New *Abrostola* OCHSENHEIMER, 1816 species from the Neotropical region

(Lepidoptera, Noctuidae, Plusiinae)

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Abstract
Descriptions of three new Neotropical *Abrostola* species, *A. karsholti sp. n.* (Peru), *A. peruviana sp. n.* (Peru) and *A. ugartii sp. n.* (Argentina) are given.

Zusammenfassung
In vorliegender Arbeit werden drei neue *Abrostola* OCHSENHEIMER, 1816 Arten beschrieben. Sie sind aus der Neotropischen Region und somit wird auch die Gattung *Abrostola* OCHSENHEIMER, 1816 erstmals auch aus der Neotropischen Region nachgewiesen.

Introduction

The genus *Abrostola* OCHSENHEIMER, 1816, is one of the largest Plusiinae genera, containing more than thirty species. The genus has long been considered as distributed widely in the Holarctic and the Palaeotropical regions but not represented in the tropical territories of the Oriental region, the Australian continent and the whole area of the Neotropical region. The characteristic Neotropical species of the tribe Abrostolini, *Mouralia tinctoides* (GUENÉE, 1852), is distributed from the equatorial part of South America throughout Central America and Mexico to the southern edges of the U.S.

As a result of the recent faunistical investigations in the northern part of the Oriental region, an autochtonous *Abrostola* species was discovered in the Philippines (Behounek and Ronkay, under preparation), related to *A. suisharyonis* STRAND, 1920.

The more intensive collectings in the South American Andes resulted in five specimens belonging to the genus *Abrostola*, representing three distinct species. The first two males were collected by O. Karsholt in 1987 in Central Peru. Five years later, a female was found in Argentina by A. Ugarte. At the end of 1994 and the beginning

of 1995, two Hungarian lepidopterological expeditions worked in Peru. Both expeditions had luckily collected an *Abrostola* specimen, a male in November, 1994 (leg. Hácz & Juhász) and a female in February, 1995 (leg. Bálint). The characterization of the Neotropical taxa of the genus and the descriptions of the new *Abrostola* species are given in the Systematic part.

Systematic part

Preliminarily, it is worth to mention that the Neotropical region is presumably rich in *Abrostola* species. In spite of the absence of previous findings, the relatively small material appears as surprisingly heterogeneous. It should be noted that 1) the five known specimens can be divided into three different units by their external features, 2) the genitalia of the males and the females are forming two different groups of each sex, 3) the single Peruvian female specimen is considered here as the other sex of *A. karsholti sp. n.*, although the colouration of the hindwing and the scaling and shining of the forewing show recognizable differences comparing with the externally very similar male specimens, 4) the female from *Argentina* differs from all of its known Neotropical congeners by its clear white hindwings and the lack of the suborbicular stigma.

Consequently, three species are separated and described, but the conspecificity of the female of *A. karsholti* with the holotype male of the species is still open to doubt. Two of the Neotropical *Abrostola* species resemble externally to some Nearctic (*urentis*- and *parvula*-groups) and Palaeotropical (*confusa*-group) species groups, the third (from Argentine) is rather distant from the other known taxa of the genus, the presence of the signum-stripes, combined with the almost complete lack of the invaginations of the eighth sternite at apophyses anteriores in its female genitalia is unique within the genus. The differences are summarized in the tables A and B, the identification keys for the external and genital features are given below these comparisons. The illustrations of the Nearctic species and their genitalia are given by EICHLIN & CUNNINGHAM (1978) and LAFONTAINE & POOLE (1991), those of numerous Palaeotropical taxa are published by DUFAY (1958).

Table A

Characteristic features of the Neotropical *Abrostola* species compared with those of the Nearctic taxa:

• external features (Plate 1, figs 6-9): less sharply defined crosslines, darker basal area with a weak ochreous irroration (the only Nearctic species having such colouration and wing pattern is *A. urentis* GUENÉE (1852); inner area of hindwing may clear silky white.

• male genitalia (text figs 1, 3): uncus with apical hook, valvae slightly asymmetric (clavi, saccular extensions), clavus well developed, large, with setose apical part,

saccular extension large, lobate or bar-like, harpe long, overreaching costal lobe, saccular end with a small process or an angle at ventral margin, vesica with a subbasal, mushroom- or cap-shaped cornutus (a homologous, curved, somewhat hook-like subbasal cornutus is present in *A. ovalis* GUENÉE (1852) and one or more (three) large cornuti fields.

