mexico. *Acta zool. cracov.*, 29(20): 441-500.



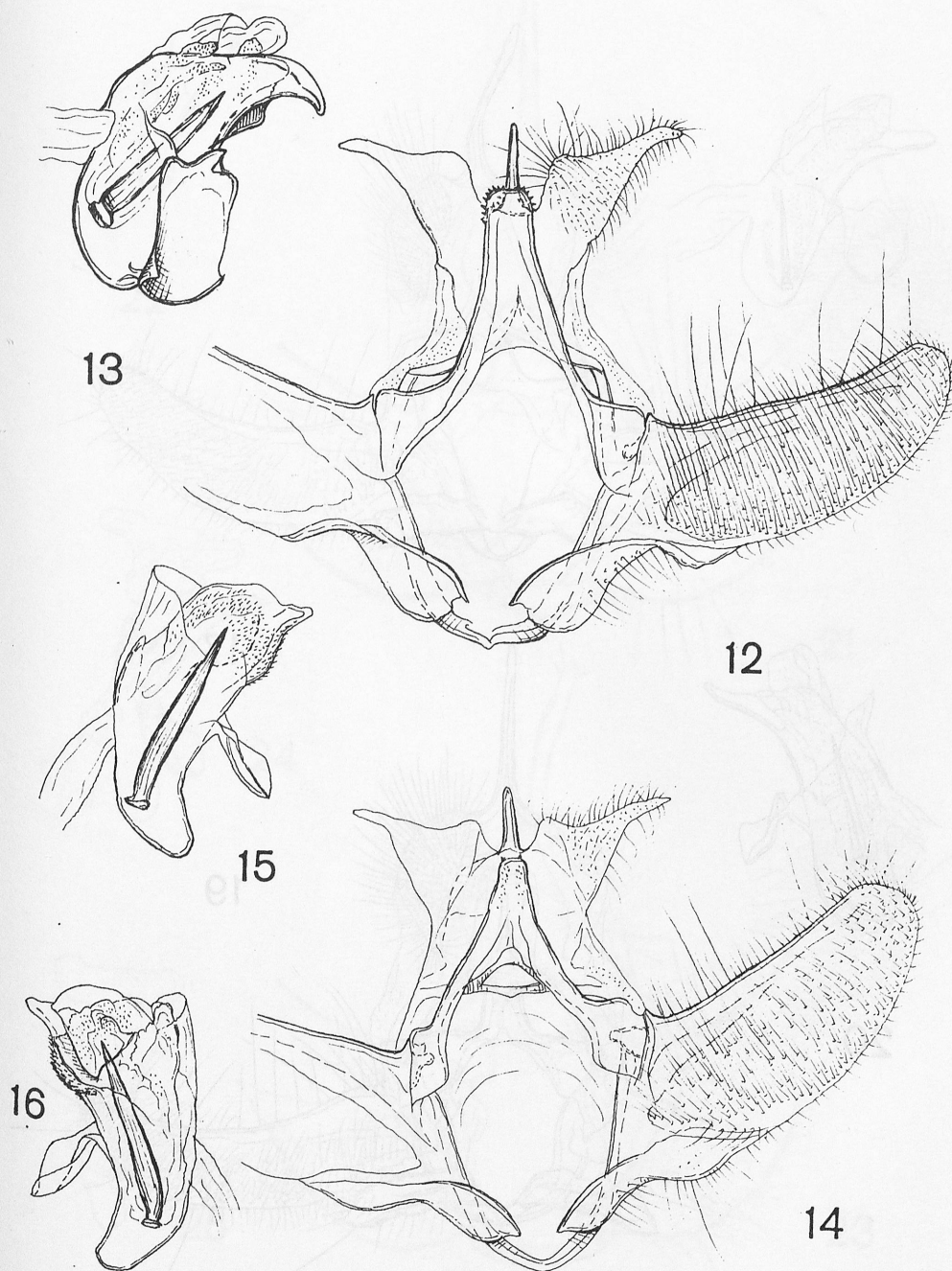
Figs 1,2. Male genitalia of *Phtheochroa faulkneri* sp.n., holotype

Figs 3-5. Male genitalia of *Phtheochroa chaunax* sp.n., holotype

