



The genus *Agrioglypta* Meyrick (Lepidoptera: Crambidae, Spilomelinae) from Indonesia with descriptions of three new species

JACKSON F. WATUNG¹, DARMAWAN DARMAWAN^{2,3}, AWIT SUWITO^{2,4}, RADEN PRAMESA NARAKUSUMO^{2,5}, HARI NUGROHO^{2,6}, ENCILIA ENCILIA^{2,7}, AGMAL QODRI^{2,8}, DJUNIJANTI PEGGIE^{2,9}, ROSICHON UBADILLAH^{2,10} & HARI SUTRISNO^{2,11*}

¹Faculty of Agriculture, Sam Ratulangi University, Manado, 95115, Indonesia

jacksonwatung@gmail.com; <http://orcid.org/0000-0002-7753-5869>

²Museum Zoologicum Bogoriense, Research Center for Biosystematics and Evolution, National Research and Innovation Agency. Jl. Raya Jakarta-Bogor Km 46, Cibinong 16911, Indonesia

³ darmawan.ento@gmail.com; <http://orcid.org/0009-0004-3777-4891>

⁴ awitswt@yahoo.com; <http://orcid.org/0000-0003-2600-2488>

⁵ pramesa.narakusum@gmail.com; <http://orcid.org/0000-0002-3087-6172>

⁶ hntawon@gmail.com; <http://orcid.org/0000-0002-7985-2825>

⁷ encilia27@gmail.com; <http://orcid.org/0000-0001-6780-7456>

⁸ agmal.qodri@yahoo.co.id; <http://orcid.org/0000-0003-4569-5259>

⁹ peggie94@yahoo.com; <http://orcid.org/0000-0002-2718-1281>

¹⁰ r.ubaidillah@gmail.com; <http://orcid.org/0000-0002-0385-3629>

*Corresponding author: sutrisnohari@yahoo.com; <http://orcid.org/0000-0003-4108-4354>

Abstract

Inventory studies on the genus *Agrioglypta* Meyrick, 1932 have been conducted in Java, Sulawesi, and Papua during 2007–2011. This study also aims to explore the diversity of *Agrioglypta* in Indonesia, and the possible apomorphic characteristics, especially genitalic characters, that support the monophyly of the genus. Three new species were discovered, *A. hastantiae* **sp. nov.**, *A. ubaidillahi* **sp. nov.**, and *A. halimunensis* **sp. nov.**, for a total of nine species of the genus recorded in Indonesia. Images of adults and genitalia are provided for all new species.

Key words: apomorphic character, inventory, monophyly, moth

Introduction

The genus *Agrioglypta* Meyrick, 1932 was established based on *Agrioglypta enneactis* Meyrick, 1932, and consists of over 20 species distributed worldwide in the tropical habitat. For example, at least five species have been recorded in Australia, two in Samoa, and two in Malaysia. However, five species, *A. naralis* C. Felder & Rogenhofer, *A. zelimalis* Walker, *A. eurytusalis* Walker, *A. itysalis* Walker, and *A. excelsalis* Walker, recorded in Australia, have also been recorded in Indonesia based on the collections of the Museum Zoologicum Bogoriense, Naturalis Biodiversity Center, Australian Insect Collection, CSIRO, and several references (Walker 1859; Walker 1866; Felder & Rogenhofer 1875; Common 1990; Shaffer *et al.* 1996; Sutrisno 2003; 2008; Sutrisno & Darmawan 2012). Indonesia is divided by the Wallacea line, so species of this genus in the eastern part of the country, which has not been well explored, might differ from others in the Lesser Sunda Island (the western part of the country).

To explore the diversity of *Agrioglypta* in Indonesia an intensive field study was conducted in the mountainous habitat in TNGHS (Gunung Halimun–Salak National Park) and Gunung Patuha Nature Reserve, West Java during 2007–2009, Mekongga Mountain, SE Sulawesi during 2010–2011, and the Foja Mountains, Papua in 2008.

Similar to other genera of moths, the monophyly of this genus has been previously established mostly based on external morphological characters (Meyrick 1932), although it needs to be defined based on apomorphic characters from the genitalic traits because these characters are more stable at the specific or generic level in Lepidoptera

(Sutrisno & Horak 2002; Sutrisno *et al.* 2015). The results obtained from this study are expected to support the monophyly of this genus based on certain apomorphic characters from the genitalic traits and enhance previous knowledge on the Indonesian moth diversity, especially the genus *Agrioglypta*.

Materials and methods

This study is based on collection material from five-year fieldwork in West Java, Southeast Sulawesi, and Papua during 2007–2011. All the material has been deposited in the Museum Zoologicum Bogoriense, Bogor, Indonesia. Additional material has been studied in the Naturalis Biodiversity Center, Leiden, the Netherlands by Dr. Rob de Vos.

Dried specimens were observed under a dissecting microscope, and the genitalia dissections were prepared according to Robinson (1976) and Maes (1995). For the wing pattern terms used follows Rosfiansyah *et al.* (2021). In addition, the genitalia terms used follows Zimmerman (1958), Tuxen (1970), Munroe (1976) and Maes (1995).