• female genitalia (text figs 2, 4): ovipositor with weaker posterior papillae, invagination of sternite VIII may lacking, ostium bursae larger, trapezoidal, inflated, ductus bursae broad, flattened, short, with scobination only, corpus bursae elongated, narrow, without signum or smaller, rounded, with four signum-stripes.

Table B

Characteristic features of the Neotropical *Abrostola* species compared with those of the Palaeotropical taxa:

• external features: suborbicular stigma less distinct (without stronger whitish annulus) or completely lacking; subterminal crossline never straight at apex, without sharp whitish definition.

• male genitalia (text figs 1, 3): saccular extension smaller, shorter, saccular end with a small process or an angle at ventral margin, vesica with a subbasal, mushroom- or cap-shaped cornutus and one or two large cornuti-fields.

• female genitalia (text figs 2, 4): no general differences, with the exception of the presence of signa in *A. ugartii*. *A. karsholti* differs from *A. canariensis* HAMPSON, 1913 by its much larger ostium and more quadrangular ductus bursae with less developed lateral appendage; from the members of the *A. brevipennis* WALKER, 1858 species-group by its smaller, weaker ostium bursae and smaller, less tubular ductus bursae.

Key to the species based on the external characteristics

1a: Hindwing clear silky white with narrow dark marginal suffusion *ugartii*

1b: Hindwing whitish or ochreous with dark brownish irroration and wide dark marginal suffusion 2

2a: Ante- and postmedial crosslines less sinuous, almost straight, male hindwing strongly irrorated with brownish on both surfaces *peruviana*

2b: Ante- and postmedial crosslines more sinuous, especially upper third of postmedial, male hindwing more whitish, especially on underside *karsholti*

Key to the species based on the male genitalia (male of *ugartii* is unknown)

1a: Saccular extensions slightly asymmetric, straight, bar-like, clavi small, digitiform, apical part of valva broader, vesica with three separated cornuti fields *karsholti*

1b: Saccular extensions strongly asymmetric, lobate, rounded, clavi large, hooked, apical part of valva narrower, vesica with a single, large cornuti field *peruviana*

Key to the species based on the female genitalia (female of *peruviana* is unknown)

1a: Sternite VIII without sclerotized invaginations, ostium bursae small, calyculate, corpus bursae with four long signum-stripes *ugartii*

1b: Sternite VIII with rounded, inflated invaginations, ostium bursae much larger, sclerotized, corpus bursae without signum *karsholti*

Plate 1, figs. 6, 7; text figs 1, 2

Abrostola karsholti sp. n.

Holotype: male, "PERU, Dept. Lima, 3: 12 km SE Chosica, Zárate, 2200-2600 m, 23.-25.i. 1987, O. Karsholt leg., Zool. Mus. Copenhagen", slide No. 2985 Ronkay, deposited in coll. Zoological Museum, Copenhagen.

Paratypes: 1 male, with the same data as the holotype (coll. ZM Copenhagen); 1 female, Peru, Dept. Arequipa, Chuquibamba, 3300 m, 20.II.1995, leg. Zs. Bálint & G. Lamas, slide No. 5191 Ronkay (deposited in coll. HNHM Budapest).

Diagnosis: the new species is rather similar to *A. peruviana sp. n.* and *A. urentis*. It differs externally from both relatives by its more greyish forewing colouration, more sinuous antemedial and postmedial crosslines converging to inner margin, more conspicuous, waved subterminal line and paler, more whitish hindwings of the male, especially on underside. The male genitalia of *A. karsholti* differ from those of *A. peruviana* by its longer uncus, broader, apically less narrower valva, smaller clavi, straight, narrow saccular extensions and the different armature of vesica consisting of a subbasal mushroom-like cornutus and three separated fields of smaller, finer cornuti. The genital differences between *A. karsholti* and *A. urentis* are rather large (see the table A), besides the features mentioned above, the vesica of *A. urentis* is more simple, tubular, armed with a few cornuti only; the female genitalia of the Nearctic species have smaller ostium, tubular ductus and large, spacious corpus bursae.