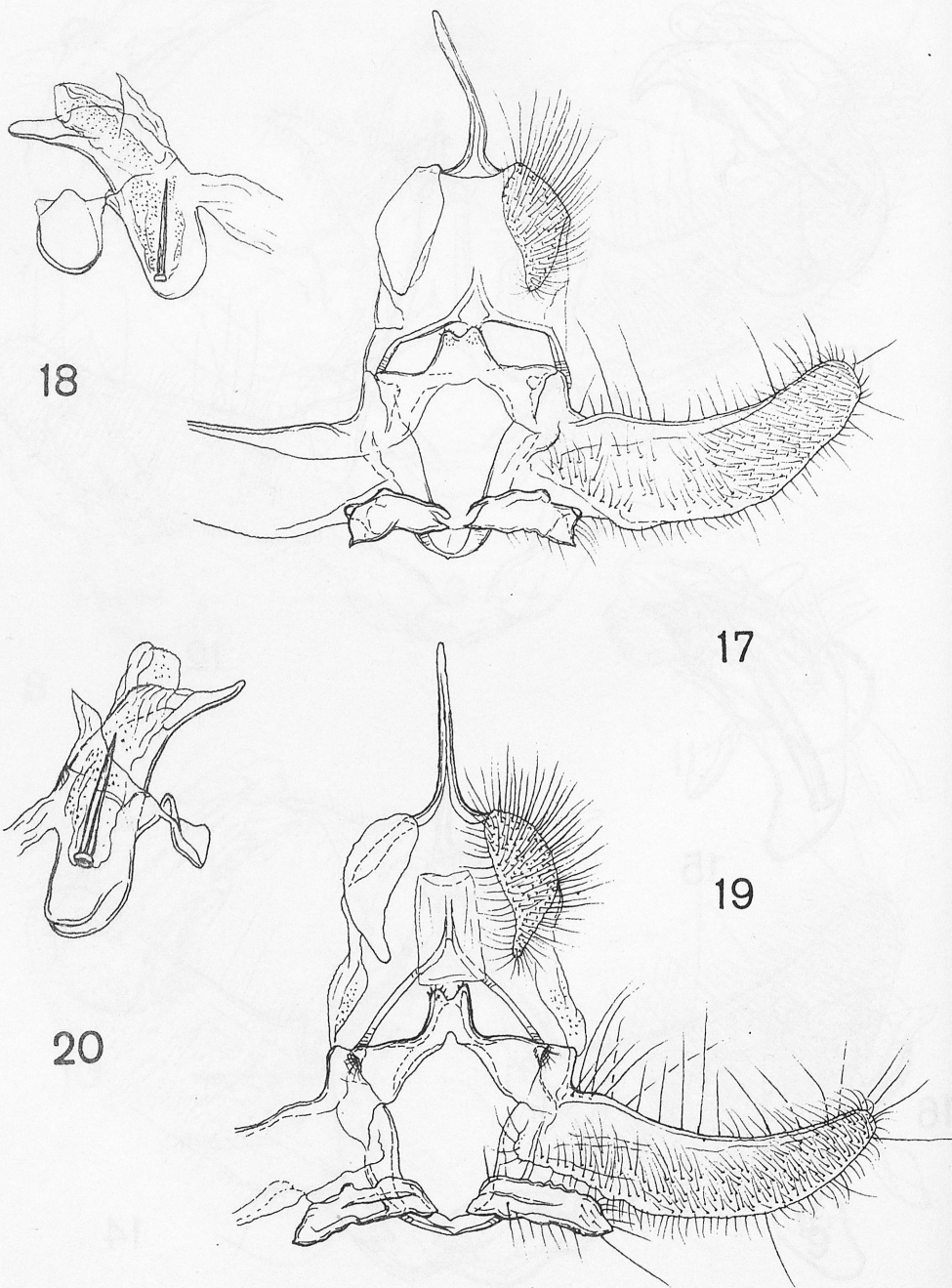


Figs 6-8 Male genitalia of *Phtheochroa johnibrowni* sp.n., holotype

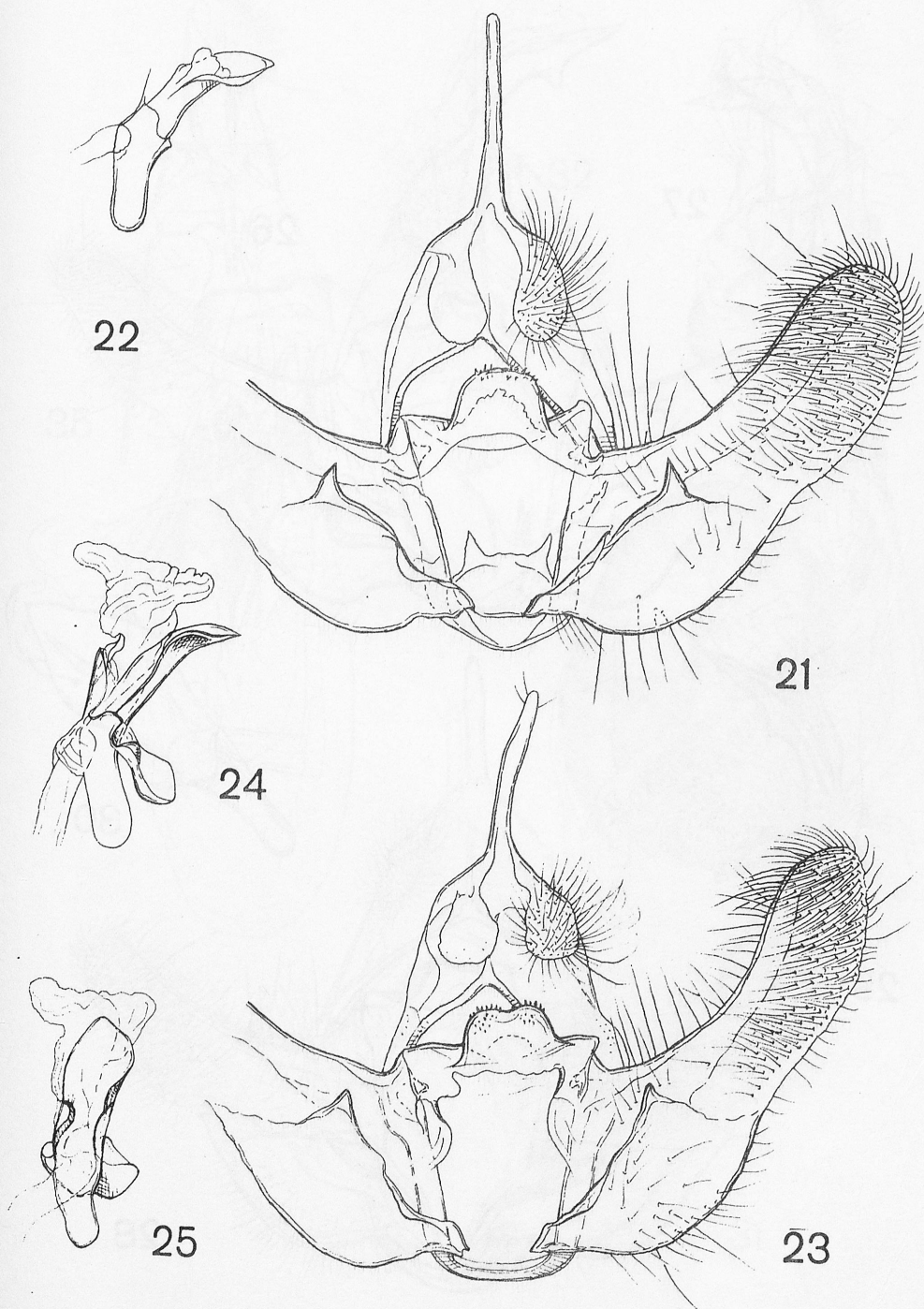
Figs 9-11. Male genitalia of *Phtheochroa ciona* sp.n., holotype