Other species for comparison used in this study are the following: *Agrioglypta excelsalis* Walker 1866; 1 ♂; Papua, Membaramo Raya, Kwerba, Mt. Foja. S 02°34' 22" E 138° 43' 02", 04.XI.2008; leg. Hari Sutrisno. (MZB); *Agrioglypta naralis* Felder & Rogenhofer 1875; 1 ♂; W. Java, TNGHS, Sukabumi, Cidahu. 16.I.2007. leg. Sutrisno H & Darmawan. (MZB); *Agrioglypta jaculalis* Snellen 1894; 1 ♂; W. Java, TNGHS, Sukabumi, Cidahu. 15.I.2007. leg. Sutrisno H & Darmawan. MZB. Lepi. 252 (MZB); 1 ♀; W. Java, TNGHS, Bogor, Pamijahan, Garehong, S 06° 44' E 106° 37. 18'.VIII.2008. leg. Sutrisno H & Darmawan. (MZB).

Abbreviation used

CSIRO = The Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia

MZB= Museum Zoologicum Bogoriense, Bogor, Indonesia

RMNH = Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands

TNGHS= Taman Nasional Gunung Halimun-Salak (here refers to Gunung Halimun-Salak National Park, West Java), Bogor, Indonesia

Checklist of *Agrioglypta* species in Indonesia

A. eurytusalis (Walker, 1859)

A. excelsalis (Walker, 1866)

A. halimunensis Sutrisno **sp. nov.**

A. hastantiae Sutrisno **sp. nov.**

A. itysalis (Walker, 1859)

A. jaculalis (Snellen in Snellen *et al.*, 1894)

A. naralis (C. Felder & Rogenhofer, 1875)

A. ubaidillahi Sutrisno **sp. nov.**

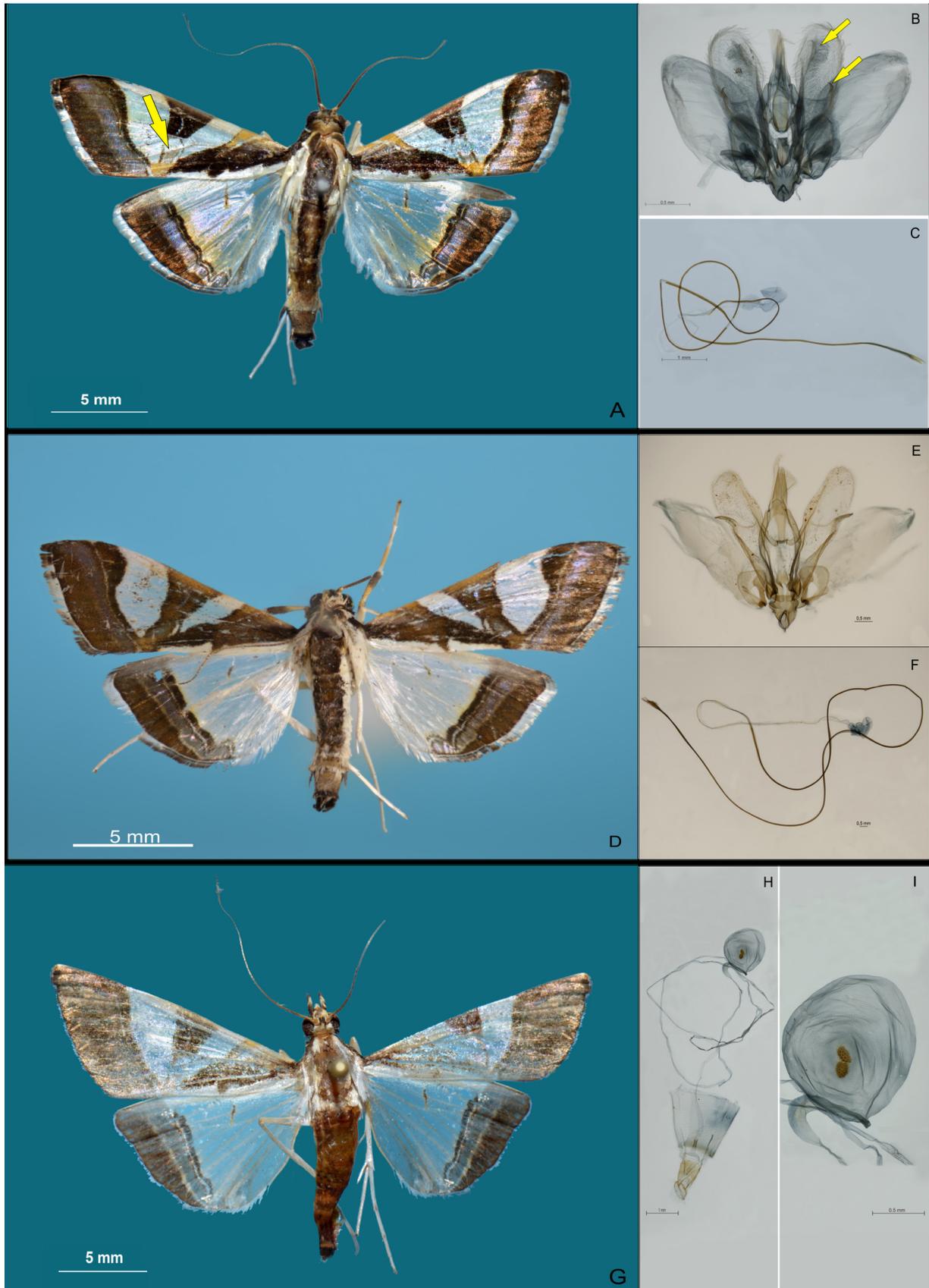
A. zelimalis (Walker, 1859)

Descriptions of new species

Agrioglypta hastantiae Sutrisno, **sp. nov.**

Figs 1A–C, G–I

Diagnosis. *Agrioglypta hastantiae* **sp. nov.** is easily distinguished from the closest species *A. excelsalis* (Walker, 1866) by a black trapezoidal medial line on the forewing, running from the mid-costa towards the end of the discal cell, and continues with a white ovate band as well as a black-tinged at both edges from M_3 towards CuA_2 and turned



