


Studies on Crambidae VI: *Cristabotys* gen. nov. a new genus of Spilomelinae from Africa (Lepidoptera: Pyraloidea: Crambidae: Spilomelinae)

urn:lsid:zoobank.org:pub:E7CFF167-431C-4900-AA80-FA25EACAE853

Published online: 22 November 2024

DOI: <https://dx.doi.org/10.4314/met.v35i1.4>

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Abstract: A new genus *Cristabotys* gen. nov. is erected in the Spilomelinae for the species *Pyrausta pastrinalis* Guenée, 1854. Data on the food plant and distribution are given and the systematic position is discussed. Adults, larva and genitalia are illustrated. Similar looking species, *Pramadea ultratrinialis* (Marion, 1954) comb. nov. and *Patania straminea* (Butler, 1875) comb. nov., are compared to *Cristabotys pastrinalis* (Guenée, 1854) comb. nov.

Key words: *Botys straminea* Butler, 1875; *Pachyzancla ultratrinialis* Marion, 1954; *Pyrausta pastrinalis* Guenée, 1854; systematics

Citation: Maes, K.V.N. 2024. Studies on Crambidae VI: *Cristabotys* gen. nov. a new genus of Spilomelinae from Africa (Lepidoptera: Pyraloidea: Crambidae: Spilomelinae). *Metamorphosis* 35: 16–20.

Peer reviewed

INTRODUCTION

Pyrausta pastrinalis Guenée, 1854, originally described from Réunion, came to my attention when it was found among a series of specimens presented to me for identification by H. S. Staude as one of the species bred by the South African Caterpillar Breeding group. (Staude *et al.* 2016). At that moment, material from the Musée National d'Histoire Naturelle (MNHN) at Paris, France, was on loan to me for identification and comparison purposes with other African material. Although the type of *P. pastrinalis* is assumed to be lost, material identified as *P. pastrinalis* does form part of the MNHN loan material. This therefore allowed me to confirm the identification of the specimen submitted by H. S. Staude. Subsequently, more material was found in other collections. Since the genitalia are quite peculiar and since the larval data are now available, this publication seemed appropriate.

METHODS AND MATERIALS

ABSRC: AgroBioSys Intl. Reference Collection, Wetteren, Belgium

MNHN: Musée National d'Histoire Naturelle, Paris, France.

RMCA: Royal Museum for Central Africa, Tervuren, Belgium.

RSA: Republic of South Africa.

The material studied comes from collections in Belgium (ABSRC, RMCA) and France, Paris (MNHN) and a bred specimen donated by H. S. Staude (RSA).

Genitalia dissection:

Genitalia were dissected following Maes (1985) (a modification and extension of Robinson [1976] specific to

the Pyraloidea). The abdomen was preserved entirely and also opened laterally along the pleural membrane to show the characters on sternites and tergites. The nomenclature of the genitalia follows Klots (1956) and the nomenclature of the tympanal organs follows Maes (1985).

Wing venation:

The wings were cleared and stained following a method described by Zimmerman (1978).

Digital processing of images:

Images of the adults were taken with a Canon Eos 5D Mark IV with a Macro lens EF 100 mm 1:2.8 using Helicon remote (ver.3.9.12M). The genitalia were photographed using a Leitz Laborlux S with a Canon Eos 5D Mark IV camera using the LM scope C-Mount, LM scope C-Mount Port 1x-38 mm. All images (adults and genitalia) were stacked using Helicon focus (ver.8.2.1).

RESULTS

Crambidae Latreille, 1810

Spilomelinae Guenée, 1854

Tribus Not assigned

Descriptions:

Cristabotys gen.nov.

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gender: male

type species: *Pyrausta pastrinalis* Guenée, 1854

Diagnosis: male genitalia with a curved, strongly sclerotized transtilla forming a distinct comb-shaped structure. Valva simple, fibula lacking; uncus as a simple narrow extension. Female genitalia with a sclerotization on the ductus bursae and a simple signum on the corpus bursae.

