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New genus and species of Philippine spittlebug (Cercopidae: Hemiptera), with notes on subtribal placement of *Trigonoschema*

Elorde S. Jr CRISPOLON [1,*], Sheryl A. YAP [2] & Adeline SOULIER-PERKINS [3]

[1] Department of Crop Protection, Division of Entomology, College of Agriculture, University of Southern Mindanao, Kabacan, Cotabato, Philippines.
[2] Institute of Weed Science, Entomology and Plant Pathology, College of Agriculture and Food Science and Museum of Natural History, University of the Philippines Los Baños, Laguna, Philippines.
[1,3] Mécanismes adaptatifs et évolution (MECADEV), Muséum national d'Histoire naturelle, CNRS, CP 50, Entomologie, 57 rue Cuvier, 75005 Paris, France.

[*] Corresponding author: ejscrispolon@usm.edu.ph
[2] Email: sayap3@up.edu.ph
[3] Email: adeline.soulier@mnhn.fr

Abstract. A new genus and two new species are described from the Philippines: *Miosterpa* Crispolon & Yap gen. nov., with two new species, *M. flammarubra* Crispolon & Soulier-Perkins gen. et sp. nov., and *M. kalanguya* Crispolon & Yap gen. et sp. nov. Male genitalia are described and illustrated. Identification keys to Philippine species of *Miosterpa* and key to the Philippine genera of Poeciloterpina Schmidt, 1920 are provided. Molecular data support the description of *Miosterpa* as a genus distinct from *Mioscarta* Breddin, 1901 and *Poeciloterpa* Stål, 1870. A short note on the subtribal classification of the genus *Trigonoschema* Crispolon & Soulier-Perkins, 2021 is also included.

Keywords. Rhinaulacini, Poeciloterpina, molecular characters, cercopid species.

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Introduction

The first cercopid species recorded in the Philippines was described in 1834. One hundred twenty-seven years later, Metcalf (1961) published a catalogue compiling all the species recorded worldwide, in which 41 species were listed for the Philippines (Soulier-Perkins 2025). Since then, despite being a biodiversity hotspot and considered a megadiverse country with a high level of endemism (Conservation International 2025), no species have been described or updates were provided about the Philippine Cercopidae Leach, 1815. Our work on *Poeciloterpa* Stål, 1870 in 2019, which added four species to the genus (Crispolon *et al.* 2019), marked the first significant contribution to the field in almost six decades. Subsequently, descriptions were provided for two new species of *Mioscarta* Breddin, 1901, and three new species (Crispolon *et al.* 2021) of *Trigonoschema* Crispolon & Soulier-Perkins, 2021. More recently, *Phantagma* Crispolon & Le Cesne, 2024, and *Vinpietri* Crispolon & Soulier-Perkins, 2024 were described, each comprising two species (Crispolon *et al.* 2024). This increases the total number of Philippine Cercopidae to over 70 valid species (with approximately 87% endemic species) classified within 22 genera, six of which are endemic to the country.

Our work in 2021 enabled us to check in the museum collection in Paris several specimens of an all-male and all-red cercopid species collected from Negros Island in 2010 and South of Luzon Island in 2011. In addition, a single female specimen was also collected in Southern Mindanao in 2019. We examined and compared all the specimens available in the collection to the closest taxa. The morphological features of these specimens posed a taxonomic challenge, as they shared characteristics with *Mioscarta* and *Poeciloterpa*. This suggested that the species in question resembles both of these genera and may not belong to either of them. This impelled a comprehensive examination of its morphological and molecular characteristics.

In this paper, we describe a new genus with two new species, based on consolidated evidence from morphological and molecular analyses. The discovery not only highlights the ongoing need for taxonomic revisions of Philippine cercopids but also emphasizes the importance of continued biodiversity documentation in the face of ecological change and underexplored faunal diversity.

Material and methods

Preparation of specimens for morphological observation

For the type materials and other examined materials, material labels are parsed as a verbatim citation by double quotation marks (“ ”). These are used to represent label citations that cannot be reliably interpreted or formatted, and square brackets [ ] to distinguish data that has been interpreted from a label, e.g., coordinates interpreted from a locality, or translations of foreign text.

The abdomen of each examined specimen was removed and cleared for 20 minutes in warm (85°C) 10% KOH. Dissections and cleaning of genital structures were performed in distilled water. If needed, a few drops of blue paragon for dying the ectodermal genital ducts were added for a few minutes. Observations were conducted in glycerol using a Leica MZ16 stereo microscope, equipped with a camera lucida, to facilitate drawing of the terminalia. The photos of the habitus were taken using a stereo microscope Leica MZ16 with an IC3D digital camera; final images were produced using Helicon ver. 5.0 software. Terminologies follow Soulier-Perkins & Kunz (2012) and Le Cesne *et al.* (2021). For the newly described taxa, only two authors are selected for the authorship, the first author, followed alternatively by the second or third author.

Taxon and data sampling

A phylogenetic analysis based on molecular characters was performed to test our decision to describe *Miosterpa* Crsipolon & Yap gen. nov. This study includes 40 specimens of Cercopidae as an ingroup, representing the genera *Aufidus* Stål, 1863 (1), *Callitettix* Stål 1865 (1), *Colsa* Walker, 1857 (1), *Eoscarta* Breddin, 1902 (1), *Euryaulax* Kirkaldy, 1906 (1), *Jacobsoniella bakeri* Casey, 1908 (1), *Kanozata* Matsumura, 1940 (1) *Mioscarta* (1), *Paraliterna* Lallemand, 1949 (1), *Phantagma* (1), *Poeciloterpa* (17), *Miosterpa* (6), *Sounama* Distant, 1908 (1) *Trigonoschema* (1), *Vinpietri* (1), *Wawi* Soulier-Perkins & Le Cesne, 2016 (1), and 14 terminals as outgroup, selected from Aphrophoridae Evans, 1946, Clastopteridae Dohrn, 1859 and Machaerotidae Stål, 1866. The representatives of genera included in the ingroup were chosen on the supposition that they are phylogenetically as close as possible to *Miosterpa* to test our hypothesis. Since the male terminalia of *Miosterpa* bear a pair of sterno-lateral plates, we have selected genera also possessing this character and occurring in the Philippines and neighbouring countries in the Asian and Australasian regions. Further, since we suspected species of *Miosterpa* to belong to either *Mioscarta* or *Poeciloterpa* we included in the phylogenetic analysis of both genera to test if they are distinct from each other. In addition to the phylogeny itself, we also used the percentage of CO1 gene differences between *Mioscarta*, *Miosterpa*, *Poeciloterpa* and *Trigonoschema* to determine whether these differences supported the decision to describe a new genus.

Most specimens sampled were stored in 95–100% ethanol. A few were dry. DNA extractions were conducted using standard protocols for QIAmp DNA microkit (Qiagen) from a detached leg. Disarticulated legs from intact voucher specimens were mounted on pins and deposited in the MNHN. PCR reactions, with negative controls included to detect contamination, were conducted in 25 µl volume using Taq DNA Polymerase, from a Taq Core kit (Qiagen) under standard thermocycler protocols. For Histone 3, 18S and 28S these included: initial denaturation for 3 minutes at 94°C, then 35 cycles of 94°C for 30 seconds, 49–56°C for 40 seconds and 72°C for 1 minute, then a final extension step at 72°C for 10 minutes, and finally held at 10°C before being removed from the cycler. For CO1 they included: initial denaturation for 3 minutes at 94°C; five cycles of 30 seconds at 94°C, 40 seconds at 47°C, and 1 minute at 72°C; 30 cycles of 30 seconds at 94°C, 40 seconds at 52°C, and 1 minute at 72°C; 10 minutes at 72°C; and finally held at 10°C), in each case oligonucleotide primers (Table 1) targeting the four loci. Amplified DNA was visualized using 1–2% agarose gel electrophoresis with midori green staining. Sequence fragments were imported into codoncode aligner ver. 5.1.4. (CodonCode Corporation, Dedham, Massachusetts, USA) and trimmed to remove the primer sequence. After sequence inspection, contigs sequences were assembled and edited based on chromatograms to ensure the accuracy of base calls. In addition, insertions/deletions and contaminant checks were confirmed for accuracy by using a reference sequence for comparison in BLAST (https://blast.ncbi.nlm.nih.gov/Blast.cgi). All sequence data are accessioned into GenBank (Table 2).