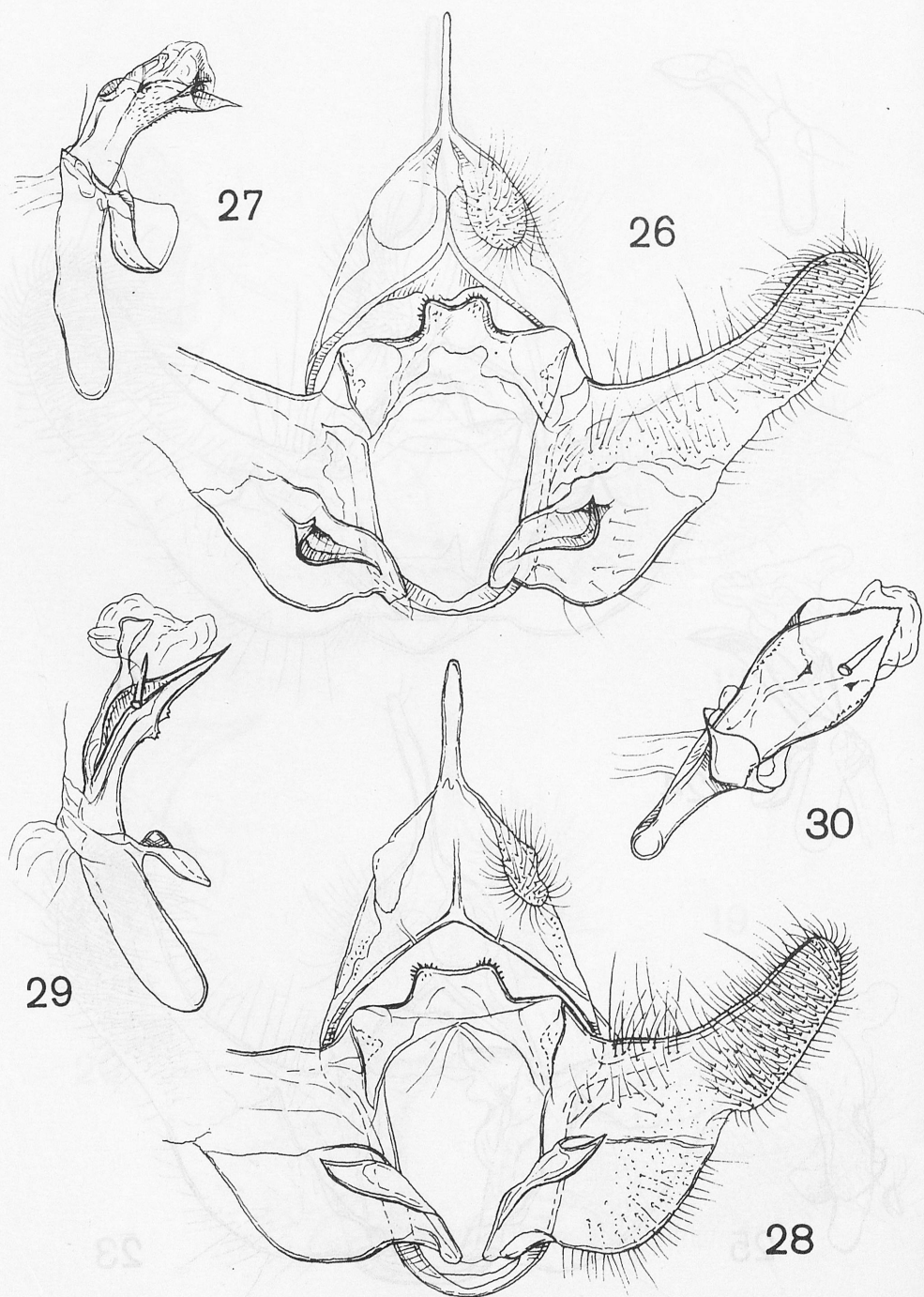
Figs 12-16. Male genitalia: 12,13 – *Phtheochroa hybrista* sp.n., holotype; 14-16 – *Ph. hyboscia* sp.n., holotype



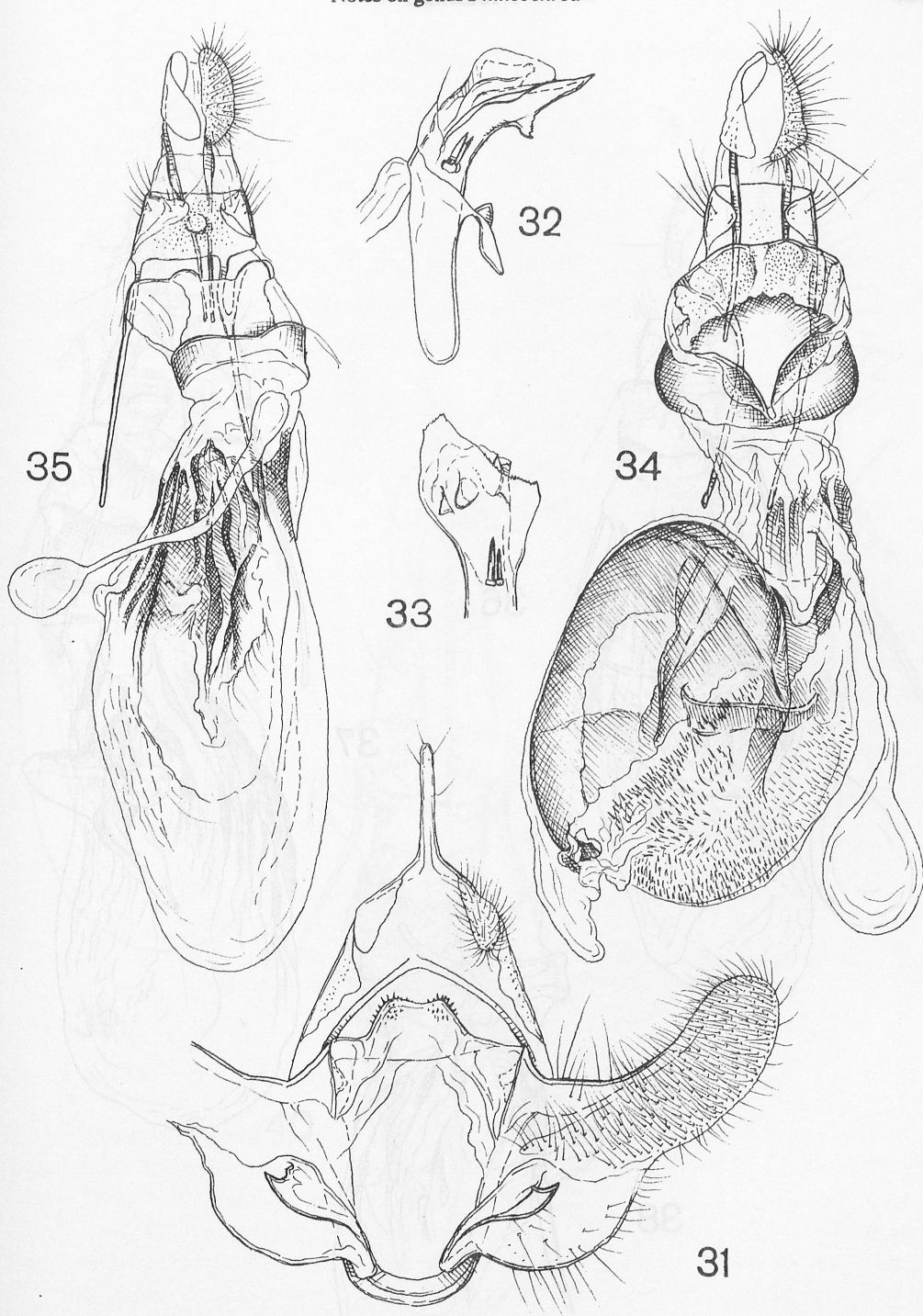
