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Notes from Old World Crambinae (II). New species of *Chilo* Zincken, 1817 (Lepidoptera: Pyraloidea)

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Abstract

Three new species of *Chilo* Zincken, 1817 are described and illustrated: *Chilo agassizi* Bassi, sp. n. from Tanzania, *Chilo barpak* Bassi, sp. n. from Nepal and *Chilo gumaensis* Bassi, sp. n from Botswana.
KEY WORDS: Lepidoptera, Pyraloidea, Crambinae, distribution, new species, Botswana, Nepal, Tanzania.

Notas de Crambinae del Viejo Mundo. Nuevas especies de *Chilo* Zincken, 1817 (Lepidoptera: Pyraloidea)

Resumen

Se describen y representan tres nuevas especies del género *Chilo* Zincken, 1817: *Chilo agassizi* Bassi, sp. n. de Tanzania, *Chilo barpak* Bassi, sp. n. de Nepal y *Chilo gumaensis* Bassi, sp. n de Botsuana.
PALABRAS CLAVE: Lepidoptera, Pyraloidea, Crambinae, distribución, nuevas especies, Botsuana, Nepal, Tanzania.

Introduction

Among the large genera of subfamily Crambinae, *Chilo* Zincken, 1817 probably is the best known due to the economic importance of some of its members as pests of cultivated Poaceae.

BŁESZYŃSKI (1962, 1970) taxonomically treated all of the species known to him, but he did not propose new combinations for the species included in the genus that did not belong to it.

Among the valuable material of *Chilo* forwarded to me for study by D. J. L. Agassiz (Weston-Super-Mare, United Kingdom) and O. Karsholt (Zoological Museum, Natural History Museum of Denmark, Copenhagen, Denmark), and in the material of my own collection I discovered three new species, which I describe here.

Material and methods

Genitalia preparations were made following ROBINSON (1976). The terminology of the genitalia follows BŁESZYŃSKI (1970), KLOTS (1970) and KRISTENSEN (2003). Genitalia photographs were taken with a Canon S120 digital camera. The habitus photos were made with a Nikon D300 digital camera. The images were enhanced with Adobe Photoshop Elements.

The following abbreviations are used:

CDA - Dr. David J. L. Agassiz research collection, Weston-Super-Mare, United Kingdom
CGB - Graziano Bassi research collection, Avigliana, Italy

m - meter(s)
ZMUC - Zoological Museum collection, Natural History Museum of Denmark, Copenhagen, Denmark.

Taxonomy

Chilo Zincken, 1817. *Germ. Mag*., **2**: 36

Type species: *Tinea phragmitella* Hübner, [1805]. *Samml. Eur. Schmett., Tineae*: figs 297-298

Chilo is the main genus of the tribe Chiloini, which includes another ten genera. It is distributed worldwide and its origin is in the Old World. Many species have metallic scales on the forewing. It is well characterized in male and female genitalia, but, being an old "store-genus", some of the fifty-eight species actually listed (see NUSS *et al*., 2021), should be reassigned to other genera of the Haimbachiini tribe. Since BŁESZYŃSKI 's revision (1970) only the Chinese fauna was taxonomically treated (WANG & SUNG, 1981).

***Chilo agassizi* Bassi, sp. n.**

Holotype 1 ♂: TANZANIA, Tanga Pangani [05º25'S 38º58'E], 14-VII-2000, DJL Agassiz [leg.], GS 5490 GB, CDA.

Description (Fig. 2): Wingspan 17 mm. Labial palpi 5 X eye diameter, off-white sprinkled with brown. Maxillary palpi concolorous with labial palpi. Antenna strongly serrate, pale brown with costa white. Frons rounded, slightly produced, brown. Ocelli small. Chaetosemata minute. Vertex white. Patagium and tegulae yellow brown. Thorax white. Forewing subtriangular, with rounded apex and termen oblique; ground color off-white with costa and veins pale brown; without bright metallic scales; cell with a suboval black dot; terminal margin with seven black dots; fringes of single available specimen damaged; underside yellow brown. Hindwing white suffused with pale yellow; fringes white; underside yellow brown. Foreleg bronze brown; mid and hind leg golden yellow; tibial spurs stout, inner slightly longer than outer.

Male genitalia (Fig. 9): Uncus and gnathos about of equal lengths, lightly sclerotized, slightly curved and pointed apically. Tegumen as long as valva, with thickened edge. Vinculum thin, rounded and moderately produced dorsally. Juxta membranous. Pseudosaccus well developed. Valva subtriangular, with pars basalis well developed and cucullus rounded, both densely clothed with bristles. Phallus larger than valva, ventral arm spoon-shaped, with strong ventral tooth; vesica with large patch of stout cornuti.