Sequence alignment and phylogenetic reconstruction

Consensus sequences were imported to Phylosuite ver. 1.2.3 (Zhang *et al.* 2020; Xiang *et al.* 2023) and aligned using MAFFT (Katoh & Standley 2013) and MACSE (Ranwez *et al.* 2011, 2018). Nuclear protein coding genes (H3) were aligned with the MAFFT program, using the FFT-NS-i algorithm. Ribosomal genes (18S and 28S) were aligned using MAFFT with algorithm E-INS-I (suitable for sequences with long unalignable regions). Mitochondrial protein coding genes (CO1) were aligned using MACSE. For the combined analyses all sequence alignments were concatenated into a single data set using Phylosuite ver. 1.2.3 (Zhang *et al.* 2020; Xiang *et al.* 2023). The resulting data matrix consisted of 5717 bp of DNA nucleotide sequence data from 54 Cercopoidea specimens used as terminals. Phylogenetic reconstruction was conducted using maximum likelihood (ML) criteria (Guindon *et al.* 2010) and all the gaps were treated as missing data. Partitioned analyses were conducted with Partition Finder (Lanfear *et al.* 2012, 2016). The best fitting model was searched using partition finder with following configuration: branchlengths = linked, models = all, model_selection AICc and the search = greedy. Codon code mode was activated for CO1 before running the analysis. Results obtained with the corrected Akaike Information Criterion (AICc) (Guindon *et al.* 2010; Lanfear *et al.* 2012, 2016) indicated that TIM+I+G was best fitting model for Histone 3, GTR+I for the first codon position, HKY+I+G for the second codon position and TRN+G for the third codon positions for CO1; SYM+I+G for 18S and GTR+G for 28S. For ML analysis the results were then imported to IQ tree (Guindon *et al.* 2010; Minh *et al.* 2013; Nguyen *et al.* 2015; Hoang *et al.* 2018) for a fast and effective stochastic algorithm to construct phylogenetic trees. Partition mode was selected, “Models” argument was ignored and models and thread were automatically set to auto. Maximum likelihood phylogeny was inferred under an edge-linked partition model for 1000 standard bootstraps, as well as the Shimodaira-Hasegawa-like approximate likelihood-ratio test (SH_aLRT branch test) with 1000 replicates (Guindon *et al.* 2010;

Table 1. Primers used for amplifying and sequencing the molecular markers.

Primers	Sequence	References
Mitochondrial coding genes		
COI		
LCO1490-JJ	CHACWAAYCATAAAGATATYGG	Astrin & Stüben 2008
HCO2198-JJ	AWACTTCVGGRTGVCCAAARAATCA	Astrin & Stüben 2008
Ron (F)	GGATCACCTGATATAGCATTCCC	Simon *et al.* 1994
MidR (R)	AATATRTGRTGDGCYCAWACHA	Cryan & Svenson 2010
Nuclear ribosomal genes		
18S		
a2.0 (F)	ATGGTTGCAAAGCTGAAAC	Whiting *et al.* 1997
9R (R)	GATCCTTCCGCAGGTTCACCTAC	Whiting 2002
28S		
EE (F)	CCGCTAAGGAGTGTGTAA	Hillis & Dixon 1991; Cryan *et al.* 2000
MM (R)	GAAGTTACGGATCTARTTTG	Hillis & Dixon 1991; Cryan *et al.* 2000
Lalt (F)	CCTCGGACCTTGAAAATCC	Dietrich *et al.* 2001
Galt (R)	TGTCTCCTTACAGTGCCAGA	Dietrich *et al.* 2001
V (F)	GTAGCCAAATGCCTCGTCA	Hillis & Dixon 1991; Cryan *et al.* 2000
X (R)	CACAATGATAGGAAGAGCC	Hillis & Dixon 1991; Cryan *et al.* 2000
Nuclear protein coding genes		
Histone 3		
HexAF (F)	ATGGCTCGTACCAAGCAGACGGC	Colgan *et al.* (1998)
HexAR (R)	ATATCCTTGGGCATGATGGTGAC	Colgan *et al.* (1998)

Minh *et al.* 2013, Nguyen *et al.* 2015, Hoang *et al.* 2018). The IQ Tree analysis tree was visualized with FIGTREE ver. 1.1.3 (Rambaut 2016).

Table 2 (continued next page). Taxa included in the phylogeny with their voucher code, geographical origin, and GenBank accession number for each marker used. a = isolates; b = from GenBank; "–" indicates absence of sequence. Accession numbers in boldface indicate newly added sequences.

Taxa	Voucher code	Geographical origin	GenBank acession number			
			H3	COI	18S	28S
Ingroup (Cercopidae)						
Aufidus albonigrus Le Cesne & Soulier-Perkins, 2021	C-00090[a]	Papua New Guinea	–	OM802062	OM685176	ON455161
Callitettix versicolor (Fabricius, 1794)	C-00086[a]	Vietnam	OM721642	OM540826	OM685178	ON455134
Colsa costaestriga (Walker, 1857)	C-00138[a]	Thailand	OM721640	OM802070	OM685164	ON455135
Eoscarta philippinica Lallemand, 1949	C-00060[a]	Philippines	OK266891	OK094471	–	OK111059
Euryaulax carnifex Fabricius, 1775)	03-09-10-76[b]	Australia	–	KX239977	KU504478	KU504406
Jacobsoniella bakeri Casey, 1908	C-00008[a]	Philippines	OK266894	OK094466	OK111087	OK111063
Kanozata conterminal (Distant, 1916)	C-00107[a]	Thailand	–	OM802082	–	ON455177
Mioscarta semperi Schmidt, 1909	C-00022[a]	Philippines	–	OK094469	OK111091	OK111067
Miosterpa flammarubra Crispolon & Soulier-Perkins gen. et sp. nov.	C–00028[a]	Philippines	–	OM802105	OM685126	ON455159
M. flammarubra	C-00080[a]	Philippines	–	–	OM685142	ON455199
M. flammarubra	C-00081[a]	Philippines	–	OM802103	–	ON372560
M. flammarubra	C-00168[a]	Philippines	–	OM802104	OM685112	ON455158
M. kalanguya Crispolon & Yap gen. et sp. nov.	C-00204[a]	Philippines	–	**PX290142**	**PX313878**	**PX326351**
Miosterpa kalanguya	C-00210[a]	Philippines	–	**PX290143**	**PX313879**	**PX326352**
Paraliterna sp.	06-02-15-43[b]	Malaysia	KX214525	KX239983	KU504483	KU504411
Phantagma maarati Crispolon & Le Cesne, 2024	C-00029[a]	Philippines	OM721631	OM802058	OM685127	ON455185
Poeciloterpa altissima Crispolon **&** Soulier-Perkins, 2019	C-00042[a]	Philippines	OK266895	–	OK111092	OK111068
P. altissima	C-00052[a]	Philippines	OM721599	OM540835	OM685138	ON455190
P. atra Jacobi, 1927	C-00023[a]	Philippines	–	OK094465/ OM534643	OK111093	OK111069
P. atra	C-00024[a]	Philippines	–	OM540836	OM685125	ON455191
P. atra	C-00153[a]	Philippines	OM721644	–	OM685169	ON455192
P. latipennis Schmidt, 1920	C-00025[a]	Philippines	–	OM540837	OM685181	ON455193
P. latipennis	C-00026[a]	Philippines	–	OK120386	OK111094	OK111070
P. latipennis	C-00035[a]	Philippines	–	–	OM685129	ON455194
P. latipennis	C-00036[a]	Philippines	–	–	OM685130	ON372556
P. latipennis	C-00054[a]	Philippines	OM721634	OM540838	–	ON455195
P. latipennis	C-00057[a]	Philippines	OM721635	OM540839	ON412933	ON455196
P. latipennis	C-00065[a]	Philippines	OM721603	–	OM685141	ON372558
P. latipennis	C-00066[a]	Philippines	OM721636	–	OM685180	ON372559
P. latipennis	C-00150[a]	Philippines	OM721628	OM540841	OM685166	ON455198
P. mangkas Crispolon & Yap, 2019	C-00011[a]	Philippines	OM721613	OM540842	–	–
P. mangkas	C-00012[a]	Philippines	–	OK094470	OK111095	OK111071
P. mangkas	C-00149[a]	Philippines	OM721641	OM540843	OM685165	ON455200
P. minuta Lallemand, 1922	C-00038[a]	Philippines	–	–	OK111096	OK111072

Table 2 (continued).