Description:

Head: frons rounded, slightly protruding; maxillary palps well developed, at base of scaled proboscis; labial palps

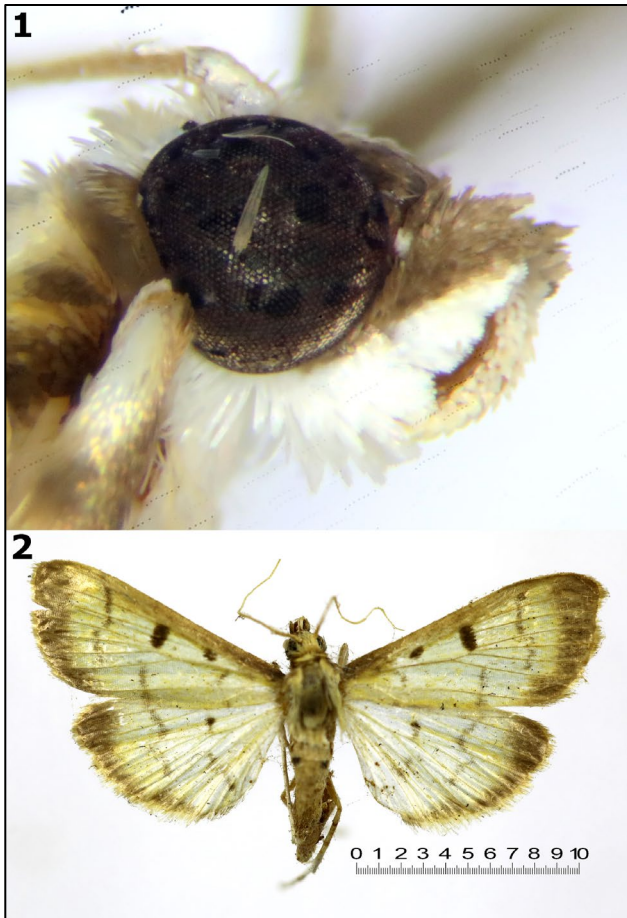
Received: 17 October 2024

Accepted: 13 November 2024

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porrect, triangular; antenna filiform, simple in female, with some short hairs on ventral part of antenna in male (Fig. 1).



Figures 1 & 2 – 1: Lateral view head *Cristabotys pastrinalis* (Guénée, 1854); 2: Adult *Cristabotys pastrinalis* (Guénée, 1854) (K. Maes Gen. Prep.nr. ♀20974).

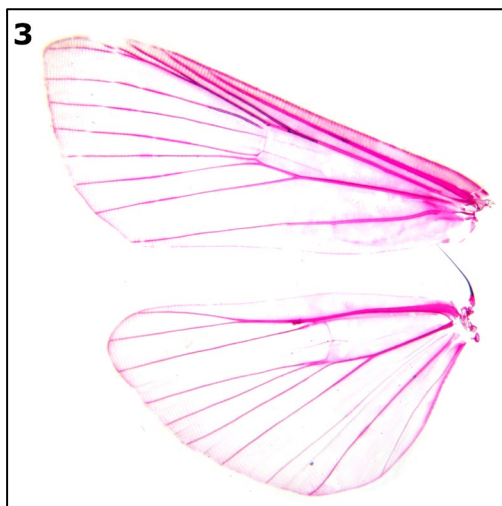


Figure 3 – Wing venation *Cristabotys pastrinalis* (Guénée, 1854) (K. Maes Gen. Prep.nr. ♂2383).

Wings: forewing triangular (Fig. 3); Sc parallel with R stem, terminating approximately at the R2+3+4 bifurcation; R2+3+5 from upper angle of the cell; R1 originating before upper angle of the cell; R1, R2, R3 terminating before the apex; R4 terminating in the apex of the fore wing; R5 slightly curved at the base, well separated from the upper angle of the cell; M1 and M2 parallel; M2, M3 and CuA1 approximated near their base and forming

the lower angle of the cell; anal vein simple, from thorax to outer edge of the wing; hindwings with Sc+R1 anastomosed beyond the upper angle of the cell: M1 and M2 parallel over their length; M2 M3 fused at lower angle of the cell; M3 close to lower angle but separated; Cu veins parallel; frenulum simple in male, double in female, frenulum consisting of a series of elongated scales originating on the membranous part between the M-Cu-stem and the A-stem.