Description: wingspan 24-26 mm, length of forewing 11-12 mm. Male. Head and thorax brownish grey, mixed with ochreous and a few blackish, collar widely whitish-ochreous, mixed with some red-brownish. Apical edges of tegulae dark brown, thoracic tufts very large, marked with dark grey. Antennae of male filiform. Abdomen greyish, basal segments with long whitish-ochreous hairs, dorsal crest rather weak, greyish-blackish, anal tuft small, whitish-ochreous. Forewing relatively high triangular with apex pointed, outer margin evenly arcuate. Ground colour dark grey

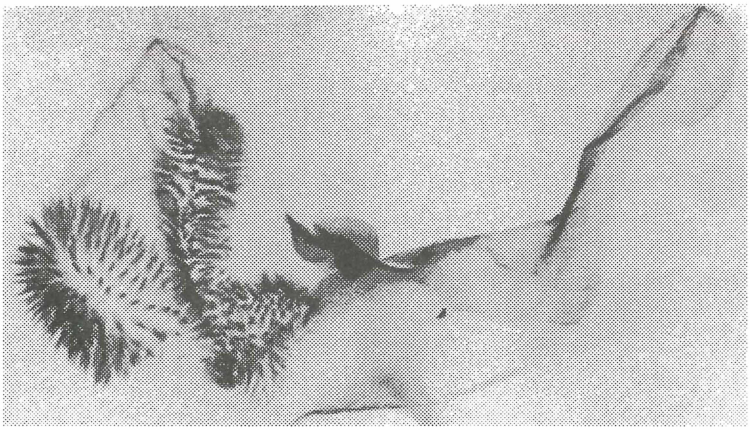


Abb. 1a +1b: *Abrostola karsholti sp. n.*, ♂-Genital

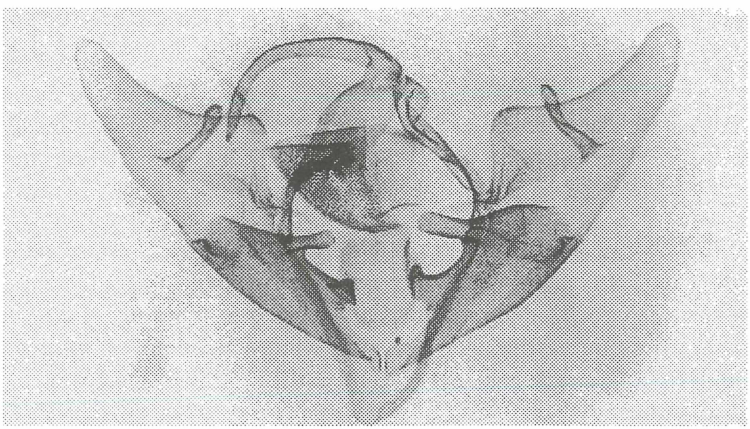
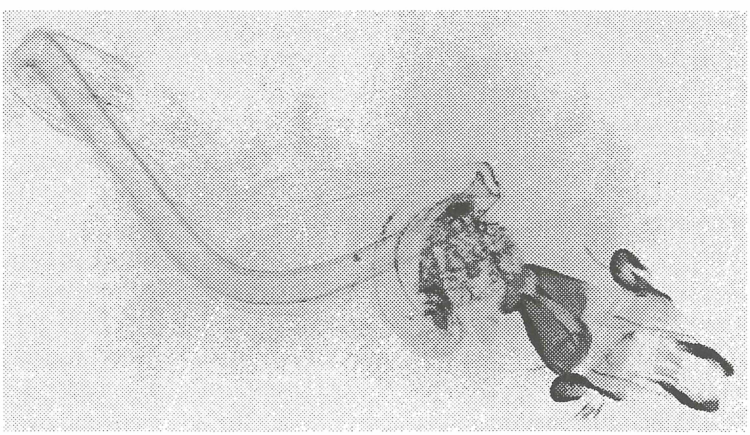