Taxa	Voucher code	Geographical origin	GenBank Acession Number			
			H3	COI	18S	28S
Sounama (*Stenaulophrys*) *koshunella* (Matsumura), Liang & Webb, 2002	05-01-15-30[b]	Taiwan	GU447181	GU447040	GU446863	GU446958
Trigonoschema manoborum Crispolon **&** Soulier-Perkins, 2021	C-00148[a]	Philippines	–	OK094468	OK111097	OK111073
Vinpietri yapae Crispolon & Le Cesne, 2024	C-00059[a]	Philippines	OM721624	OM802081	–	ON455143
Wawi mehi Soulier-Perkins & Le Cesne, 2016	C-00095[a]	Papua New Guinea	OK266896	–	OK111100	OK111076
Outgroups						
Aphroporidae						
Clovia conifera (Walker, 1851)	C-00220[a]	Philippines	–	–	–	**PX317701**
Clovia sp.	C-00004[a]	Philippines	OK266887	OK094478	OK111080	OK111054
Clovia sp.	C-00005[a]	Philippines	OK266888	OK094477	OK111081	OK111055
Perinoia sp.	C-00001[a]	Philippines	OK266884	OK094474	OK111077	OK111051
Perinoia sp.	C-00002[a]	Philippines	OK266885	OK094475	OK111078	OK111052
Perinoia sp.	C-00003[a]	Philippines	OK266886	OK094473	OK111079	OK111053
Clastopteridae						
Clastoptera brunnea Ball, 1919	01-07-18-58[b]	USA	AY744862	–	AY744790	AY744824
C. xanthocephala Germar, 1839	01-07-15-06[b]	USA	GU447121	–	GU446795	GU446885
Iba sp.	C-00013[a]	Philippines	–	OK094479	OK111084	OK111058
Machaerotidae						
Apomachaerota reticulata Schmidt, 1910	06-02-15-17[b]	Malaysia	GU447197	–	GU446882	GU446977
Grypomachaerota turbinate Schmidt, 1907	06-02-15-19[b]	Malaysia	GU447198	–	GU446883	GU446978
Machaerota pugionata Schmidt, 1910	04-05-11-45[b]	Australia	–	–	GU446815	GU446906
Machaerota sp.	C-00219[a]	Philippines	–	–	–	**PX313880**
Machaerota takeuchii Kato, 2014	04-10-15-80[b]	Japan	–	–	GU446828	GU446918

Abbreviations for morphological terms and measurements

ae = apical extension
CuA = cubital anterior vein
CuP = cubital posterior vein
IP = intermediate plate
m-cu = cross vein between median and cubital veins
PCR = polymerase chain reaction
pdp = postero-dorsal protrusion
pp = posterior protrusion
R = radial vein
RA = radial anterior vein
RP = radial posterior vein

Sc = sub-costal vein
SLP = sterno-lateral plate

Institutional abbreviations

MNHN = Muséum national d'Histoire naturelle, Paris, France
UPLBMNH = University of the Philippines Los Baños Museum of Natural History, Philippines

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hemiptera Linnaeus, 1758
Suborder Auchenorrhyncha Duméril, 1806
Infraorder Cicadomorpha Evans, 1946
Family Cercopidae Leach, 1815
Subfamily Cercopinae Oshanin, 1916
Tribe Rhinaulacini Kirkaldy, 1906
Subtribe Poeciloterpina Schmidt, 1920

Genus ***Miosterpa*** Crispolon & Yap gen. nov.
urn:lsid:zoobank.org:act:EC5381E8-71BE-49F9-92AA-5E11B3BBE41D
Figs 1–2, Tables 2–5

Type species

Miosterpa flammarubra Crispolon & Soulier-Perkins gen. et sp. nov.

Diagnosis

Miosterpa Crsipolon & Yap gen. nov. possesses characters similar to *Mioscarta* and *Poeciloterpa* but the following characters taken together allow it to be distinguished clearly from both genera: habitus slightly dorso-ventrally flattened, 2–4 mm shorter than *Mioscarta*, with small ocelli, postclypeus with two prominent lateral carinae, widest part before midlength of tegmina when viewed dorsally, apical cells concave; male terminalia with subgenital plate with equal length relative to height of pygofer without a slender apical appendage extension (as in *Mioscarta*). Additional character diagnoses are presented in Table 3 (modified from Crispolon *et al.* 2021), comparing the four closely related genera of the tribe Rhinaulacini Kirkaldy, 1906 from the Philippines

Etymology

The generic name is derived from the two most closely related genera, *Mioscarta* and *Poeciloterpa,* with the first four letters of the former genus are concatenated with the last five letters of the latter genus. The gender of the genus is feminine.

Description

Body length 6–7 mm (tegmina included), width 3–3.5 mm.

General Shape. In dorsal view, eyes slightly elongated, small ocelli, distance between eyes 9–10.5 × ocellus diameter, distance between ocelli equals 1–1.5 × ocellus diameter, distance between ocellus and compound eye 3–3.5 × ocellus diameter, ocelli closer to each other than to compound eyes, eyes not prominent, 1.5–2 × as long as wide, vertex and frons with longitudinal median carina present (Figs 1, 2B). Postclypeus with longitudinal furrow forming two prominent parallel longitudinal carinae (Figs 1, 2B),

Table 3. Character diagnosis for the three closely related genera from the Philippines (modified from Crispolon *et al.* 2021).

No.	Characters	Genera			
		Mioscarta	***Poeciloterpa***	***Trigonoschema***	***Miosterpa* Crispolon & Yap gen. nov.**
1	habitus general shape in lateral view	dorso-ventrally flattened, total length nearly 4 × height	globulous, total length around 2.5 × height	not dorso-ventrally flattened, in lateral view total length around 3 × height	dorso-ventrally flattened, in lateral view total length around 3.5 × height (Figs 1, 2A)
2	total length of the specimen	8–11 mm	not exceeding 8 mm	9.5–12.5 mm	6–7 mm
3	Pronotum angle	not more than 25°	42°	around 45°	around 45°
4	distance between ocellus and compound eye	2 × ocellus diameter	6 × ocellus diameter	less than 4 × ocellus diameter	3 × ocellus diameter
5	distance between ocelli	1.5 ocellus diameter	at least 2 × ocellus diameter	1.5 ocellus diameter	1 ocellus diameter
6	size of ocelli evaluated according to the distance between eyes using ocellus diameter	large, distance between eyes less than 8 × ocellus diameter	very small, distance between eyes 16 × ocellus diameter	small, distance between eyes 9–10.5 × ocellus diameter	small, distance between eyes 9–10.5 × ocellus diameter
7	postclypeus shape in frontal view	ovoid	compressed laterally with lateral sides almost straight	ovoid	ovoid (Figs 1, 2B)
8	lateral carinae on postclypeus in frontal view	absent	present, prominent	absent	present prominent (Figs 1, 2B)
9	widest part of postclypeus in frontal view	mid height	close to frons	close to frons	mid height
10	Apical reticulation of the tegmen	generally developed and reduced in few cases	reduced	reduced	reduced (Figs 1, 2C)
11	apical curve of tegmen in dorsal view	visible	rarely visible	rarely visible	visible (Figs 1, 2C)
12	widest part of habitus	midlength of tegmen	before midlength of tegmen	before midlength of tegmen	before midlength of tegmen (Figs 1, 2C)
13	apical cells of the tegmen	not concave	concave	not concave	concave (Figs 1, 2C)
14	Rp posterior wing	Rp separating from SC+Ra nearly at midlength (Fig. 3A)	Rp separating from SC+Ra after midlength and making a strong bend after separating from SC+ Ra (Fig. 3C)	Rp separating from SC+Ra nearly at midlength (Fig. 3D)	Rp separating from SC+Ra nearly at midlength, (Fig. 3A–B)
15	subgenital plates length	at least 1.5 × as long as pygofer height	slightly longer than pygofer height	clearly shorter than 1.5 × as long as pygofer height	as long as the pygofer height (Figs 1, 2E–F)
16	subgenital plates fine appendage	always present, longer than the main plate	generally absent, if present shorter than the main plate	generally present but shorter than the main plate	absent (Figs 1, 2E–F)
17	paramere general shape	not globose and without protrusion on lateral side	not globose and without protrusion on lateral side	globose with protrusion on lateral side	not globose and without protrusion on lateral side (Figs 1, 2G)

slightly swollen, ovoid shape in frontal view, widest part at mid-height, not receding before anteclypleus where it bends forming obtuse triangle in lateral view (Figs 1, 2A). Rostrum very long, reaching but not surpassing metacoxae. Tegmina opaque, R bifurcates on apical half, M bifurcates on basal third, veins not prominent on first ⅔, becoming prominent on apical third, forming concave apical cells (Figs 1, 2A, C).

Male Terminalia. Subgenital plates finger-shaped, with equal length relative to height of pygofer without any elongated, thin apical appendage extension (as in *Mioscarta*), (Figs 1, 2–F). Paramere (Figs 1, 2G) midlength broad without protrusion on lateral side (as in *Trigonoschema*), with process on dorsal margin located apically, ventral margin bearing apically two processes. Aedeagus (Figs 1, 2H) S-shaped with posterior protrusion (pp) and apical extension.

Distribution

Philippines.

Key to the species of *Miosterpa* Crispolon & Yap gen. nov.

1. Tegmina entirely red (Fig. 1A, C), posterior protrusion of aedeagus short and broad, axe-shaped with a fine needle-shaped extension (Fig. 1H) .... ***M. flammarubra*** Crispolon & Soulier-Perkins gen. et sp. nov.
– Tegmina yellowish brown (Fig. 2A, C), posterior protrusion of aedeagus elongated and narrow apex with fine long appendages (Fig. 2H–I) ....***M. kalanguya*** Crispolon & Yap gen. et sp. nov.