Male genitalia: uncus simple, dorsally and laterally with simple setae; tegumen rather wide as is vinculum, no pronounced saccus; valva simple, ovoid; transtilla strongly sclerotized forming a curved comb-shaped structure; fibula lacking; aedeagus tubular with some minute spines at the apical end (Fig. 4: A, B, C).

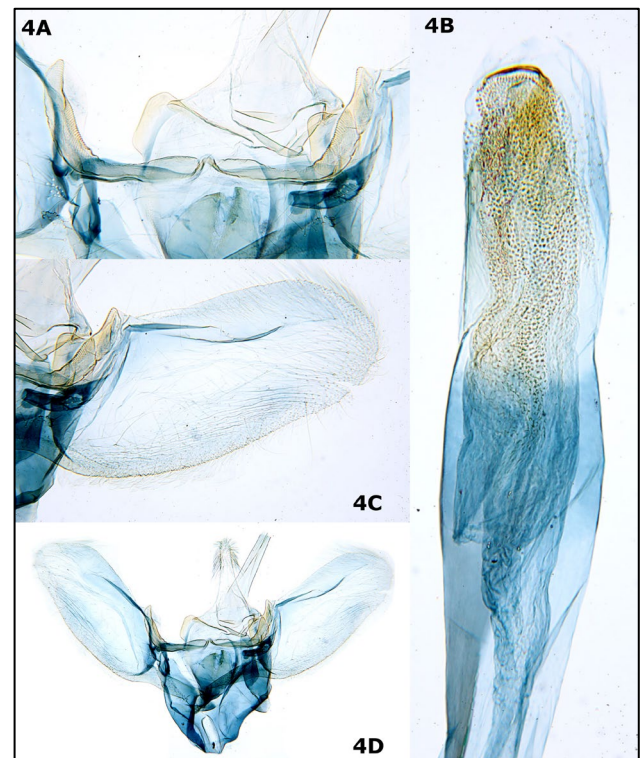


Figure 4 – Male genitalia *Cristabotys pastrinalis* (Guénée, 1854) (K. Maes Gen. Prep.nr. ♂2041). 4A: detail transtilla; 4B: aedeagus; 4C: valva; 4D: male genitalia.

Female genitalia: papillae anales membranous with long and short setae; apophyses posteriores and anteriores of about equal length; sinus vaginalis membranous; antrum tubular as an open ring; ductus bursae wide with a coiled, wide ductus seminalis near the antrum; sclerotized plate on ductus bursae and top of corpus bursae bearing longitudinal grooves; corpus bursae with a large, sickle-shaped signum, transversally on the corpus bursae; appendix bursae lacking (Fig. 5: A, B).

Tympanal organs: praecinctorium bilobed; tympanal organs invaginated, bean shaped; fornix tympani narrow with a large processus tympani; spinula well developed; saccus tympani well developed; venula prima and venula secunda membranous (Fig. 6).

Foodplant: *Bidens pilosa* L. (Asteraceae).

Distribution: Confirmed from Réunion, Republic of South Africa, Cameroon.

Etymology: the name refers to the typical comb-like transtilla (Latin = crista) and *Botys*, a name used by the

older authors (e.g. Hübner, Walker, Fabricius) for Pyraloidea.

Remarks: see under redescription.

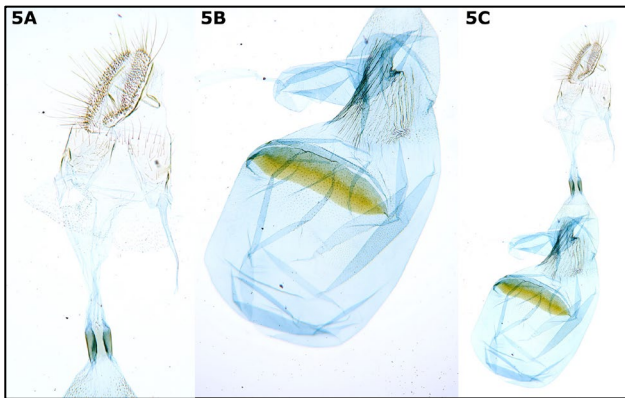


Figure 5 – Female genitalia *Cristabotys pastrinalis* (Guénée, 1854) K. Maes Gen. Prep. nr. ♀2042. 5A: Apophyses and antrum; 5B: corpus bursae; 5C: female genitalia.