Abb. 2: *Abrostola karsholti sp. n.*, ♀-Genital



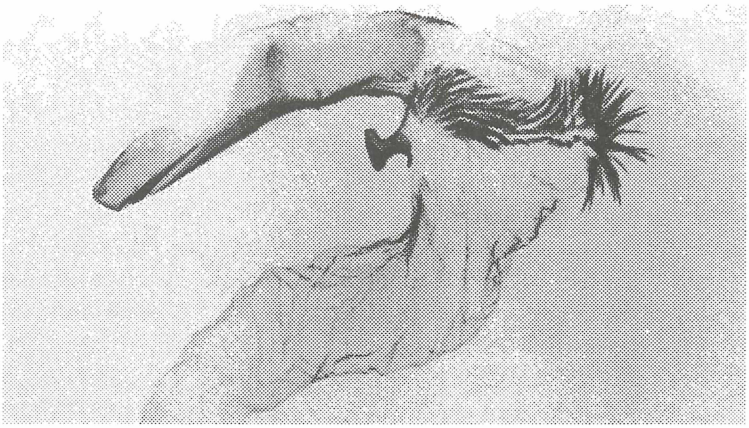


Abb. 3a +3b: *Abrostola peruviana sp. n.*, ♂-Genital

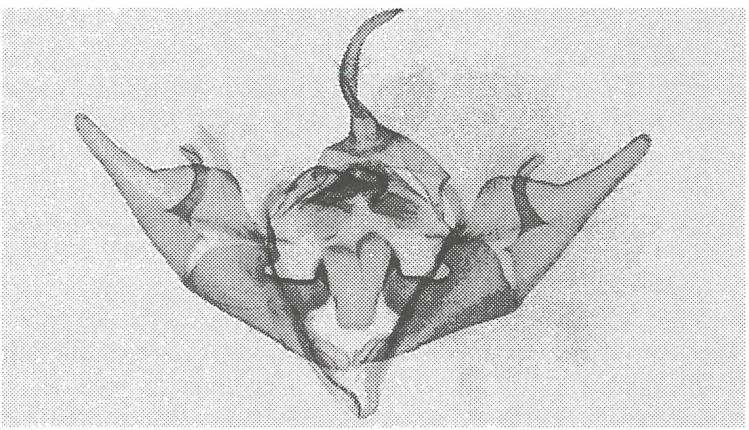
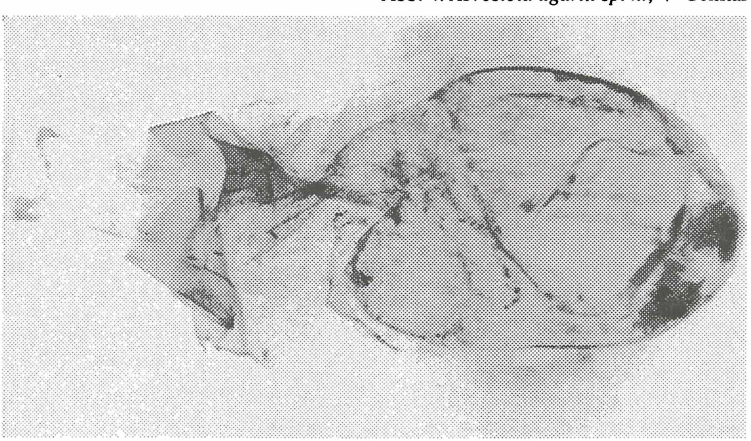


Abb. 4: *Abrostola ugartii sp. n.*, ♀-Genital



with plumbeous shining, irrorated with blackish grey, especially in medial area, base of wing suffused with pale ochreous. Ante- and postmedial crosslines rather distinct, former more or less straight, latter oblique, both crosslines slightly sinuous, blackish grey, defined with ochreous or reddish; upper third of postmedial line arcuate, strongly sinuous. Medial area slightly tapering below cell towards inner margin. Orbicular and reniform stigmata rounded, relatively big, fully encircled with blackish, marked with a few whitish-grey, subcellular stigma somewhat larger than orbicular, rounded, its outline blackish. Subterminal rather obsolescent, sinuous, whitish grey, defined by three short blackish apical streaks and a few others along outer margin. Hindwing whitish-ochreous, irrorated strongly with dark grey-brown, discal spot and transverse line poorly visible, marginal area rather narrow, uniformly dark brown; cilia whitish with dark brown inner stripe. Underside of forewing suffused strongly with dark grey-brown, transverse line diffuse, slightly sinuous, dark brown, discal spot hardly visible. Hindwing whitish, irrorated with dark brown, veins covered with brown. Discal spot lunulate, transverse line sinuous, rather diffuse; marginal area narrow.