Miosterpa flammarubra Crispolon & Soulier-Perkins gen. et sp. nov.
urn:lsid:zoobank.org:act:32C5D6FF-C599-4FC1-A95A-BA3F52DDCD86
Figs 1, 4–5, Tables 2, 4

Diagnosis

General shape close to *M. kalanguya* Crispolon & Yap gen. et sp. nov., but the colour pattern distinguishes it immediately. This species is red in colour, while *M. kalanguya* is yellowish brown.

Etymology

The name '*flammarubra*' represents the colour of the tegmina, which is flaming red. It is a combination of the two Latin words '*flamma*' which means 'flame', and '*rubra*' meaning red.

Type material

Holotype

PHILIPPINES • ♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′31″ E 123°05′43″ // MUSEUM PARIS / 1098 m / 30-X-2010 / D. Ouvrard Rec. // UPLBMNH HEM-06923"; UPLBMNH.

Paratypes

PHILIPPINES • 3 ♂♂; "Philippines / Negros volcan Canlaon / champ de coqs / N 10°25′.29″ E 123°05′23″ // MUSEUM PARIS / Piège lumineux / 932 m / 28-X-2010 / A. Soulier-Perkins rec. // MNHN, Paris EH 31003–31005"; MNHN • 2 ♂♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′34″ E 123°05′37″ // MUSEUM PARIS / 1070 m / 29-X-2010 / D. Ouvrard Rec. // MNHN, Paris EH 31006–31007"; MNHN • 1 ♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′ 31″ E 123°05′40″ // MUSEUM PARIS / Piège lumineux / 1098 m / 29-X-2010 / A. Soulier-Perkins rec. // sequencage par Elorde Crispolon C-00080 // MNHN, Paris EH 31008"; MNHN • 6 ♂♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′ 31″ E 123°05′40″ // MUSEUM PARIS / Piège lumineux / 1098 m / 29-X-2010 / A. Soulier-Perkins rec. // MNHN, Paris EH 31009–31014"; MNHN • 1 ♂; Philippines / Negros volcan Canlaon / forêt / N 10°25′31″ E 123°05′43″ // MUSEUM PARIS /

1098 m / 30-X-2010 / D. Ouvrard Rec. // séquençage par Elorde Crispolon C-00081 // MNHN, Paris EH31015"; MNHN • 14 ♂♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′31″ E 123°05′43″ // MUSEUM PARIS / 1098 m / 30-X-2010 • 6 ♂♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′36″ E 123°05′37″ // MUSEUM PARIS / Piège lumineux / 1057 m / 31-X-2010 / D. Ouvrard Rec. // MNHN, PARIS EH31039–31044"; MNHN • 3 ♂♂; "Philippines / Negros volcan Canlaon / forêt /

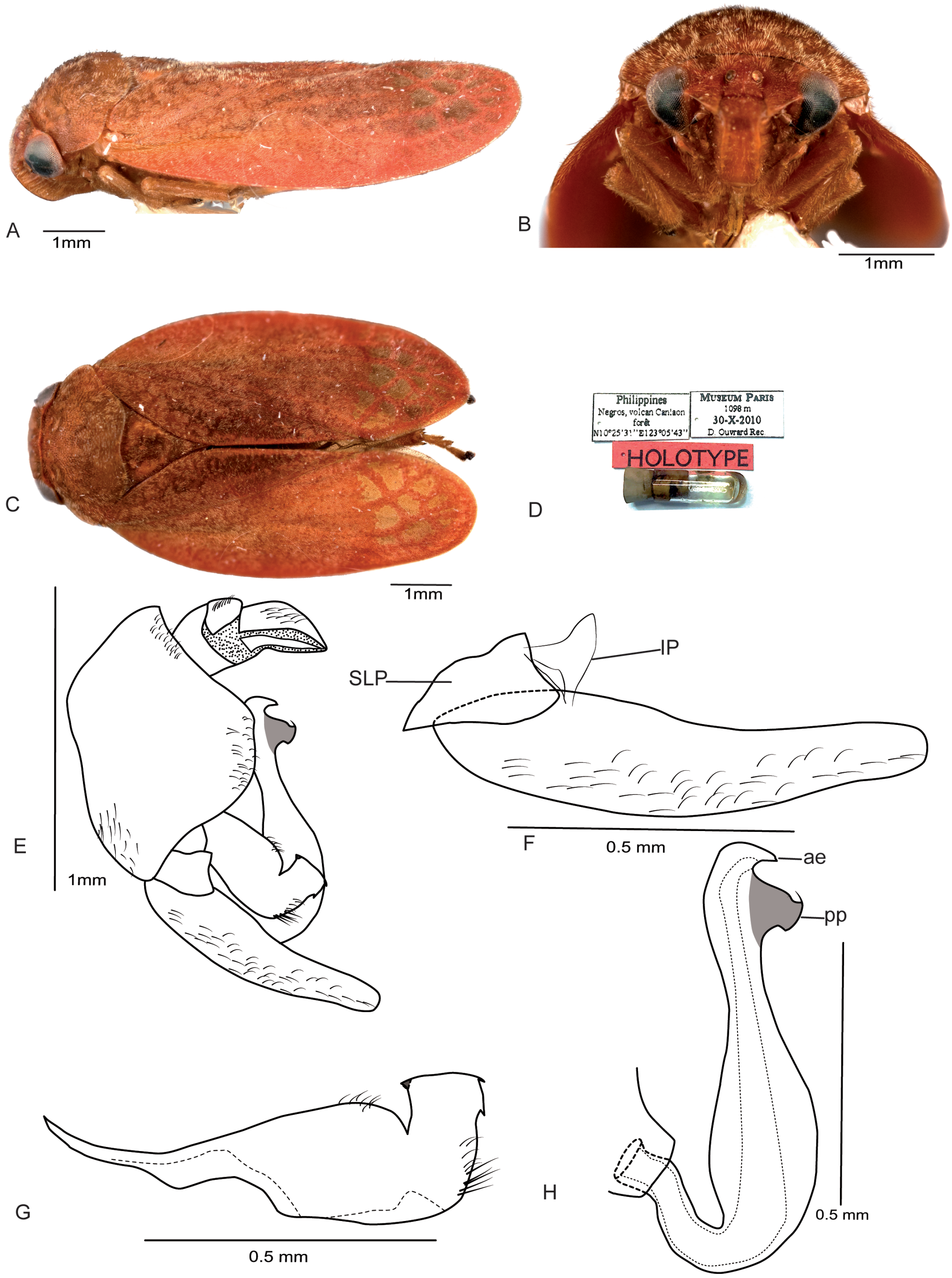

Fig. 1. *Miosterpa flammarubra* Crispolon & Soulier-Perkins gen. et sp. nov., ♂, holotype, habitus and terminalia in lateral view (UPLBMNH HEM-06923). **A**. Lateral view. **B**. Frontal view. **C**. Dorsal view. **D**. Labels. **E**. Terminalia. **F**. Sterno-lateral, intermediate, and subgenital plates. **G**. Paramere. **H**. Aedeagus. Abbreviations: see Material and methods.

N 10°25′36″ E 123°05′37″ // MUSEUM PARIS / Piège lumineux / 1057 m / 31-X-2010 / A. Soulier-Perkins rec. // MNHN, Paris EH31045–31047"; MNHN • 5 ♂♂; "Philippines / Negros volcan Canlaon / forêt / N 10°25′36″ E 123°05′37″ // MUSEUM PARIS / Piège lumineux / 1057 m / 31-X-2010 / A. Soulier-Perkins rec. // UPLBMNH HEM-06924–06928"; UPLBMNH • 1 ♂; "Philippines / Luzon / Mount Isarog / Light trap // MUSEUM PARIS / 31-V-2011 / S. Yap Rec. // UPLBMNH HEM-06929"; UPLBMNH • 1 ♀; "Philippines / Mount Apo / Bongolanon / Magpet, N. Cotabato / 27 to 28-VI-2019 / ESCrispolon // UPLBMNH HEM-06930"; UPLBMNH.

Description

Body length 6–7 mm (tegmina included), width 3.5 mm.

Head (Fig. 1C). Head including eyes, narrower than widest part of pronotum. In dorsal view, eyes slightly elongated, small ocelli, distance between eyes 10.5 × ocellus diameter, distance between ocelli equals 1.5 ocellar diameter, distance between ocellus and compound eye 3.5 × ocellus diameter, ocelli closer to each other than to compound eyes. Eyes not prominent, 1.5 × as long as wide. Vertex and frons longitudinal median carina present. Vertex slightly longer than wide with 3.5 × ocellus diameter in between the two vertex grooves outside ocelli and 4.5 × ocellus diameter between anterior and posterior vertex margins. No dimple in upper part of postclypeus just below frons (as in *Amberana* Distant, 1908). Postclypeus with longitudinal furrow forming two prominent parallel longitudinal carinae, slightly swollen, ovoid shape in frontal view, widest part at mid-height (Fig. 1B), not receding prior to anteclypleus where it bends forming obtuse triangle in lateral view (Fig. 1A). Rostrum very long, reaching but not surpassing metacoxae.