FIGURES 1 A–I: **A.** *Agrioglypta hastianiae* sp. nov. ♂ (Holotype), **B.** Valva of male genitalia of *A. hastianiae* sp. nov., **C.** Phallus of male genitalia of *A. hastianiae* sp. nov., **D.** *A. excelsalis* ♂, **E.** Valva of male genitalia of *A. excelsalis*, **F.** Phallus of male genitalia of *A. excelsalis*, **G.** *A. hastianiae* sp. nov., ♀, **H.** Complete genitalia of female of *A. hastianiae* sp. nov., **I.** Corpus bursae of *A. hastianiae* sp. nov.

into whitish-yellow from CuA_2 toward the dorsum (Fig. 1A). On the other hand, a dark triangle medial line of the forewing on *A. excelsalis* continuously run from the mid-costa towards the dorsum (Fig. 1D). In addition, the male genitalia of this new species shows uniquely dense scaled at central and margin part of valva and the tip of fibula recurved (Fig. 1B).

Description. Male (Fig. 1A): Forewing length 7 mm. Head with frons black at middle, white-yellowish edge, and vertex black. Labial palpus subascending with long, rough black scales, yellow-tinged from middle to apex, and white scales at ventral from middle to basal. Maxillary palpus prominent, first and third palpomeres covered with yellow scales, while second has black scales. Proboscis white and well-developed. Antennae filiform, extending to approximately full forewing length, while dorsal surface covered with a longitudinal row of black scales, ventral surface with minute yellow cilia. Thorax black at dorsal and white at ventral part, patagia black with white scales at middle and yellowish-white tegulae. Legs white, epiphysis covered with black scales. Forewings triangular, with white terminal cilia and dark scales at apex and tornus. Hindwing with a yellow straight discal bar and a snow white fringe running from tip of $Sc+R_1$ toward tip of CuA_1 . Abdomen slender, with first segment towards 8th black to dark brown gradually, 6th segment bears pair of black pencils setae, while ventral 9th segment bears a bundle of black tuft scales, curved upwards to cover anal lobe.

Male genitalia (Figs 1B, 1C): Tegumen subtriangular, subscaphium slightly sclerotized; uncus simple, weakly sclerotized with a narrow triangular base, medially narrow, curved subdistally and apically blunt, not extended at apex of valva; valva simple, semirectangular, center of ventral part with densely scaled as well as margin of valva; fibula never exceeding valva length, curved inwardly, pointed apically; juxta prominent, tongue-shaped, weakly sclerotized; vinculum simple, semicircular. Coremata large, ovate, with a bundle of lamellar scales, almost twice size of valva. Phallus long and thin, more than three times length of abdomen.

Female (Fig. 1G): Similar to male, except for yellow scales on 9th segment over anal lobe

Female genitalia (Figs 1H, I): Anal lobe ovate with scattered faint scales; lamella postvaginalis moderate sclerotized; posterior apophyses short, anterior apophyses length almost double of posterior apophyses; ostium bursae wide, membranous, antrum short, never reached tip of anterior apophyses; ductus bursae thin and long; corpus bursae globular with a pair of oval signa with denticules.

Holotype: ♂; Papua, Membaramo Raya, Kwerba, Mt. Foja. S 02°34' 22" E 138° 43' 02", 04.XI.2008; leg. Hari Sutrisno. MZB Lepi. 662; MZB.

Paratypes: 1 ♀; Papua, Membaramo Raya, Kwerba, Mt. Foja. S 02°34' 22" E 138° 43' 02", 03.XI.2008. leg. Hari Sutrisno. MZB. Lepi. 663 (MZB); 1 ♂; SE Sulawesi, Kolaka, Wawo, Tinukan, Mt. Mekonga. S 03°64' 46.1" E 121°09' 85.9", 30.XI.2010. leg. Ubaidillah R, B. Kimsey, Nugroho H, Lupyaningdyah P, Darmawan. MZB Lepi. 248 (MZB); 1 ♀; RMNH – Project Wallace, Indonesia – N. Sulawesi, 27.iv–2.v.1985, at light, leg. R. de Jong, Dumoga-Bone N.P., Edward's Camp, 600–700 m, 0°35'N 123°51'E, multistr. Evergreen forest, monsoon forest, RMNH.INS.1453661 (RMNH); 1 ♀; RMNH – Project Wallace, Indonesia – N. Sulawesi, 20–23.v.1985, at light, leg. R. de Jong, Dumoga-Bone N.P., Gn. Mogogonipa, 900–1008 m, 0°27'N 123°57'E, multistr. Evergreen forest, moss forest, RMNH.INS.1453662 (RMNH); 1 ♀; RMNH – pw26 [Project Wallace], N. Sulawesi: Dumoga Bone NP, Hogs Back, alt. 560 m, 17–18.xi.1985, leg. J Krikken, multistr evergr forest, at light, RMNH.INS.1453663 (RMNH); 1 ♂; RMNH – Project Wallace, Indonesia – N. Sulawesi, 20–26.iv.1985, at light, leg. R. de Jong, Dumoga-Bone N.P., Base Camp/Sg. Toraut, 0°34'N 123°54'E, fallow land, ca 210 m, RMNH.INS.1453664 (RMNH); 1 ♂; Museum Leiden, Indonesia, Bali, Candikuning, 1300 m, Kebun Raya Bali, 8°16'40"S – 115°09'00"E, 8–9.v.1991, leg. J. van Tol, RMNH.INS.1453660 (RMNH); 1 ♂; SUMATRA – O K ["oostkust" = East coast], leg. Don. Waldeck 1904, RMNH.INS.1453659; 1 ♂; Irian Jaya, Kab. Merauke, Kouh, 15.vi.1993, leg. P.J.A. de Vries, RMNH.INS.1453665 (RMNH).