Female unknown.

Biology: Unknown.

Diagnosis: The adult of *C. agassizi* Bassi, sp. n. is a small *Chilo* without shiny metallic scales on the forewing and with a well demarcated suboval dot in the cell, unlike all other Afrotropical congeners. The male genitalia are very distinctive and unlike those of other *Chilo*; the hyper-developed phallus is reminiscent of that of *C. saccariphagus* (Bojer, 1856), but the latter is a large species (wingspan: 26-30 mm) and its male genitalia have the valva without pars basalis and without strong apical bristles, and the phallus is with smaller cornuti and without ventral arm.

Etymology: The species is named after its collector, DJL Agassiz, well-known microlepidoptera specialist.

***Chilo barpak* Bassi, sp. n.**

Holotype 1 ♂: NEPAL, Central, 15 km S[outh] Barpak, Baluuea [Baluwa], 850 m, 10-VII-1998, leg. M. Fibiger, GS 4572 GB, ZMUC.

Description (Fig. 1): Wingspan 29 mm. Labial palpi 4.5 X eye diameter, brown sprinkled with black; upper border yellow basally; apex slightly downcurved, black. Maxillary palpi yellow sprinkled with brown. Antenna strongly serrate, brown with costa bronze brown. Frons conical, strongly

produced, yellow. Ocelli and chaetosemata small. Vertex blackish brown medially, yellow laterally. Patagium yellow medially, black laterally. Tegulae black, distally sprinkled with yellow. Thorax yellow. Forewing subrectangular, with rounded apex and termen almost straight; ground color as in fig. 1, black at base with dorsum and veins yellow; without bright metallic scales; black subdorsal dot distinct; seven large terminal dots white bordered black; terminal line brown; fringes with short scales bronze brown with pale brown line basally and long scales damaged in available specimen; underside brown, paler distally and with costa yellow. Hindwing brown; fringes pale bronze brown with pale brown line basally; underside brown, paler than in forewing. Fore and hindleg damaged in available specimen; midleg yellow with darker shadow on outer side; outer side of tarsi annulated with dark brown; tibial spurs stout, inner longer than outer.

Male genitalia (Figs 5, 6): Gnathos longer than uncus, both stout, curved and pointed apically. Tegumen short, with thickened edge and ventrally sclerotized below gnathos. Vinculum thin, rounded. Juxta subrectangular, with slightly asymmetrical arms, both with strong apical tooth facing inwards. Pseudosaccus moderate. Valva subtriangular, with pars basalis moderate and cucullus rounded. Phallus with phallobase with bulbose projection, ventral arms traceable but not free; vesica with large patch of small and medium-sized cornuti.

Female: Unknown.

Biology: Unknown.

Diagnosis: *Chilo barpak* Bassi, sp. n. is similar in wingspan to *Chilo infuscatellus* Snellen, 1890, but its habitus (Fig. 1) is darker, without bright metallic scales on the forewing and with more contrasted terminal dots. The male genitalia are somewhat similar to those of *C. ceylonicus* Hampson, 1896, *C. crypsimetalla* (Turner, 1911) and *C. infuscatellus*, but differ in the shape of the juxta, which is subovate with arms of equal length in *C. crypsimetalla*, and in the phallus, which is distally enlarged and without cornuti in *C. ceylonicus* and medially bulged and with a single strong cornutus in *C. infuscatellus*.

Etymology: The name refers to the type locality and is treated as a noun in apposition.

Chilo gumaensis Bassi, sp. n.

Holotype 1 ♀, Botswana, Okavango West, Guma Lagoon Camp, 980 m, 3-XII-2010, 18º57'41''S, 22º22'24''E, G. Bassi leg., 58410 Collection Bassi, CGB. Paratypes: 2 ♀♀, same data as holotype, GS 5270 and 6885 GB, CGB.

Description (Fig. 3): Wingspan: 27 mm (holotype), 27 and 28 mm (paratypes). Labial palpi 4 X eye diameter, yellow brown sprinkled with dark brown; apex slightly downcurved. Maxillary palpi yellow brown sprinkled with dark brown. Antenna simple, brown with costa pale brown sprinkled with black, especially basally. Frons conical, strongly produced and pointed, brown. Ocelli and chaetosemata minute. Vertex yellow brown, paler in medially. Patagium yellow brown. Tegulae brown, paler distally. Thorax brown with whitish suffusion distally. Forewing elongated, with pointed apex and termen strongly oblique; ground colour brown; with a rather large black dot in cell; postmedial fascia broken, ill defined, oblique; without bright metallic scales; with seven small black terminal dots; brown fringes slightly paler basally; underside ivory yellow. Hindwing bright white, with pale yellow suffusion apically; fringes white; underside white pale-yellow costa. Legs brown, paler on inner side; tibial spurs small, inner longer than outer. Abdomen with each tergite creamy white tinged with rufous distally; sternites bright white.