Thorax. In dorsal view, pronotum with anterior concavities on each side, anterior margin of the pronotum as wide as posterior margin of the head including eyes, anterolateral margins curved, posterior margin grooved, posterolateral margins slightly concave and longer than anterolateral margin, humeral angle rounded. Pronotum angle in lateral view around 45° (Fig. 1A). Scutellum slightly longer than wide with large median concavity.

Tegmen. R bifurcates on apical half, M bifurcates on basal third, veins not thickened on first ⅔, becoming thickened on apical third forming concave apical cells (Fig. 1C).

Posterior wing. Rp separating from SC+RA nearly at midlength, r-m absent, M reaches ambient vein, CuA and CuP fused at base, CuA bifurcate in CuA1 and CuA2 near midlength, m-cu links M to CuA above CuA bifurcation, total of six longitudinal veins and five apical cells between SC+RA and CuP, angular protrusion of the costal margin near base present (Fig. 3B).

Legs. Metafemur with apical spine on inner margin, metatibia bearing 1 lateral spine, both primary and secondary basitarsi with one row of at least five spines.

Male terminalia. In lateral view, posterior margin of pygofer (Fig. 1E) largely convex medially with a slight curvature on last third. Subgenital plates (Fig. 1E–F) finger-shaped, equal in length to height of pygofer without any elongated, thin apical appendage extension (as in *Mioscarta*), ventral and dorsal margin regularly rounded, apex of the dorsal margin dented, sterno-lateral plate present and slightly elongated, intermediate plates present, subtriangular, linking internal sides of sterno-lateral plate and subgenital plate. Paramere (Fig. 1G), dorsal margin convex then curving abruptly dorsally and finishing with a sharp process directed anteriorly, ventral margin regularly rounded with apical part bearing two spiniform processes directed antero and postero-ventrally. Aedeagus (Fig. 1H), basal third of dorsal margin sharply bent and last ⅔ vertical and S-shaped, basal part of erected part of aedeagus enlarged, apical extension (ae) directed posteriorly, posterior protrusion (pp) axe-shaped with fine needle-shaped extension prolonging edge dorsally.

Colour. Body covered with yellowish setae. Head, thorax red, rostrum orange, antennal scape and pedicel yellowish, legs reddish brown. Protibia without brown or black stripes on external margin. Male tegmina entirely flaming red, female darker red.

Type locality

Philippines: Visayas, Negros Occidental, Mount Kanlaon.

Distribution

Philippines: Luzon Island; Visayas, Negros Island; Mindanao Island (Fig. 5).

Miosterpa kalanguya Crispolon & Yap gen. et sp. nov.

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Fig. 2, 4–5, Tables, 2, 4

Diagnosis

General shape close to *M. flammarubra* Crispolon & Soulier-Perkins gen. et sp. nov., but the colour pattern distinguishes it immediately. This species is yellowish-brown in colour, while *M. flammarubra* is red.

Etymology

The species name refers to the tribe ‘Kalanguya’ inhabiting the area where the type specimens were collected. It is treated as a noun in apposition.

Type material

Holotype

Philippines • ♂; “Philippines / Luzon, Pangasinan / San Nicolas / Brgy. Malico // MUSEUM PARIS / 8-IV-2024 / SAYap & VThompson // sequencage par Elorde Crispolon C-00204 // MNHN, Paris EH31049”; MNHN.

Paratypes

Philippines • 1 ♂; Philippines, “Mt. Polis S. E. / Elev. 2000m / 29.V.1948 / Celestino // UPLBMNH HEM-04055”; UPLBMNH • 1 ♀; “Philippines / Luzon, Pangasinan / San Nicolas / Brgy. Malico // MUSEUM PARIS / 8-IV-2024 / SAYap & VThompson // séquençage par Elorde Crispolon C-00210 // MNHN, Paris EH31048”; MNHN • 1 ♀; “Philippines / Luzon, Pangasinan / San Nicolas / Brgy. Malico // MUSEUM PARIS / 8-IV-2024 / SAYap & VThompson // UPLBMNH HEM-06931”; UPLBMNH.

Description

Body length 6–7 mm (tegmina included), width 3–3.5 mm.

Head (Fig. 2C). Head including eyes, narrower than widest part of pronotum. In dorsal view, eyes slightly elongated, small ocelli, distance between eyes 9 × ocellus diameter, distance between ocelli equals one ocellar diameter, distance between ocellus and compound eye 3 × ocellus diameter, ocelli closer to each other than to compound eyes. Eyes not prominent, 2 × as long as wide. Vertex and frons longitudinal median carina present. Vertex slightly longer than wide with 3 × ocellus diameter in between two vertex grooves outside ocelli and 4 × ocellus diameter between anterior and posterior vertex margins. No dimple in upper part of postclypeus just below frons (as in *Amberana*). Postclypeus with longitudinal

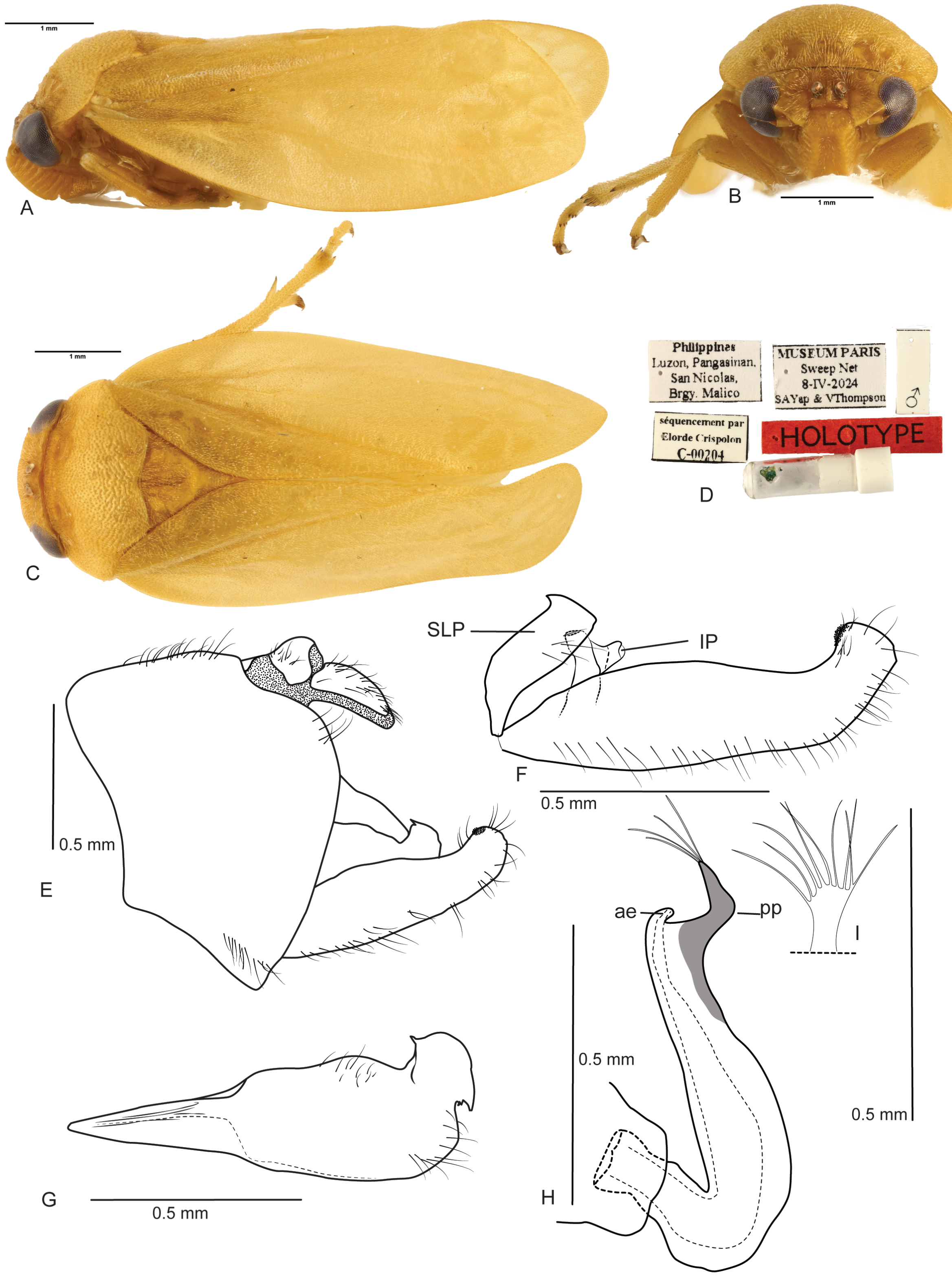

Fig. 2. *Miosterpa kalanguya* Crispolon & Yap gen. et sp. nov. holotype, habitus and male terminalia in lateral view (MNHN, EH31049). **A**. Lateral view. **B**. Frontal view. **C**. Dorsal view. **D**. Labels. **E**. Terminalia. **F**. Sterno-lateral, intermediate, and subgenital plates. **G**. Paramere. **H**. Aedeagus. **I**. Shape of pp in posterior view. Abbreviations: see Material and methods.

furrow forming two prominent parallel longitudinal carinae, slightly swollen, ovoid shape in frontal view, widest part at mid-height (Fig. 2B), not receding prior to anteclypleus where it bends forming obtuse triangle in lateral view (Fig. 2A). Rostrum very long reaching but not surpassing metacoxae.