Etymology. The specific name *hastantiae* is derived from the wife's name of the senior author, Hari Sutrisno. This name is dedicated to her support during our preparing this manuscript. A noun in the genitive case.

Distribution. Papua to Sulawesi, Ternate Island (Moluccas), Bali and Sumatra (Fig. 4).

Remark: The wing scales on the first paratype female shown in Fig. 1G were damaged while mounting the specimen leading to the loss of wing colors compared to males. Adults are nocturnal. .

***Agrioglypta ubaidillahi* Sutrisno, sp. nov.**

Figs 2A–C, G–I

Diagnosis. *Agrioglypta ubaidillahi* sp. nov. is easily distinguished from the closest species, *A. naralis*, by a brown trapezoidal medial band on the forewing which runs from costa to dorsum, followed by a yellowish U-shaped, wider and white band and white fringe at the middle of the termen (Fig. 2A). The brown trapezoidal medial band of the forewing of *A. naralis* is narrower. Moreover, the yellowish U-shaped band of *A. naralis* is more or less equilateral and the termen with yellow fringe at middle (Fig. 2D). In addition, the base of fibula of male genitalia of this new species arise from the mid of costa and the juxta strongly sclerotized. On the other hand the base of fibula of *A. naralis* arise from the mid of valva and the juxta less sclerotized (Figs 2B–C, E–F).

Description. Male (Fig. 2A): Forewing length 10 mm. Head with frons with black scales at middle and yellowish-white at edge and vertex black. Labial palpus white at base, black at middle, and yellowish-white at tip. Maxillary palpus prominent, black except at third segment yellowish-white. Proboscis white. Antennae filiform, extending to approximately full forewing length, dorsal surface with longitudinal row of black scales, and ventral surface with minute yellow cilia. Thorax black dorsally, white ventrally, patagia black with white scales at middle and tegulae white. Legs yellowish-white except for foretibia and epiphysis covered with black scales. Forewing triangular, yellowish-white terminal cilia with black scales at apex and tornus. Hindwing with a yellow thin discal bar and yellowish-white fringe running from Sc+R₁ towards CuA₁. Abdomen slender, first segment toward 8th black gradually fading to dark brown, ventral 9th segment has dense black tuft scales, curved upwards to cover anal lobe.

Male genitalia (Figs 2B, C). Tegumen subtriangular, subscleritum weakly sclerotized, uncus curved dorso-ventrally, medially narrow and distally blunt extending just beyond apical valva. Valva leaf-shaped, costa slightly sinuate, ventrally with scattered distal piliform scales. Fibula curved inwards, sharply pointed apically. Coremata moderate, almost as large as valva, with weak, lamellar scales. Vinculum simple, keel-shaped. Phallus long and thin, approximately three times length of abdomen.

Female (Fig. 2G): Similar to male, except for yellow scales of 9th segment which cover anal lobe.

Female genitalia (Figs 2H, I): Anal lobe ovate, with faint scattered piliform scales; anterior long, almost equal to posterior apophyses; entrance to ostium bursae wide, very membranous; antrum short, less than length of anterior apophyses, weakly sclerotized; ductus bursae very thin and long (more than 20 times of corpus bursae); corpus bursae globular with a pair rounded signa with denticules.

Holotype: ♂; SE Sulawesi, Kolaka, Wawo, Tinukan, Mt. Mekongga. S 03° 38 ' 17 " E 121° 11 ' 35.2 ". Alt. 1449 m. 02.VII.2011. Ubaidillah R, B. Kimsey, Nugroho H, Darmawan, Pungki L, Giyanto. MZB Lepi. 664; MZB.

Paratypes: 1 ♀; SE Sulawesi, Kolaka, Wawo, Tinukan, Mt. Mekongga. S 03° 37 ' 55 " E; 121° 13 ' 15.2 ". Alt. 1880 m. 04.VII. 2011. Ubaidillah R, Kimsey L, Nugroho H, Darmawan, Pungki L, Giyanto. MZB. Lepi. 254 (MZB); 1 ♂; SE Sulawesi, Kolaka, Wawo, Tinukan, Mt. Mekongga. S 03° 37 ' 55 " E 121° 13 ' 55.2 ". Alt. 1880 m. 05. VII. 2011. Ubaidillah R, Kimsey, L, Nugroho H, Darmawan, Pungki L, Giyanto MZB. Lepi. 249 (MZB); 2 ♂; Indonesia, Sulawesi Tengah, Lore Lindu N.P., Rano Rano, 1600 m, 10km NE Gimpu, 13.iii.1985 & 14.iii.1985, J.P. & M.J. Duffels, Stat. 40, Lower montane forest, MV-light, RMNH.INS.1453666 & RMNH.INS.1453667 (RMNH).

Etymology. The specific name *ubaidillahi* is dedicated to Rosichon Ubaidillah for his dedication in leading the expedition to Sulawesi that resulted this new species. A noun in the genitive case.