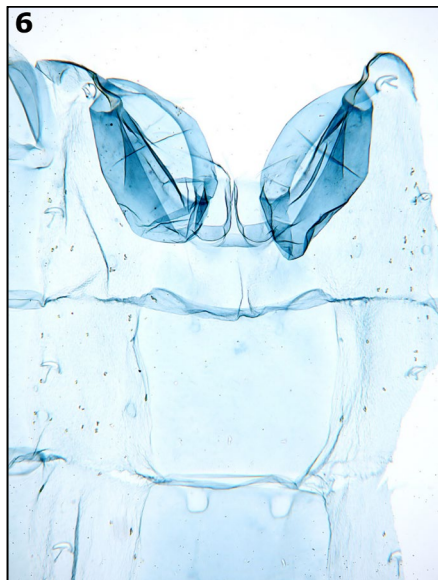


Figure 6 – *Cristabotys pastrinalis* (Guénée, 1854) tympanal organs K. Maes Gen. Prep. nr. ♂2041.

Redescription of *Pyrausta pastrinalis* Guénée, 1854

(Fig. 1; Fig. 2; Fig. 3; Fig. 4: A, B, C, D; Fig. 5: A, B, C; Fig. 6)

Type material: probably lost.

Additional material studied: 1♀: LA RÉUNION Saint Philippe, Forêt Brulé de Mare Longue 1.ii.1955 P. Viette / K. Maes Gen. Prep. nr. ♀20974 (MNHN); ♀: CAMEROON, Centre, Savannah-Rainforest edge, near Magong, SE of Yoko. N 05°23'38.5". E 012°30'48.4". 732m. 15 Watt Black Light. 9 to 11-VI-2018. K. Maes/ ABSRC1000128; ♂: CAMEROON Center Yaoundé Mt. Phébé 1070m viii.1993/ K. Maes Gen. Prep. nr. ♂2041/ ABSRC1001777; ♀: CAMEROON Sud Prov. Campo Res. 80m 1-4.11.1991 K. Maes/ K. Maes Gen. Prep. nr. ♀2042/ ABSRC1001778; ♀: CAMEROON, Centre Region, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m. Black/MV lights. 25-VI-2022. K. Maes/ ABSRC1002518; ♂: CAMEROON, Sud Province, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m.