Figs 17-20. Male genitalia: 17,18 – *Phtheochroa descensa* sp.n., paratype; 19,20 – *Ph. noema* sp.n., paratype



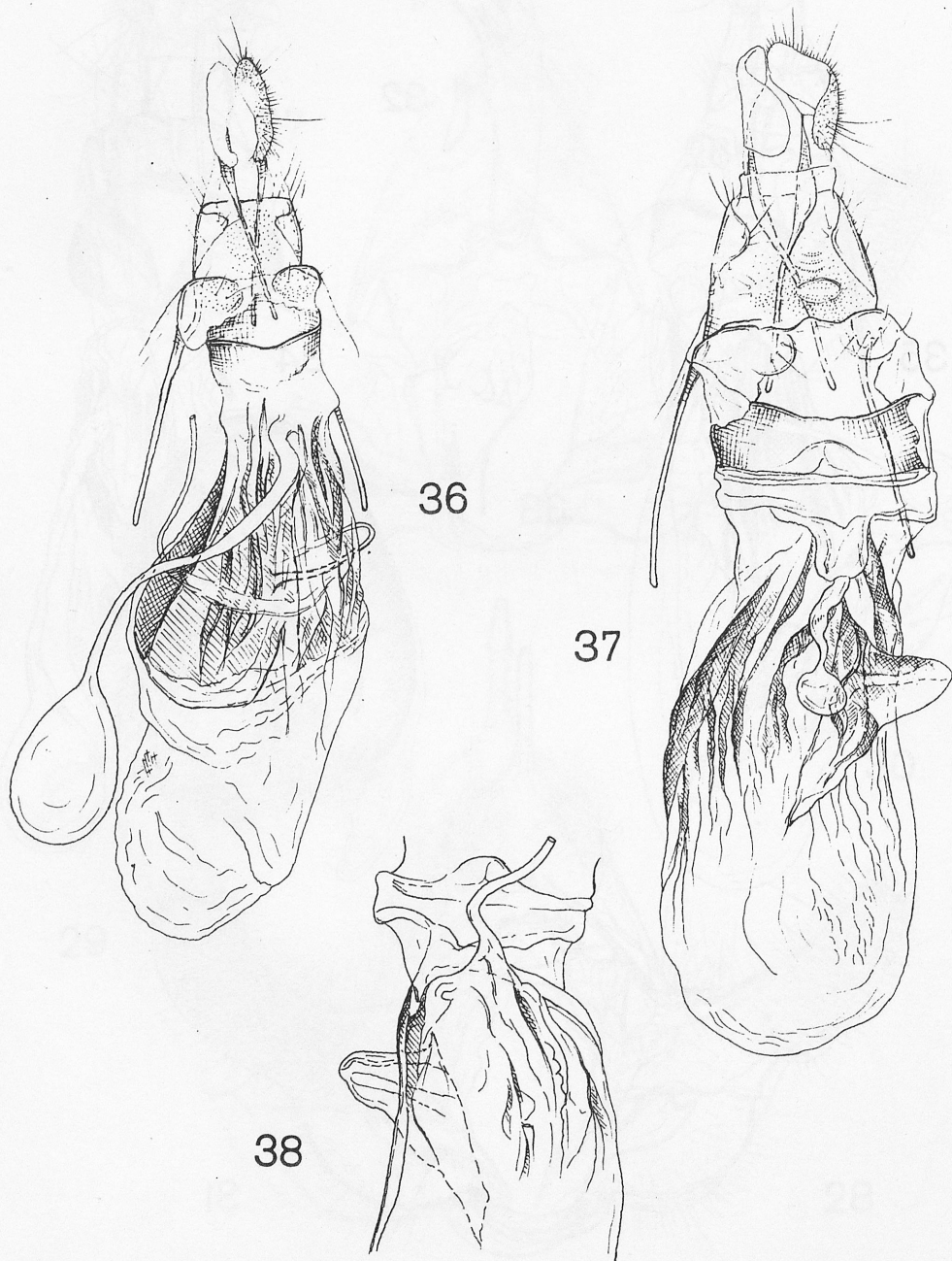
Figs 21-25. Male genitalia: 21,22 – *Phthoechroa hydnum* sp.n., holotype; 23-25 – *Ph. circina* sp.n., holotype



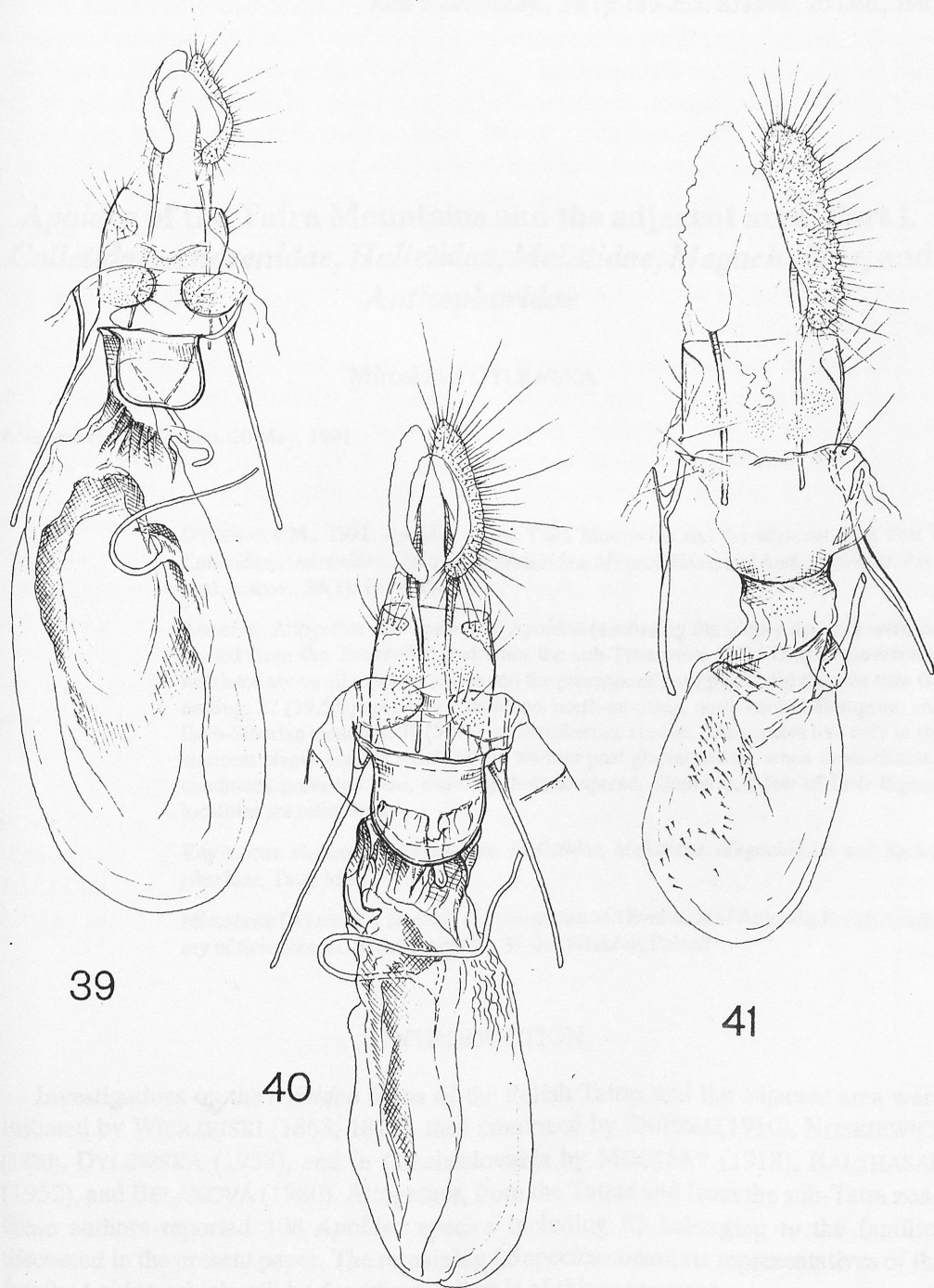
Figs 26-30. Male genitalia: 26,27 – *Phtheochroa chriacta* sp.n., holotype; 28-30 – *Ph. chriodes* sp.n., holotype



Figs 31-35. Male and female genitalia: 31-34 – *Phitheochroa ochodea* sp.n., holotype; 35 – *Ph. hybrista* sp.n., pratype



Figs 36-38. Female genitalia: 36 – *Phtheochroa cistobursa* sp.n., holotype; 37,38 – *Ph. hyboscia* sp.n., paratype



Figs 39-41. Female genitalia: 39 – *Phtheochroa descensa* sp.n., paratype; 40 – *Ph. noema* sp.n., holotype; 41 – *Ph. hydnum* sp.n., paratype