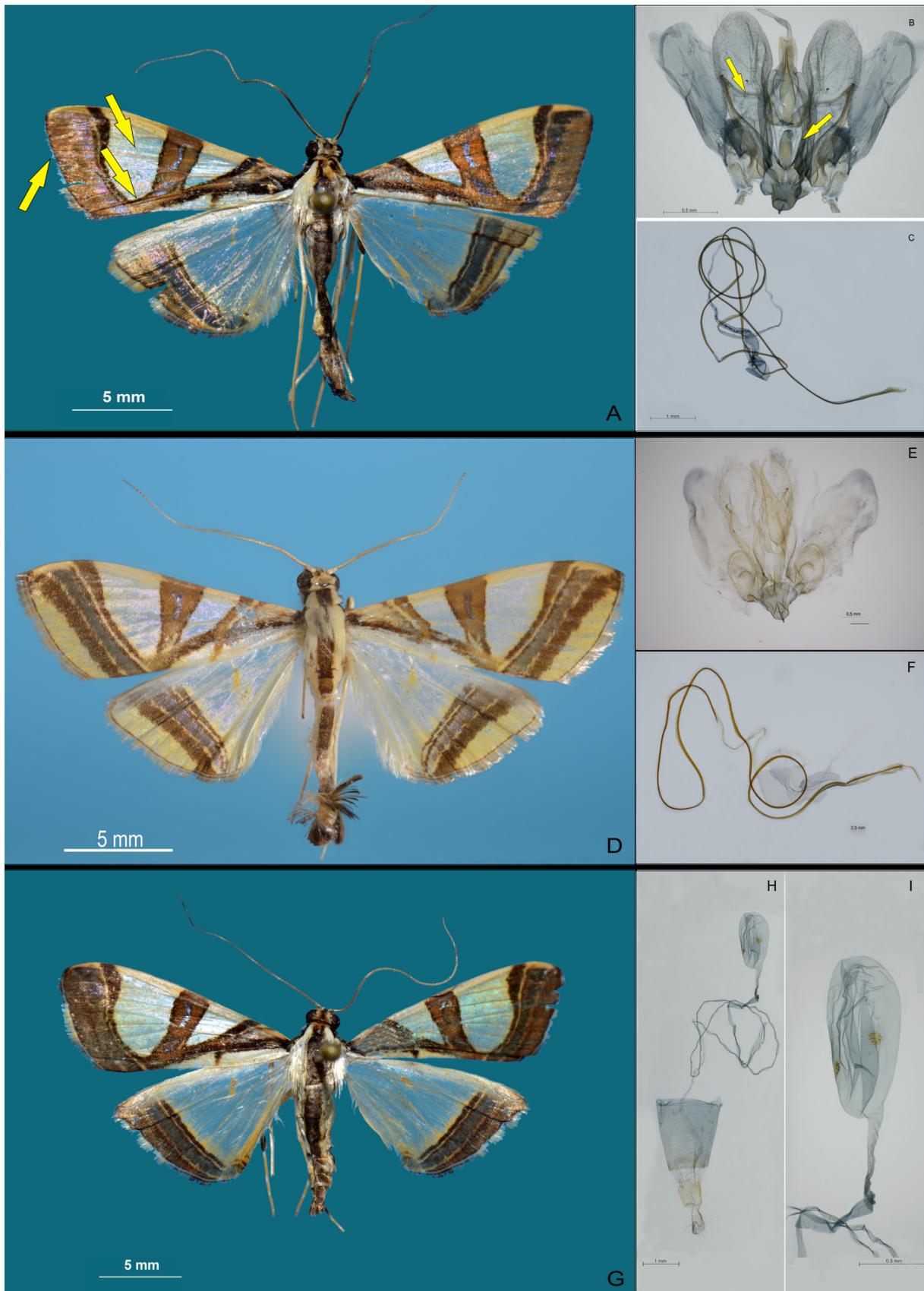
Distribution. Mountain Mekongga, Southeast Sulawesi and Central Sulawesi (Fig. 4).

Remark: Adults were collected using a light trap at altitude >1449 m. above sea level.