MV Light. 14 to 15-XII-2014. K. Maes/ ABSRC1004086; ♂: CAMEROON, Sud Province, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m. MV Light. 14 to 15-XII-2014. K. Maes/ ABSRC1004088; ♂: CAMEROON, Sud Province, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m. MV Light. 14 to 15-XII-2014. K. Maes/ ABSRC1004089; CAMEROON, Sud Province, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m. MV Light. 14 to 15-XII-2014. K. Maes/ K. Maes Gen. Prep. nr. ♂2482/ ABSRC1004087; ♂: CAMEROON, Centre, clearing off new highway from Yaoundé to Douala, near Ekékam III. 3°52'48"N. 11°21'4"E. 770m. 250W LVM light. 1-VII-2023. K. Maes/ ABSRC1003100; ♀: CAMEROON, Sud Province, near Ebogo village, fresh clearing near edge of secondary forest. 03°24'31.9"N. 11°29'30.2"E. 670m. MV Light. 23-IV-2015. K. Maes/ ABSRC1004084; ♀: CAMEROON, Centre, Yaoundé, Mt Phébé. 3°54'49.92"N. 11°29'51.08"E. 900m. MV Light. 20 to 25-VIII-2012. K. Maes/ ABSRC1004085; ♂: CAMEROON Center Yaoundé Mt. Phébé 1070m vii.1993/ ABSRC1004076; ♂: CAMEROON Center Yaoundé Mt. Phébé 1070m vii.1993/ ABSRC1004077; ♂: CAMEROON Center Yaoundé Mt. Phébé 1070m vii.1993/ ABSRC1004078; ♂: CAMEROON Center Yaoundé Mt. Phébé 1070m 6.vi.1993/ ABSRC1004079; ♂: CAMEROON S.W. Mt. Cameroon Bonakanda 1375m 29.12.1988 K. Maes/ ABSRC1004080; ♂: CAMEROON S.W. Mt. Cameroon Bonakanda 1375m 29.12.1988 K. Maes/ ABSRC1004081; ♂: CAMEROON S.W. Mt. Cameroon Bonakanda 1375m 29.12.1988 K. Maes/ ABSRC1004082; ♂: CAMEROON S.W. Mt. Cameroon Bonakanda 1375m 29.12.1988 K. Maes/ ABSRC1004083; ♂: CAMEROON, Centre, clearing off new highway from Yaoundé to Douala, near Ekékam III. 3°52'48"N. 11°21'4"E. 770m. 250W LVM light. 1-VII-2023. K. Maes/ K. Maes Wing Prep. ♂2483/ ABSRC1003099; ♂: KENYA, Western, Kakamega F. R., Primary Forest. 0°21.34'N. 34°51.39'E. 1600m. 15 Watt Black Light. 6-XII-2001. F.N. Namu/ K. Maes Gen. Prep. nr. ♂1624/ ABSRC1004074; ♂: KENYA, Western, Kakamega F.R., Primary Forest. 0°21.34'N. 34°51.39'E. 1600m. 15 Watt Black Light. 17-XII-2001. F.N. Namu/ ABSRC1004075; ♀: RSA Franklin Park, Hoedspruit, bred from larva coll on 31.05.2014, pupa on 01.06.2014, emerged on 18.06.2014. Bred on "unknown green creeper" A. & I. Sharp. (M841)/ K. Maes Gen. Prep. nr. ♀2499/ ABSRC1003431.

Diagnosis: Ground color yellow with a round black spot in the middle of the cell and a reniform black spot on the transverse vein of the cell.

Description:

Head: as for the genus; dorsal part of the labial palps brown, ventral part white.

Wings: forewing triangular, ground color straw-yellow with brown costa up to the apex of the forewing. Postmedial band brown over its whole length; weak antemedial fascia; round spot near the middle of the cell and a reniform black spot near the transverse vein of the cell; postmedial line brown, slightly curved outwards near the M-veins, strongly curved inwards to base of wing near Cu-vein. Hindwing same color as forewing with a dark spot in the cell, a curved, brown postmedial line and a brown

postmedial band which is broader near the apex of the hindwing and narrower beyond the apex.

Male genitalia: uncus simple, simple setae laterally; tegumen broad, well developed as vinculum; valva ovoid without fibula but with a curved, strongly sclerotized transtilla; aedeagus tubular, very small pines as cornuti near the apical end of the aedeagus.

Female genitalia: papillae anales membranous with long and short setae; sinus vaginalis membranous; apophyses posteriores and anteriores of about equal length; antrum ring-shaped, open; ductus bursae with a curved, wide ductus seminalis; ductus bursae rather short, with a sclerotized plate with longitudinal grooves near the base of the membranous corpus bursae; simple sickle shaped signum on corpus bursae, appendix bursae lacking.

Tympanal organs: praecinctorium bilobed; tympanal organs invaginated, bean shaped; fornix tympani narrow with a large processus tympani; spinula well developed; saccus tympani well developed; venula prima and venula secunda membranous.

Foodplant: *Bidens pilosa* L. (Asteraceae) (M. Bippus, 2019); “unknown green creeper”, (Staude *et al.*, 2016).

Distribution: Cameroon, RSA, Kenya, Réunion, Mauritius.