Thorax. In dorsal view, pronotum with anterior concavities on each side, anterior margin of pronotum as wide as posterior margin of head including eyes, anterolateral margins curved, posterior margin grooved, posterolateral margins slightly concave and longer than anterolateral margin, humeral angle rounded. Pronotum angle in lateral view around 45° (Fig. 2A). Scutellum slightly longer than wide with large median concavity.

Tegmen. R bifurcates on apical half, M bifurcates on basal third, veins not thickened on first ⅔, become thickened on apical third, forming concave apical cells (Fig. 2C).

Posterior wing. Rp separating from SC+RA nearly at midlength, r-m absent, M reaches ambient vein, CuA and CuP fused at base, CuA bifurcate in CuA1 and CuA2 at apical third, m-cu links M to CuA above CuA bifurcation, total of six longitudinal veins and five apical cells between SC+RA and CuP, angular protrusion of the costal margin near base present (Fig. 3B).

Legs. Metafemur with apical spine on inner margin, metatibia bearing 1 lateral spine, both primary and secondary basitarsi with one row of at least five spines.

Male terminalia. In lateral view, posterior margin of pygofer (Fig. 2E) convex medially with slight curvature towards last third. Subgenital plates (Fig. 2E–F) finger-shaped, with equal length relative

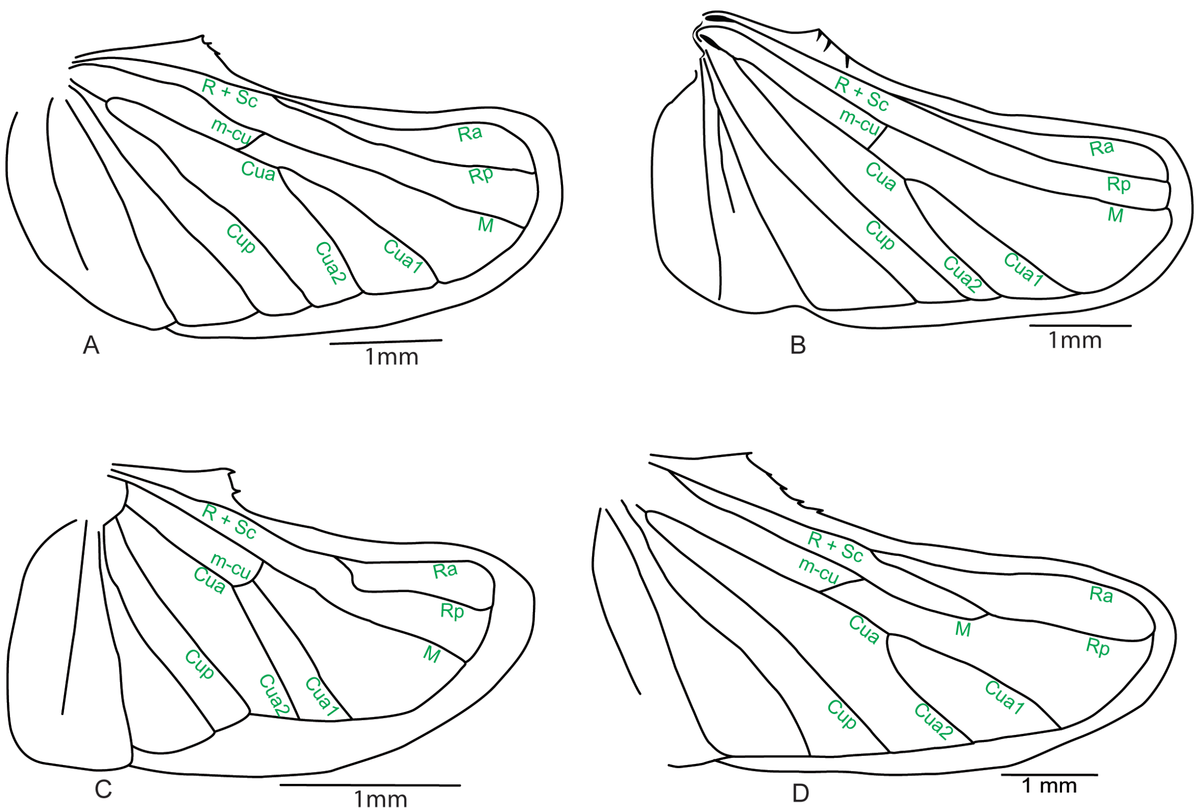

Fig. 3. Posterior wings. **A**. *Mioscarta* Breddin, 1901. **B**. *Miosterpa* Crispolon & Yap gen. nov. **C**. *Poeciloterpa* Stål, 1870. **D**. *Trigonoschema manoborum* Crispolon & Soulier-Perkins. Abbreviations: Abbreviations: see Material and methods.

to height of pygofer without longated, thin apical appendage extension (as in *Mioscarta*), ventral and dorsal margins regularly rounded, apex of dorsal margin dented, sterno-lateral plate present and slightly elongated with apical end of dorsal margin pointed, intermediate plates present, roughly Y-shaped, linking internal sides of sterno-lateral plate and subgenital plate. Paramere (Fig. 2G), dorsal margin slightly convex ⅔ of its length then becoming concave before finishing up with spiniform process directed dorsally, ventral margin convex and apex with one larger and two minute spiniform processes directed antero-ventrally. Aedeagus (Fig. 2H), basal third of dorsal margin slightly bent and last ⅔ vertical and S-shaped, basal part of the erected part of aedeagus slightly enlarged, apical extension (ae) directed ventrally, posterior protrusion (pp) elongated directed dorsally, when viewed posteriorly, sub apex flattened, apical part with fine long appendages (Fig. 2I).

Colour. Body covered with golden yellow setae. Head, thorax, rostrum, antennal scape, pedicel, tegmen, legs yellowish brown, tegmen apical part much lighter and translucent.

Type locality

Philippines: Luzon, Pangasinan, San Nicolas.