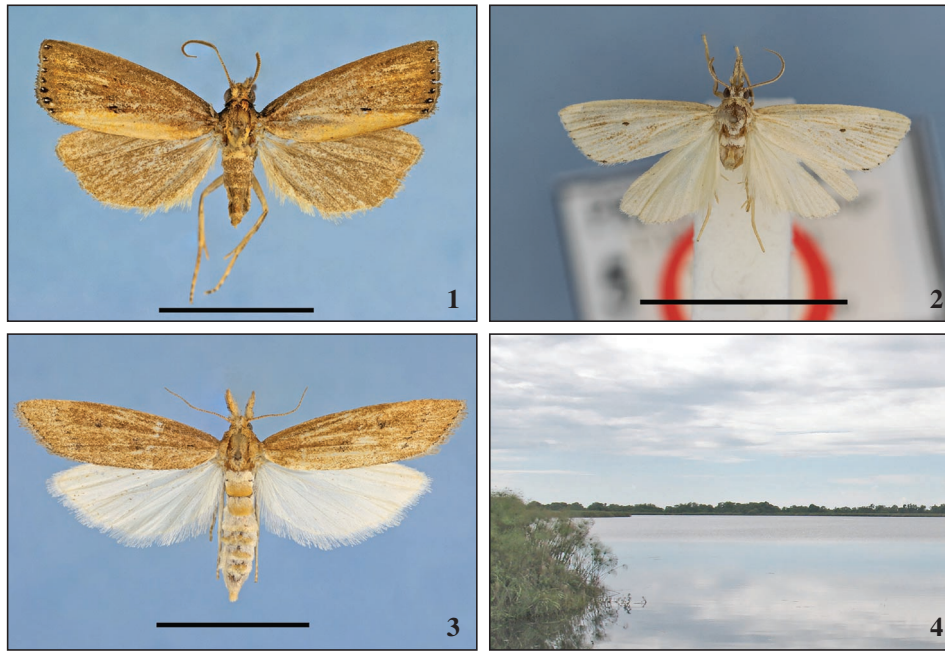
Female genitalia (Figs 7, 8): Papillae anales slightly concave, densely covered with setae. Apophyses posteriores half as long as apophyses anteriores, both narrow and medially slightly curved. Abdominal segment VIII moderately sclerotized, narrowing ventrally. Seventh sternum membranous. Ostium bursae slightly concave. Ductus bursae 2/3 as long as corpus bursae, folded at 1/3, wrinkled distally; basal third more sclerotized, slightly bulged and with two minutes teeth laterally. Ductus seminalis branching off in fold of ductus bursae. Corpus bursae membranous, slightly bulged in basal half.

Male unknown.

Biology: Unknown. The adults were attracted to actinic artificial light in the riparian vegetation of the Guma Lagoon (Fig. 4).

Diagnosis: In the adult female of *C. gumaensis* Bassi, sp. n. (Fig. 3) the yellow brown forewing with oblique postmedial fascia associated with bright white hindwing are unlike any other Afrotropical *Chilo*. The female genitalia with the ductus sclerotized basally and the long corpus bursae without signum is somewhat similar to those the Palearctic *C. pulverosellus* Ragonot, 1885 and the Neotropical *C. chiriquitensis* (Zeller, 1877), but it is easily distinguishable on the basis of the two lateral teeth proximally in the ductus bursae.

Etymology: The specific name refers to the lagoon in the Okavango delta where the species was collected.



Figs 1-4.– 1. *Chilo barpak* Bassi, sp. n., holotype. **2.** *Chilo agassizi* Bassi, sp. n., holotype. **3.** *Chilo gumaensis* Bassi, sp. n., holotype. **4.** Habitat of *Chilo gumaensis* Bassi, sp. n. (photo G. Bassi, Dec. 4, 2010) (Scale bars = 10 mm).

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Figs 5-9.– *Chilo* sp. genitalia. **5.** *Chilo barpak* Bassi, sp. n., holotype, male genitalia with juxta and phallus extracted. **6.** The same, apex of juxta strongly magnified. **7.** *Chilo gumaensis* Bassi, sp. n., paratype GS 5270 GB, female genitalia. **8.** The same, ostium bursae and basal part of ductus bursae magnified. **9.** *Chilo agassizi* Bassi, sp. n., holotype, male genitalia.