Remarks: Several species with this typical yellow color and wing pattern can be found in Crambidae from Africa. This yellow color is quite common among species of *Pyraustinae* and *Spilomelinae* and *C. pastrinalis* (Guenée, 1854) can easily be confused with other similar looking species. This species is externally similar to *Patania straminea* (Butler, 1875) **comb. nov.** originally described from South Africa, but *P. straminea* lacks the round median spot in the cell. On the other hand, this median spot is found in *Pramadea ultratrinialis* (Marion, 1954) **comb. nov.** originally described from Madagascar, but the forewing is more elongated triangular and the ground color is more rich-yellow and the brown subterminal band on the wings is more undulated and not straight. The two similar species were dissected and the new combinations are based on the genitalia.

Cristabotys pastrinalis (Guenée, 1854) was originally placed in *Botys* now *Pyrausta* Schrank 1802 [Apr. 24] and although it resembles externally some *Pyrausta* species (wing pattern, labial and maxillary palps), the genitalia place it in the *Spilomelinae*, because of the overall structure of the male genitalia (uncus, tegumen, valva), tympanal organs and female genitalia. The male genitalia are quite peculiar in the presence of the comb-like structure and the lack of a fibula on the valva. Currently this genus is not attributed to a tribus because of the peculiar transtilla. The distribution of the species mentioned here is only based on specimens actually studied and dissected but this species probably occurs over large parts of Africa. More material may be in collections from different localities but at present these are likely to be misidentified/overlooked because of the external resemblance with other species. The study of material from different collections of Crambidae from Africa will likely result in a greater geographic range for the species.

Additional material from similar species studied:

Holotype: *Pachyzancla ultratrinialis* Marion, 1954: Madagascar central, Massif de l'Ankaratra, Manjakatampo; Gen. slide nr. ♂ 517 (Marion) [rectangular

label “Type”, red] (MNHN); ♂: Madagascar Est Marojely Rés. nat. int. xii Ambatosoratra sommet 1700m 11.1960 P. Soga/RMCA ENT 000008156.

Holotype: *Botys straminea* Butler, 1875: 75–64 Natal [round type label with red border] (NHMUK); ♀: KENIA Taita Discovery Centre, Entrance 500m 03°42'S 38°46'E 01.iv.2001 Leg. J.& W. De Prins/ RMCA-ENT-000045117; ♀: KENIA, Coast, Rukinga Ranch, Sagana Dam. 03°51'09.6"S. 38°50'39.7"E. 462m. Black/MV lights. 30-XII-2000. K. Maes/ K. Maes Gen. Prep.nr. ♀ 2342/ ABSRC1003373; ♂: TANZANIA, Morogoro, 41 km W. of Morogoro . 6°56'04.3"S. 37°23'04.7"E. 550m. Black/MV lights. 3-VI-2001. K. Maes/K. Maes Gen. Prep.nr. ♂ 2344/ABSRC1003375; ♀: KENIA, Coast, TDC, Rukinga Ranch, Makaramba. 3°40'22"S. 38°45'44"E. 495m. Black/MV lights. 27-III-2002 K. Maes/ ABSRC1004090; ♀: Coll. Museum Tervuren Kenya: Taita Discovery Centre 27/03/2000 Near laboratory 03°42'S 38°46'E (D6) Ugo Dall'Asta/K. Maes Gen. Prep.nr. ♀ 14415/RMCA-ENT 000045118; ♀: Coll. Museum Tervuren Kenya: Taita Ranch 27/03/2000 (R4) Savannah GPS 3°51'S 38°53'E Ugo Dall'Asta Hg + Hal/ RMCA-ENT 000045119; Rep. South Africa, Limpopo, Casketts farm, Hoedspruit, bred on *Dombeya burgessiae* (Malvaceae) (M220). Ex-larva 21/03/2013 collected, 29/03/2013 pupation, 12/04/2013 emergence. A. & I. Sharp/ K. Maes Gen. Prep.nr. ♂ 2309/ABSRC1003327.

ACKNOWLEDGEMENTS

The author wishes to thank Hermann Staude for the adult specimen from his larval rearing group. The staff of the Entomology Laboratory, Paris (MNHN), were so kind to put material at his disposition during a visit in 2019. The author wishes to the staff of The Royal Museum for Central Africa (RMCA) for logistic support. D. Agassiz and W. Mey were so kind to revise the paper and provide constructive remarks.

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