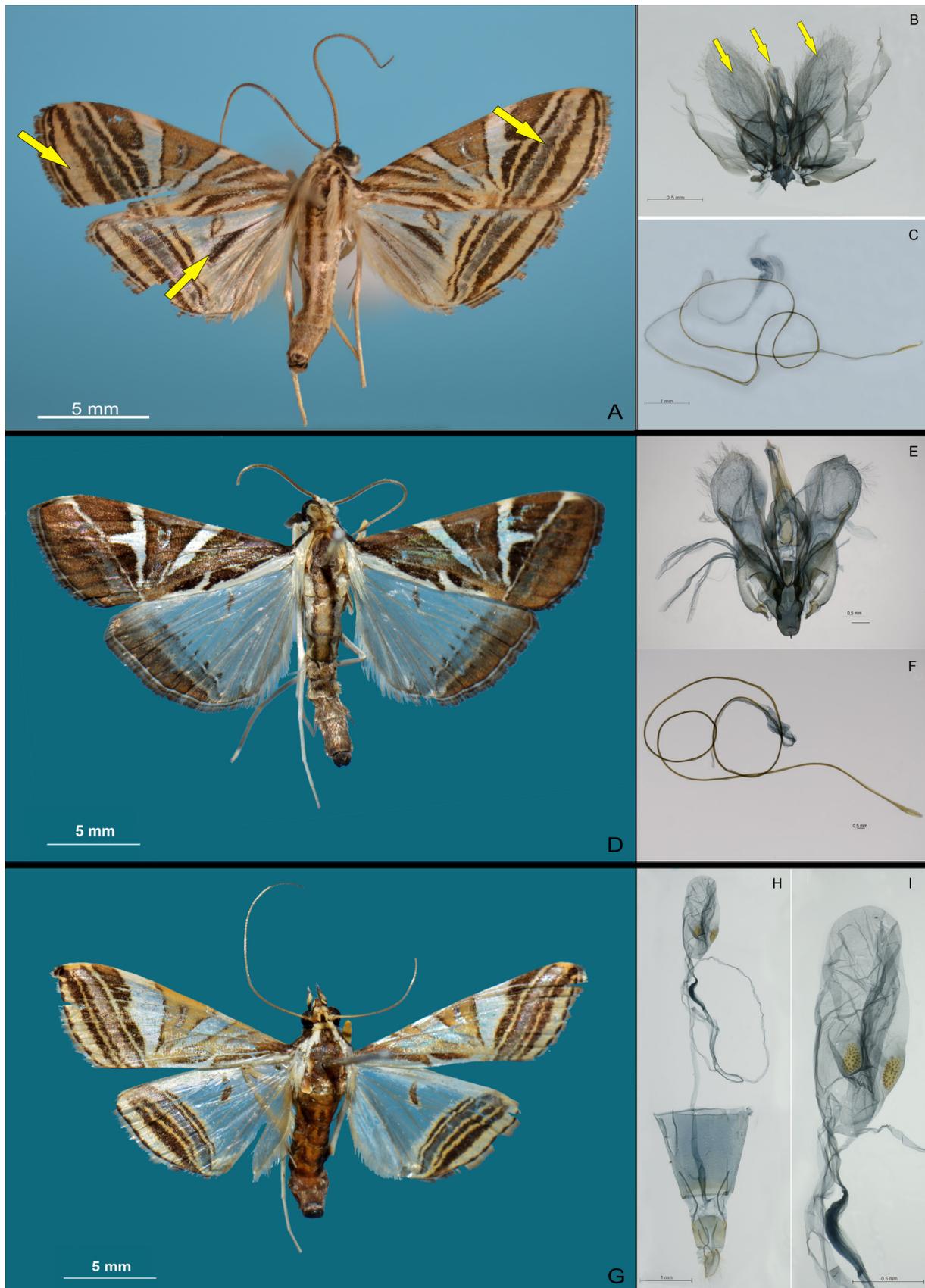
***Agrioglypta halimunensis* Sutrisno, sp. nov.**

Figs 3A–C, G–I

Diagnosis. *Agrioglypta halimunensis* sp. nov. is easily distinguished from *A. jaculalis* (Snellen 1894) by a post medial line with three alternate bands: yellowish white, gray, and dark brown scales and the margin with yellowish white scales at middle. Moreover, the hindwing of this new species with a dark brown scales at middle area between M₃ and CuA₁ (Fig. 3A). The male genitalia of this new species with dense and piliform scales at ventral part of a simple valve, and the uncus never extended beyond the valva. On the other hand, the valva of *A. jaculalis* with a strong frame a costa and the uncus always extended beyond the valva (Figs 3B–C, E–F).



FIGURES 2 A–I: **A.** *Agrioglypta ubaidillahi* sp. nov. ♂ (Holotype), **B.** Valva of male genitalia of *A. ubaidillahi* sp. nov., **C.** Phallus of male genitalia of *A. ubaidillahi* sp. nov., **D.** *A. naralis* ♂, **E.** Valva of male genitalia of *A. naralis*, **F.** Phallus of male genitalia of *A. naralis*, **G.** *A. ubaidillahi* sp. nov., ♀, **H.** Complete genitalia of female of *A. ubaidillahi* sp. nov., **I.** Corpus bursae of *A. ubaidillahi* sp. nov.



FIGURES 3 A–I: **A.** *Agrioglypta halimunensis* sp. nov. ♂ (Holotype), **B.** Valva of male genitalia of *A. halimunensis* sp. nov., **C.** Phallus of male genitalia of *A. halimunensis* sp. nov., **D.** *A. jaculalis* ♂, **E.** Valva of male genitalia of *A. jaculalis*, **F.** Phallus of male genitalia of *A. jaculalis*, **G.** *A. halimunensis* sp. nov., ♀, **H.** Complete genitalia of female of *A. halimunensis* sp. nov., **I.** Corpus bursae of *A. halimunensis* sp. nov.