Female. Similar to male but ground colour of forewing shining plumbeous grey, irrorated with some blackish grey at costa, base of wing dark, with a very few pale ochreous scales only, orbicular and reniform stigmata somewhat larger, rounded, encircled with blackish, subterminal relatively strong, sinuous, whitish grey, defined by three short blackish apical streaks and a dark grey outer shadow. Hindwing almost unicolorous, shining dark grey-brown, inner area only a bit lighter. Terminal line ochreous, cilia whitish with dark brown inner stripe. Underside of both wings strongly suffused with dark greyish brown, inner area of hindwing somewhat paler. Transverse line and discal spot obsolescent on both wings, somewhat stronger on hindwing.

Male genitalia (text fig. 1): uncus short, slender, curved, apically hooked, tegumen broad, low, weak. Fultura inferior more or less quadrangular, sclerotized, fultura superior covered with minute teeth; vinculum short, V-shaped. Valvae almost symmetric, medium-long, dilated at middle, apical part triangular, with apex pointed. Costal margin with a triangular lobe, ventral margin evenly arcuate, with a small process at saccular end. Sacculus sclerotized, clavi strong, curved, with fine, pointed, setose apices. Saccular extensions well developed, straight, bar-like, right extension somewhat larger, thicker. Harpe rather long, flattened, apically curved, overreaching costal lobe. Aedeagus short, thick, curved, carina with a broad, finely dentated ventral plate. Vesica rather short, everted forward, curved ventrally. Basal half inflated, more or less globular, armed with a small, subbasal, cap-shaped plate („cornutus") at inner curve and two large, elongated fields of cornuti running from lateral edges of carina to frontal tip of vesica, consisting of short, fine, pointed spinules. Medial part with a small, membranous, conical diverticulum, covered with minute spiculi, distal part of vesica finely scobinate, without cornutus.

Female genitalia (text fig. 2): ovipositor short, conical, posterior papillae strongly scobinate, eighth sternite with small, inflated-sphaerical lateral invaginations; gonapophyses very short, fine. Ostium bursae inflated, more or less trapezoidal, proximally tapering, its walls granulosely sclerotized, dorsal surface partly folded at middle. Ductus bursae short, broad, gelatinose with dense scobination, posterior part with a conical, lateral projection. Cervix bursae small, conical, scobinate, corpus bursae elongated, narrow, membranous with fine scobination.

Bionomics and distribution: the species was found in Peru at medium high altitudes (between 2200-3300 m a.s.l.), in the second half of the summer period, in January-February.

Plate 1, fig. 8; text fig. 3
Abrostola peruviana sp. n.

Holotype: male, "PERU, Prov. Cusco, Ollantaitambo, 2800 m, 28.XI.1994, leg. Hácz & Juhász, coll. Fábián", slide No. 5192 Ronkay, deposited in coll. Gy. Fábián (Budapest).

Diagnosis: the new species differs from *A. karsholti* by its more unicolorous plumbeous grey forewings with less sinuous ante- and postmedial crosslines and darker, more brownish irrorated hindwings on both surfaces. The male genitalia of *A. peruviana* differ from those of *A. karsholti* by its shorter uncus, narrower valvae with larger, hooked clavi, flattened, rounded saccular extensions and the armature of the vesica, consisting of larger, stronger spines unified into a single, large cornuti field. The differences between *A. peruviana* and the Nearctic (*A. urentis*) and Palaeotropical relatives (members of the *A. confusa*-group) are discussed above (see the tables A and B).

Description: wingspan 25 mm, length of forewing 11 mm. Head and thorax brownish grey, mixed with ochreous and a few blackish, collar widely ochreous, mixed with red-brownish. Apical edges of tegulae dark brown, thoracic tufts very large, marked with dark grey. Antennae of male filiform. Abdomen dark brownish grey, dorsal crest strong, blackish, anal tuft small, dark brown. Forewing rather narrow triangular with apex pointed, outer margin evenly arcuate. Ground colour shining plumbeous grey, irrorated with whitish grey and a few blackish grey (mostly along costa), basal field and outer third of medial area suffused with pale ochreous- or reddish brown. Ante- and postmedial crosslines rather distinct, almost straight, slightly sinuous, double, blackish grey filled with ochreous or reddish. Medial area wide, orbicular and reniform stigmata relatively small, incompletely encircled with blackish