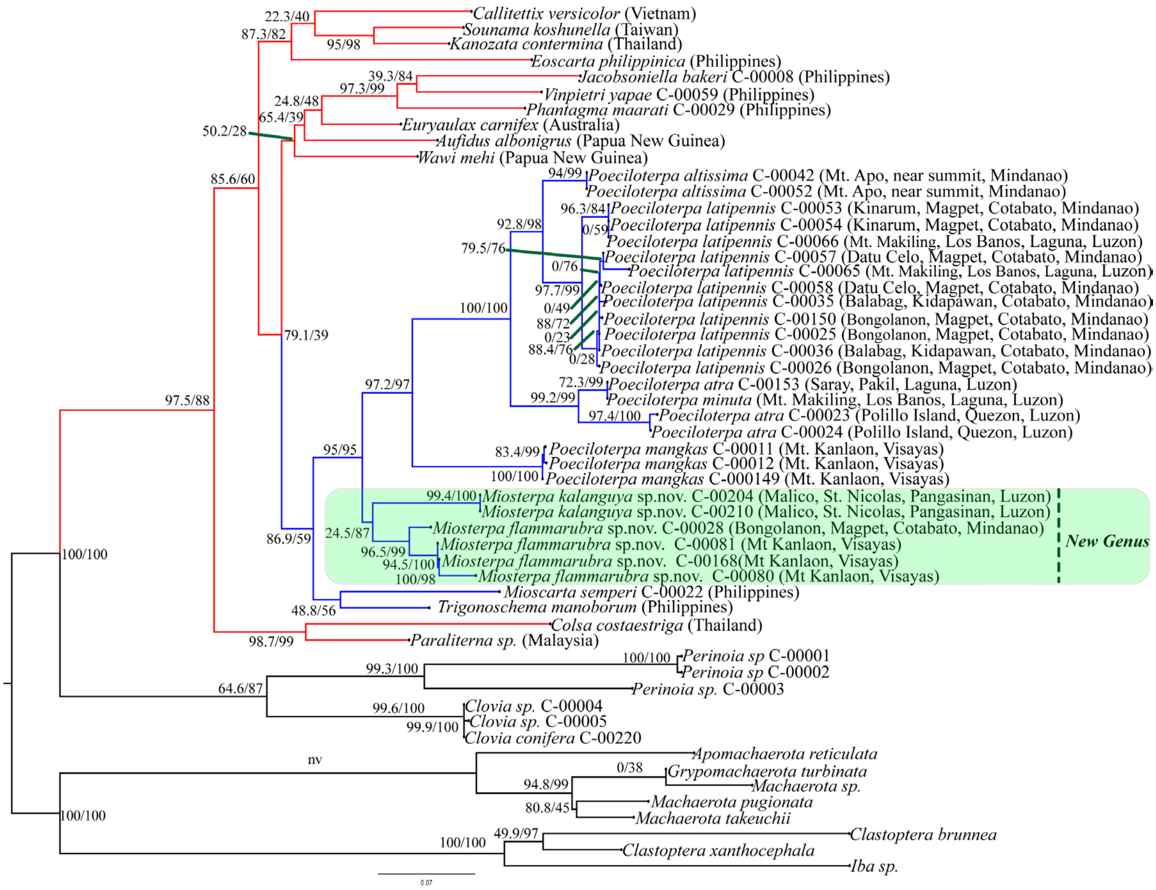

Fig. 4. Maximum likelihood topology (likelihood score of -18712.403) of combined sequences (CO1, Histone 3, 18S, and 28S). Support statistics from an ML bootstrap value (SH-aLRT support% / standard bootstrap support%) are indicated at each resolved node. Black branches correspond to the outgroup, while coloured branches correspond to the ingroup. Red branches correspond to the non-Poeciloterpina genera, while blue branches correspond to the Philippine genera of Poeciloterpina Schmidt, 1920 with *Miosterpa* Crispolon & Yap gen. nov. highlighted in green.

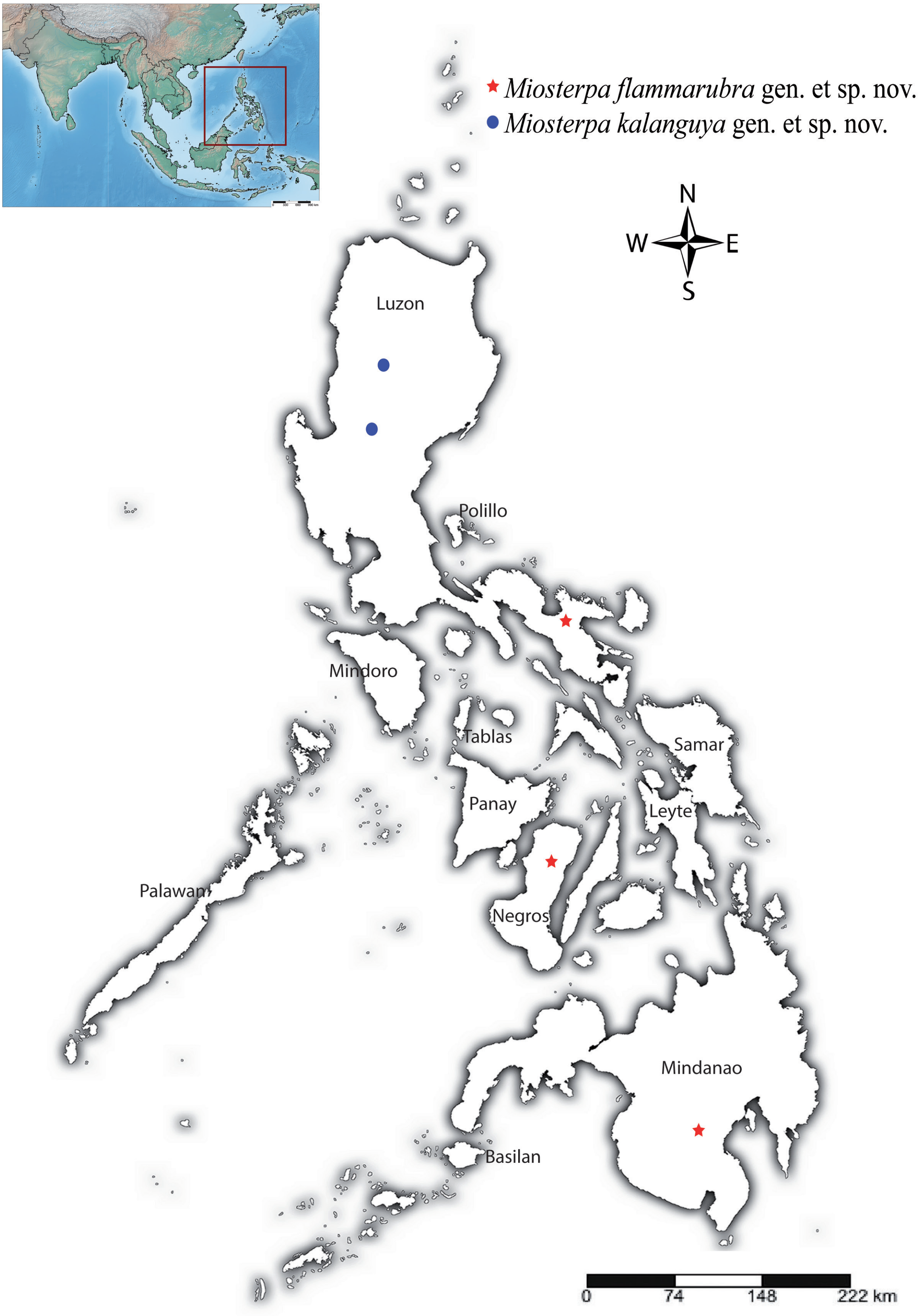

Fig. 5. *Miosterpa* Crispolon & Yap gen. nov., distribution map.

Distribution

Philippines: Luzon Island (Fig. 5).

Molecular phylogeny

The result of the ML analysis with a likelihood score of -18712.403 is shown in Figure 4. In the phylogeny, the ingroup appears as monophyletic, supported by an ML bootstrap value (ML BS) of 98.1/98% (SH-aLRT support/standard bootstrap support). *Miosterpa* Crsipolon & Yap gen. nov. is recovered as a monophyletic group which is supported by an ML BS of 64.3/88%. Is recovered as sister group of *Poeciloterpa* supported by an ML BS of 97.2/98%. The genera *Mioscarta* and *Trigonoschema*, each represented in the phylogeny by only one specimen, are recovered together as monophyletic with an ML BS of 46.6/67%. These four closely related genera: ((*Mioscarta* + *Trigonoschema*)+(*Miosterpa* + *Poeciloterpa*)), form a clade, supported by an ML BS of 89/81%.

For the other genera used as ingroup here, the relationships recovered corroborate the work of Crispolon *et al.* (2023), even with the much smaller number of terminals used in this study. The clade (*Wawi* + (*Aufidus* + (*Euryaulax* + (*Phantagma* + (*Jacobsoniella* + *Vinpietri*))))) was recovered as sister to ((*Trigonoschema* + *Mioscarta*) + (*Miosterpa* Crsipolon & Yap gen. nov. + *Poeciloterpa*)), and the clade (*Eoscarta* + (*Callitettix* + (*Sounama* + *Kanozata*))) is sister to this clade. While the clade (*Paraliterna* sp. + *Colsa costaestriga*) was recovered at the base of the ingroup.

Discussion

A new genus, distinct from *Mioscarta* Breddin, 1901 and *Poeciloterpa* Stål, 1870

At first glance, specimens of *Miosterpa* Crsipolon & Yap gen. nov. appear similar to *Mioscarta* in overall morphology, size, and general habitus. However, closer examination of detailed characters reveals clear distinctions between the two genera. When examining the male terminalia, this genus doesn't possess the elongated, thin appendage on the subgenital plate that distinguishes *Mioscarta* from *Poeciloterpa* and other genera within the tribe. On the other hand, the absence of this appendage on the subgenital plate and other characters such as smaller ocelli, bulging pronotum, presence of thick veins in the apex of the tegmina, and presence of concave apical cells, could lead us to identify this species as belonging to the genus *Poeciloterpa.* However, *Miosterpa* doesn't exhibit the dome-shaped general habitus that clearly distinguishes *Poeciloterpa* from the other cercopid genera (Crispolon *et al.* 2019, 2021). To support our decision to describe *Miosterpa* as a new genus, we used the species for which we had molecular samples to do a phylogenetic and percentage genetic distance/variation analyses using four genes (COX 1, Histone 3, 18S, and 28S) on top of the morphological evidence.

Phylogenetic support and genetic distance between genera

As discussed by Soulier-Perkins & Stroiński (2017), the intra- or interspecific delimitation through genetic distance can be variable depending on the group of organisms. Even with the advancement of molecular science, there is still a huge gap in terms of our knowledge on generic and species delimitation using molecular data for the whole superfamily Cercopoidea, or at least for the family Cercopidae. This is proven by the non-inclusion of Cercopidae or Cercopoidea in some of the studies before the works of Castanhole *et al.* in 2013 and Crispolon *et al.* in 2024 (e.g., Gopurenko *et al.* 2013). Although their works report the intra- and interspecific genetic distances of some species of Cercopidae, these works do not suggest what percentage of genetic variation should be the standard value for the generic and species delimitation, at least for the family.