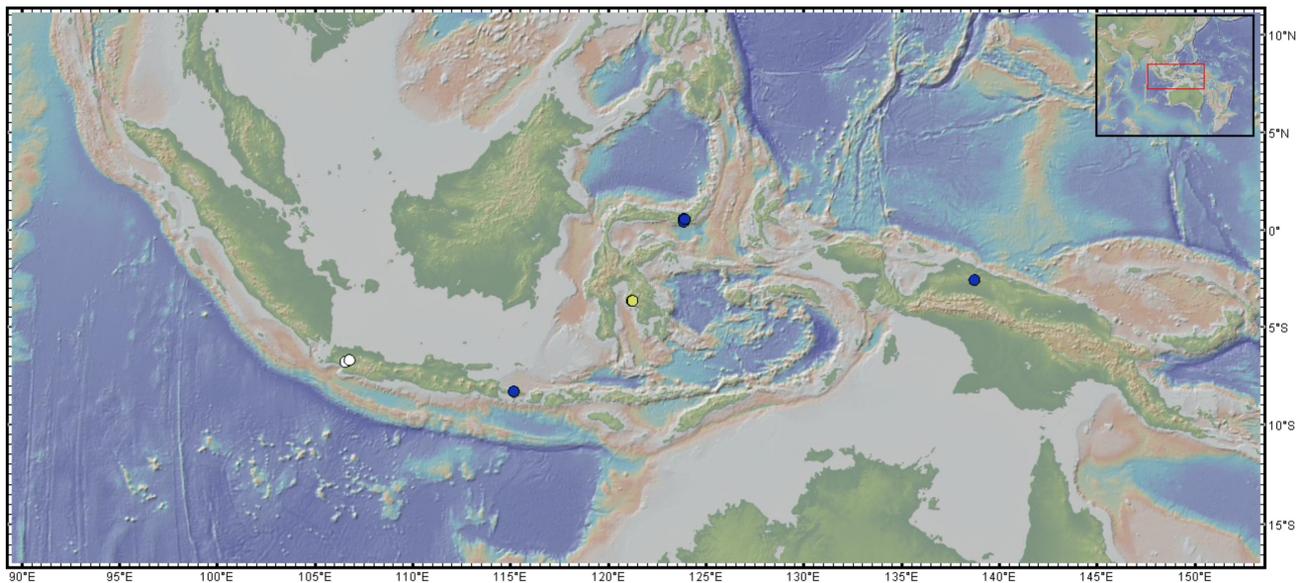


FIGURE 4. Distribution of the three new species (*A. hastantiae* sp. nov. = blue dots, *A. ubaidillahi* sp. nov. = yellow dot, *A. halimunensis* sp. nov. = white dots) in Indonesia.

Description. Male (Fig. 3A). Forewing length 7 mm. Head with frons partly with black scales at middle and yellowish-white at edge and vertex black at middle and white-yellowish at edge. Labial palpus white at base, black at middle, and white-yellowish at tip. Maxillary palpus prominent, black except at third segment white-yellowish. Proboscis white. Antennae filiform extending approximately full forewing length, dorsal surface covered a longitudinal row of black scales, and ventral surface with minute yellow cilia. Thorax black dorsally, white-ochreous ventrally, patagia black with white scales at middle. Tegulae black at middle and white at edge. Legs white-ochreous. Forewing triangular with yellow termen, surrounded by black scales, and terminal cilia ochreous. Hindwing with a prominent, yellowish-brown sickle-shaped of discal bar and a yellowish-white fringe running from Sc+R₁ towards CuA₂. Abdomen slender, first segment towards 8th white ochreous with black to dark brown tinged scales, ventrally 9th segment with dense grey scales, curved upwards cover anal lobe.

Male genitalia (Figs 3B–C). Tegumen subtriangular, subscaphium weakly sclerotized, uncus curved dorso-ventrally, apically blunt, reaching at half of valva. Valva simple, leaf-shaped, with dense long piliform scales ventrally, fibula curves inwards, with a sharp apex. Coremata large with a weak bundle of lamellar scales, easily detached during slide mounting. Vinculum simple, keel-shaped. Phallus long (more than ten times of length of valva) and thin.

Female (Fig. 3G). Similar to male, except for ventral yellow scales of 9th segment which cover anal lobe.

Female genitalia (Figs 3H–I). Anal lobe ovate with faint piliform scales, posterior apophyses short, half length of anterior apophyses. Ostium bursae moderately wide; antrum weakly sclerotized, short, approximately a quarter of 8th segment; ductus bursae thin and long (more than 20 times of corpus bursae), corpus bursae globular, a pair of oval signa with minute, pointed denticules.

Holotype: ♂; W. Java, TNGHS, Sukabumi, Cidahu. 16.I.2007. leg. Sutrisno H & Darmawan. MZB Lepi. 668; MZB.

Paratypes: 1 ♀; W. Java, TNGHS, Sukabumi, Cidahu. 15.I.2007. leg. Sutrisno H & Darmawan. MZB. Lepi. 252 (MZB); 1 ♀; W. Java, TNGHS, Bogor, Pamijahan, Garehong, S 06° 44' E 106° 37. 18'.VIII.2008. leg. Sutrisno H & Darmawan (MZB); 1 ♀; W. Java, TNGHS, Malasari, G. Kendeng; S 06° 45' 39" E 106° 32' 20"; 31.X.2007. leg. Darmawan (MZB); 1 ♀; W. Java, TNGHS, Bogor, Pamijahan, Garehong. 25.VII.2008. leg. Cholik E & Mumu (MZB); 1 ♀; W. Java, TNGHS, Bogor, Malasari, G. Kendeng. S06° 45' 39 E " 106° 32' 20. 31"; X.2007. leg. Darmawan (MZB); 1 ♂; W. Java, TNGHS, Bogor, Ciapus. S 06° 40' 37" E 106° 45' 08". 5.X.2009. leg. Sutrisno & Darmawan (MZB); 2 ♂, W. Java, TNGHS, Bogor, G. Bunder. S06° 42' 24" E 108° 41' 22"; 07.X.2009. leg. Sutrisno H & Darmawan (MZB).

Etymology. The specific name *halimunensis* is derived from the type locality. This new species is endemic to Halimun, West Java. An adjective in the nominative singular.

Distribution. Mountain Halimun–Salak National Park (TNGHS), West Java only (Fig. 13).

Remark: The male holotype forewing showed damages. The lamellar coremata bundle was damaged during slide mounting due to its soft nature, nevertheless, a small part remains on both sides. The adults were collected using a light trap at altitude >1400 m above sea level.

Discussion

The genus *Agrioglypta* was established by Meyrick (1932) based on a single male genitalia character, the leaf-shaped coremata, and other morphological characters such as shape and structure of the proboscis, antennae, labial and maxillary palpi, posterior tibiae, as well as wing venation. All these characters used to define this genus are applicable to the three new species.