and a paler grey annulus, subcellular stigma smaller than orbicular, rounded, marked with blackish; claviform represented by a few blackish scales only. Subterminal a diffuse, sinuous, whitish grey shadow, defined by three short blackish apical streaks and a cupreous patch at apex. Terminal line fine, interrupted, blackish, defined by a narrow ochreous outer line; cilia dark brownish grey. Hindwing shining whitish-ochreous, irrorated strongly with dark grey-brown, marginal area wide, uniformly dark brown. Terminal line ochreous, cilia whitish with dark brown inner stripe. Underside of forewing whitish-ochreous, suffused strongly with dark grey-brown, transverse line rather sharp, straight, dark brown, marked with a pale ochreous outer shadow, discal spot a fine, pale arch.
Male genitalia (text fig. 3): uncus short, slender, curved, apically hooked, tegumen broad, low, weak. Fultura inferior subdeltoidal-cordiform, strong, rather large, vinculum short, V-shaped. Valvae almost symmetric, medium-long, dilated at middle, apical part long, narrow. Costal margin with a rounded medial lobe, ventral margin with a small angle at saccular end. Sacculus sclerotized, clavi strong, curved, with fine, pointed apices, basal part shorter but broader on right side. Saccular extensions well developed, curved lobes, right extension larger, its dorsal edge more arcuate. Harpe strong, curved, flattened, overreaching costal lobe. Aedeagus short, slightly arcuate, carina with a broad, smooth lateral plate and a small, dentated ventral bar. Vesica broadly tubular, recurved ventrally, distal half tapering. Basal part with a small, mushroom-shaped cornutus at inner curve and a large, elongated cornuti field running from lateral end of carina to frontal tip of vesica, consisting of relatively long, pointed spinules. Distal part of vesica finely scobinate, without cornuti.

Bionomics and distribution: early stages are unknown, the unique specimen was found at the end of November at a medium high altitude in the Peruvian Andes.

Plate 1, fig. 9; text fig. 4
Abrostola ugartii sp. n.

Holotype: female, "ARGENTINIEN, Las Maderas, Jujuy, 21.02.1992, leg. A. Ugarte"; slide No. 27 Thöny (coll. HNHM Budapest).

Diagnosis: *A. ugartii sp. n.* differs externally from all related species by its clear white hindwings with rather narrow dark marginal suffusion only and by the lack of the suborbicular stigma. The configuration of the female genitalia is unique within the genus by the presence of the signum-stripes and the almost complete lack of the invaginations of the eighth sternite at apophyses anteriores.

Description: wingspan 28 mm, length of forewing 12 mm. Head and thorax grey-brown, mixed with ochreous and a few blackish, collar with strong black basal stripe; antennae of female filiform. Forewing rather broad, short triangular, with apex pointed, outer margin evenly arcuate. Ground colour shining, dark fumous grey, irrorated with blackish brown and a few pale ochreous. Basal area wide, partly ochreous (it is probably an arte factum due to the setting process!), ante- and postmedial crosslines fine, sinuous, blackish, defined by whitish. Medial area narrow, tapering below cell, orbicular small, rounded, reniform large, elliptical, both encircled with fine blackish and silvery-whitish annuli, filled with brownish grey; suborbicular stigma completely missing. Subterminal diffuse, sinuous, whitish grey, defined by three short blackish apical streaks and some small, indistinct darker patches; marginal area with an oblique, dark grey shadow running from apex to inner margin. Hindwing clear, shining silky white, veins and marginal suffusion dark brown, transverse line represented by small spots on veins; cilia white. Underside of both wings white, forewing and marginal area of hindwing strongly suffused with dark greyish brown, transverse lines and discal spots present but diffuse on both wings, somewhat stronger on hindwing.
Female genitalia (text fig. 4): ovipositor short, conical, posterior papillae anales weak, eighth sternite without inflated-sphaerical invaginations but with a finely sclerotized depression only; apophyses anteriores short, rather strong. Ostium bursae relatively small, quadrate-calyculate, sclerotized, finely wrinkled. Ductus bursae short, membranous with fine wrinkles, posterior half narrow, tubular, anterior half broadened, conical. Cervix bursae small, rounded, corpus bursae ovate, with four long signum-stripes.

Bionomics and distribution: early stages unknown, the unique specimen was collected at the last decade of February. The species is known from the type locality only.

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