Even without a clear standard value for species delimitation, the work of Crispolon *et al.* (2024) gives more straightforward results, clearly separating three genera from the Philippines. In their results using 522 COX 1 sites, the p-distance between species in *Jacobsoniella* Melchar, 1914 was 6.32%. Unfortunately, the p-distance was not compared between species of *Phantagma* and *Vinpietri* as only one species for each genus has COX 1 data. Further, the p-distance they obtained between the three genera (*Jacobsoniella* vs *Phantagma* vs *Vinpietri*) was 12.07% to 16.28%. In the current study, together with the support of our morphological evidence and our phylogenetic analyses, we also determined the percentage genetic distance between genera and species using the COX 1 gene sites to further support that *Miosterpa* Crsipolon & Yap gen. nov., *Poeciloterpa*, *Mioscarta*, and *Trigonoschema* are distinct genera. According to the previous studies, the average percentage genetic distance within and between species of Hemiptera ranges from 0.31% to as high as 23.4% (Hebert *et al.* 2003; Bressan *et al.* 2009; Gitau *et al.* 2011; Gopurenko *et al.* 2013; Picciau *et al.* 2016; Soulier-Perkins & Stroiński 2017; Zheng *et al.* 2018). Here, based on 312 COX 1 sites (Table 4), the p-distance within and between species of *Miosterpa* ranges from 0.32% to 12.5%. Further, the p-distance between the species of *Miosterpa* and all species of *Poeciloterpa* with the COX 1 gene ranges from 12.18% to 15.71%. In addition, between the species of *Miosterpa* and *Mioscarta*, the p-distance ranges from 12.82 to 15.38%, while between the species of *Miosterpa* and *Trigonoschema*, the p-distance ranges from 11.54 to 12.82%.

With the strong morphological evidence and phylogenetic analysis, we conclude that *Miosterpa* Crsipolon & Yap gen. nov. is a distinct genus from *Poeciloterpa*, *Mioscarta* and *Trigonoschema*. Despite the heterogeneity in the ranges of p-distance within and between species, and between genera (especially between species of *Miosterpa*, some species of *Poeciloterpa*, and *Trigonoschema*), this analysis still aids in the delimitation of the genera in question. Although the result of the percentage genetic distance analysis of the current study does not directly suggest a standard value of p-distance for species delimitation. They do suggest the value of a wider and more comprehensive analysis with more exemplars from the family Cercopidae for a standard value of p-distance for generic and species delimitation.

Tribal and subtribal placement of *Miosterpa* Crsipolon & Yap gen. nov.

Miosterpa Crsipolon & Yap gen. nov. possesses characters that allow its clear identification from the other Rhinaulacini genera found in the Philippines, specifically *Mioscarta*, *Poeciloterpa*, and even *Trigonoschema*, the genera belonging to subtribe Poeciloterpina Schmidt, 1920. The characters listed by Lallemand (1949) and Liang & Webb (2002), especially the presence of a sterno-lateral plate between the pygofer and subgenital plate on the male genitalia (Liang & Webb 2002), define the tribe Rhinaulacini. These characters were further discussed by Crispolon *et al.* (2021, 2024). This genitalic character was also characteristic of all the ingroups used in the current study in the phylogenetic analysis. *Miosterpa* fits with the definition of the tribe; we are therefore certain in placing *Miosterpa* in Rhinaulacini. This makes eight genera belonging to the tribe Rhinaulacini present in the Philippines: *Miosterpa*, *Eoscarta*, *Jacobsoniella*, *Mioscarta*, *Phantagma*, *Poeciloterpa*, *Trigonoschema*, and *Vinpietri*. As *Miosterpa* is close to *Mioscarta* and *Poeciloterpa* in the subtribe Poeciloterpina, we further place it in the subtribe Poeciloterpina. This is also supported and confirmed by the characters on the posterior wing (listed by Breddin (1901) and further elaborated by Lallemand (1949)). Molecular phylogenetic analysis presented in the current study also supports the decision (Fig. 4).

Notes on subtribal placement of *Trigonoschema* Crispolon & Soulier-Perkins, 2021 (in Crispolon *et al.* 2021)

We described *Trigonoschema* as a new genus with three new species and two new species of *Mioscarta* from the Philippines in 2021 (Crispolon *et al.* 2021). In that paper, we wrote the taxonomy specifically for *Mioscarta*, mentioning Poeciloterpina as its subtribe. In the discussion, we mentioned that we would not classify *Trigonoschema* in any subtribe, even with its proximity to *Mioscarta*. However, we did not write the taxonomy specific to *Trigonoschema* suggesting by inference that we followed the taxonomy written for *Mioscarta*. This caused confusion for some readers and was critiqued by Packer (2025).

Table 4. Measured p-values (%) between species within and among genera using 312 COX 1 sites.

Mioscarta semperi C-00022	*Miosterpa flammarubra* Crispolon & Soulier-Perkins gen. et sp. nov. C-00028	*Miosterpa flammarubra* C-00081	*Miosterpa flammarubra* C-00168	*Miosterpa kalanguya* Crispolon & Yap gen. et sp. nov.C-00204	*Miosterpa kalanguya* C-00210	*Poeciloterpa altissima* Crispolon & Soulier-Perkins, 2019 C-00052	*Poeciloterpa atra* Jacobi, 1927 C-00023	*Poeciloterpa latipennis* Schmidt, 1920 C-00025	*Poeciloterpa mangkas* Crispolon & Yap, 2019 C-00011	*Trigonoschema manoborum* Crispolon & Soulier-Perkins, 2021 C-00148
Mioscarta semperi C-00022	12.82	14.42	14.42	15.38	15.38	15.71	15.06	16.03	16.99	14.74
	Miosterpa flammarubra C-00028	5.76	6.41	11.22	11.22	12.18	13.46	12.82	13.78	11.54
		Miosterpa flammarubra C-00081	0.32	12.18	12.18	13.46	14.74	13.78	12.82	11.86
			Miosterpa flammarubra C-00168	12.5	12.5	14.10	15.06	14.10	13.14	12.5
				Miosterpa kalanguya C-00204	0.00	15.71	15.38	14.10	14.74	12.82
					Miosterpa kalanguya C-00210	15.71	15.38	14.10	14.74	12.82
						Poeciloterpa altissima C-00052	12.82	9.62	15.70	14.74
							Poeciloterpa atra C-00023	12.50	16.35	15.06
								Poeciloterpa latipennis C-00025	17.31	14.74
									Poeciloterpa mangkas C-00011	12.82
										Trigonoschema manoborum C-00148

Here, based on the morphological characters and phylogenetic analyses (Crispolon *et al.* 2023, and this study), we place *Trigonoschema* in the subtribe Poeciloterpina together with *Miosterpa* Crsipolon & Yap gen. nov., *Mioscarta*, and *Poeciloterpa*. This makes four Poeciloterpine genera found in the Philippines, three of which are endemic. The following key characters distinguish the subtribe Poeciloterpina from other Cercopidae: radial veins of tegmina branching but are not fused by a transverse vein, the median vein of the posterior wing bifurcating (Schmidt 1920; Lallemand 1949).

Key to the genera of Philippine *Poeciloterpina* Schmidt, 1920

1. Tegmina with concave apical cells, apical veins thickened 2
– Tegmina without concave apical cells, apical veins not thickened 3

2. General habitus dome-shaped, length 2.5 × height .... ***Poeciloterpa*** Schmidt, 1920
– General habitus not dome-shaped, total length 3.5 × height .. ***Miosterpa*** Crispolon & Yap gen. nov.

3. Body dorso-ventrally flattened, pronotum angle in lateral view less than 25° ....
....***Mioscarta*** Breddin, 1901
– Body not dorso-ventrally flattened, pronotum angle in lateral view around 45° ....
.... ***Trigonoschema*** Crispolon & Soulier-Perkins, 2021

Distribution and some notes on ecology

Two new species are currently described, belonging to *Miosterpa* Crsipolon & Yap gen. nov., a new endemic genus from the Philippines. The description of a new genus and two new species brings the total number of genera endemic to the Philippines to seven out of 22 total and brings the total number of Philippine cercopid species to 75, with around 88% endemicity. *Miosterpa* and the two included species are recorded in the islands of Luzon, Negros, and Mindanao (Fig. 5). The habitats of the two species are a mixed forest landscape, a combination of disturbed and native vegetation. Both species were collected in both primary and secondary forest areas with patches of agricultural lands nearby. Unfortunately, only a single female specimen of one species, *Miosterpa flammarubra* Crispolon & Soulier-Perkins gen. et sp. nov. from Mindanao, can be associated with an identified host plant, a species in the family Melastomataceae Juss.. Most of the specimens of both species were collected using light trapping or sweep netting. Light trapping confirms that *Miosterpa*, displays positive phototaxy. This adds an additional genus of Cercopidae with such behaviour, as only a few cases have been reported in the scientific literatures (e.g., Soulier-Perkins & Kunz 2012; Crispolon *et al.* 2021, 2024).

Acknowledgements

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