Based on genitalic observations, there are other possible apomorphic characters to define the monophyly of this genus in the female genitalia, i.e., a pair of rounded to elongated signae with blunt to pointed denticles at the surface. Most species of this genus have rounded to ovate signa except *A. eurytusalis* which has elongated ones. Compared to other closely related genera the shape and structure of the signa are very specific to this genus. The sister group of *Agrioglypta*, *Talanga* Moore, [1885], has a pair of rounded signa with long, pointed spikes at the surface and share at least three characters, including a lamellar-scaled coremata, a long ductus bursae and a long and thin phallus (Sutrisno 2003). Moreover, other apomorphic characters from the male genitalia are the simple uncus, juxta medially narrow, curved subdistally and apically blunt and prominent tongue-shaped. This strong juxta probably complements the long phallus which is more than three times longer than the abdomen length.

Acknowledgment

The authors are grateful to Dr. Rob de Vos (Naturalis Biodiversity Center, Leiden, The Netherlands) for his assistance in checking the specimens as well as the suggestions to improve the manuscript. The authors are also grateful to the reviewers, Alma Solis and Xicui Du, for their insightful comments and constructive feedback. Furthermore, the authors would like to acknowledge Conservation International, Nagao Foundation and ICBG (The International Cooperative Biodiversity Group) project for financial support during the field works in Papua, Sulawesi and Java. Without those supports, it is impossible to conduct this study successfully.

References

- Butler, A.G. (1887) Description of New Species of Heterocerous Lepidoptera (Pyrallites) from the Solomon Islands. *Annals and Magazine of Natural History*, 20, 116, 114–124.
<https://doi.org/10.1080/00222938709460019>
- Common, I.F.B. (1990) *Moth of Australia*. Melbourne University Press, Melbourne, 535 pp.
- Felder, C. & Felder, R. & Rogenhofer, A.F. (1875) Heft 5, Heterocera. In: Felder, C., Felder, R. & Rogenhofer, A.F. (Eds) *Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Willerstorff-Urbair*. Zoologischer Theil, Zweiter Band, Zwete Abtheilung: Lepidoptera. Atlas. K. -k. Hof- und Staatsdruckerei, Wien, pls 121–140.
- Maes, K.V.N. (1995) A comparative morphological study on the adult Crambidae (Lepidoptera: Pyraloidea). *Bulletin et annales de la Societe Royal Belge d'Entomologie*, 131, 265–434.
- Meyrick, E. (1932) *Exotic Microlepidoptera 1*, 8. Taylor and Francis, Red, Lion Court, 31 pp.
- Moore F. (1885) *The Lepidoptera of Ceylon 3*. L. Reeve & CO., London, 578 pp.
- Robinson, G.S. (1976) The preparation of slide of Lepidoptera genitalia with special references to the microlepidoptera. *Entomologist's Gazette*, 27, 127–132.
- Rosfiansyah, R., Yagi, S., Tomura, S. & Hirowatari, T. (2021) A new species of the genus *Agrioglypta* Meyrick (Lepidoptera: Crambidae) from Japan based on morphological characters and DNA barcoding. *Journal of Asia-Pacific Biodiversity*, 14 (4), 557–568.
<https://doi.org/10.1016/j.japb.2021.10.001>
- Shaffer, M., Nielsen, E.S. & Horak, M. (1996) Pyraloidea. In: Nielsen, E.S., Edwards, E.D. & Rangsi, T.V. (Eds.) *Checklist of the Lepidoptera of Australia*. CSIRO Publishing, Collingwood, pp. 164–199.

- Snellen, P.C.T., van der Wulp, F.M. & Everts, J.G. (1894) *Tijdschriftvoor Entomologie De Nederlandsche Entomologische Vereeniging, Jaagrang 1893–1894*. Martinus Nijhoff, Leiden, 196 pp.
- Sutrisno, H. (2003) Cladistic analysis of the Australian *Glyphodes* Guenée and allied genera (Lepidoptera: Crambidae: Spilomelinae). *Entomological Science*, 5, 457–467.
- Sutrisno, H. (2008) Moth Diversity at Gunung Halimun–Salak National Park, West Java. *HAYATI (Journal of Biosciences)*, 13, 111–117.
<https://doi.org/10.4308/hjb.15.3.111>
- Sutrisno, H. & Darmawan, D. (2012) *Moths of Gunung Halimun–Salak National Park part 1: Thyridoidea & Pyraloidea*. LIPI Press, Jakarta, 185 pp.
- Sutrisno, H. & Horak, M. (2002) Revision of the Australian species of *Hyalobathra* Meyrick (Lepidoptera: Pyraloidea: Crambidae: Pyraustinae) based on adult morphology and with description of a new species. *Australian Journal of Entomology*, 42, 233–248
<https://doi.org/10.1046/j.1440-6055.2003.00355.x>
- Sutrisno, H., Watung, J.F. & Suwito, A. (2015) Discovery of *Cryptophasa* Lewin, 1805 (Lepidoptera: Xyloryctidae) from Indonesia with the descriptions of three new species. *Zootaxa*, 3994, 122–132.
<https://doi.org/10.11646/zootaxa.3994.1.6>
- Tuxen, S.L. (1970) *Taxonomist's Glossary of Genitalia in Insect*, 2nd ed. Munksgaard, Copenhagen, Denmark, 359 pp.
- Walker, F. (1859) *List of the specimens of Lepidopterous insects in the Collection of the British Museum*. London, 17, 255–508.
- Walker, F. (1866) *List of the specimens of Lepidopterous insects in the Collection of the British Museum*. London, 34, 1121–1533.
- Zimmerman, E.C. (1958) *Insect of Hawaii (Lepidoptera: Pyraloidea)*, 8. University of Hawaii Press, Honolulu, USA, 456 pp.