2024	Heteropterus Revista de Entomología **Heteropterus Rev. Entomol.**	**24(1):** 1-6

ISSN: 1579-0681

A new species of *Kundakimuka* (Hemiptera: Heteroptera: Miridae: Deraeocorinae) from Zamami Island, Ryukyus, Japan

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Abstract

A new species of plant bug, *Kundakimuka arimotoana* **sp. nov.** (Termatophylini), is described from Zamami Village of Okinawa Prefecture, a small subtropical coral island in southwestern Japan. This is the second congener of *Kundakimuka* Cassis, 1995 occurring in eastern Asia.

Key words: Miridae, *Kundakimuka*, new species, Okinawa, SEM documentation.

Resumen

Una nueva especie de* Kundakimuka *(Hemiptera: Heteroptera: Miridae: Deraeocorinae) de la Isla Zamami, Ryukyus, Japón

Se describe una nueva especie de mírido, *Kundakimuka arimotoana* **sp. nov.** (Termatophylini), de la Villa de Zamami, en la Prefectura de Okinawa, una pequeña isla coralina subtropical del suroeste de Japón. Se trata del segundo miembro de *Kundakimuka* Cassis, 1995 presente en Asia oriental.

Palabras clave: Miridae, *Kundakimuka*, nueva especie, Okinawa, documentación MEB.

Laburpena

Kundakimuka *espezie berri bat (Hemiptera: Heteroptera: Miridae: Deraeocorinae) Zamami Uhartekoa, Ryukyus, Japonia*

Miridoen espezie berri bat, *Kundakimuka arimotoana* **sp. nov.** (Termatophylini), deskribatzen da Japoniaren hego-mendebaldeko koral-uharte subtropikal txikia den Zamami Hiribildukoa, Okinawa Prefekturan. Hau da ekialdeko Asiatik ezagutzen den *Kundakimuka* Cassis, 1995 generoko bigarren kidea.

Gako-hitzak: Miridae, *Kundakimuka*, espezie berria, Okinawa, EME dokumentazioa.

Introduction

The termatophyline genus *Kundakimuka* (Miridae: Deraeocorinae: Termatophylini) was proposed by Cassis (1995) to accommodate *K. carvalhoi* Cassis, 1995 (Australia), *K. pallipes* (Miyamoto, 1965) (Japan) and *K. queenslandica* Cassis, 1995 (Australia). Subsequently, Cassis *et al.* (2011) described two additional congeners, *K. ribesi* Cassis, Tatarnic & Symonds, 2011 (Australia) and *K. sudanensis* Cassis, Tatarnic & Symonds, 2011 (Sudan).

Recently, a unique undescribed species of Termatophylini was collected by a coleopterist from Zamami, a small coral island lying 40 km W of

Okinawa Island. After careful examination using a tabletop SEM, we confirmed it as the 6th member of *Kundakimuka* and herein describe as a new to science, namely *K. arimotoana* **sp. nov.** Eventually, the Japanese fauna of Termatophylini is now composed of five members (*cf.* Yasunaga *et al.*, 2001).

Material and methods

The holotype specimen is deposited in Nagasaki West High School, SSH Biology Section (NWHS), with a matrix code label (AMNH_PBI 00378791) which is archived in an online database (American Museum of Natural History, New York) and searchable (by species name) on «Heteroptera Species Pages» (http://research.amnh.org/pbi/heteropteraspeciespage/).

Terminology principally follows Cassis (1995) and Cassis *et al.* (2011). Scanning electron micrographs were taken with a Hitachi Miniscope® (TM4000 Plus II). All measurements are given in millimeters; for some of the SEM images, scale bars are shown in micrometers (µm).

Results

Kundakimuka arimotoana Yasunaga & Ito sp. nov. (Figs. 1a-d, 2a-g)

Type material:

HOLOTYPE: ♀, JAPAN: Ryukyus, Okinawa Pref., Shimajiri-gun, Zamami Island, Asa [26.242542, 127.324308, 100 m alt.], at light, 2.V.2018, K. Arimoto (NWHS) (AMNH_PBI 00378791).

Diagnosis:

Currently known by a female holotype. Most similar and closely related to *Kundakimuka pallipes* (Miyamoto, 1965) (Figs. 1e-h, 2h-l), from which the present new species is distinguished readily by its body comparatively stout [relatively flat in *K. pallipes*]; dorsum with long, wooly, golden setae [only with silvery setae]; punctures (or notches) along lateral margin of scutellum obsolete apically [present at apical part]; and procoxa and profemur darkened [pale].

Description:

Holotype female: Body generally dark brown, small (2.3 mm in total length), ovoid, relatively stout; dorsal surface weakly shining, somewhat matte, with uniformly distributed, wooly, golden, long setae, mixed with shorter silvery setae (Fig. 1a, c). **Head:** Dark brown, relatively short, porrect, with narrowly yellow apex; eye contiguous to anterior margin of pronotum; vertex as wide as an eye in dorsal view, with a narrow but continuous basal transverse carina (Fig. 2b). **Antenna:** Yellowish brown, generally short; segment I dark brown; segments II slightly thickened towards apex; segments III and IV almost linear, equal in length each other. **Labium:** Yellowish brown, short, not surpassing apex of mesocoxa, longer than metafemur; segments III and IV darkened. **Thorax:** Uniformly darkened; pronotum trapeziform, rather matte, with pointed posteromesal margin; collar thick, thicker than antennal segments; calli demarcated by rows of punctures and with a row of 5 punctures along midline (Fig. 2b); mesoscutal-scutellar fovea (*sensu* Yasunaga, 2022) as in Fig. 2c; scutellum pale brown at apex, weakly inflated, shallowly and transversely rugose, with a row of punctures along each lateral margin (except for apical part as in Fig. 2a); pleura and coxae shiny chocolate brown; metathoracic scent efferent system dark grayish brown, with comparatively elongate peritreme (Fig. 2d); accessory evaporatorium (*sensu* Yasunaga and Duwal, 2019) distinct (Fig. 1d). **Hemelytron:** Uniformly darkened, rather matte, with base of corium and apical margin of corium narrowly pale, declivous at cuneal fracture; clavus (along claval vein) and corium (along R+M vein) each with a distinct row of punctures (Figs. 1c, 2a); membrane including veins smoky brown, narrowly whitish along cuneal margin. **Legs:** Coxae and femora shiny chocolate brown; extreme apices of meso- and metafemora pale; metafemur smooth, without spine nor process; trochanters, tibiae and tarsi yellowish brown; pretarsal structure of metaleg as in Fig. 2g; claw relatively long. **Abdomen:** Uniformly shiny dark brown.

Male: Unknown.

Measurements:

See Table 1.

Etymology:

Named in honor of Dr. K. Arimoto, who collected and provided a valuable specimen herein designated as the holotype of this new species; Latinized as an adjective.

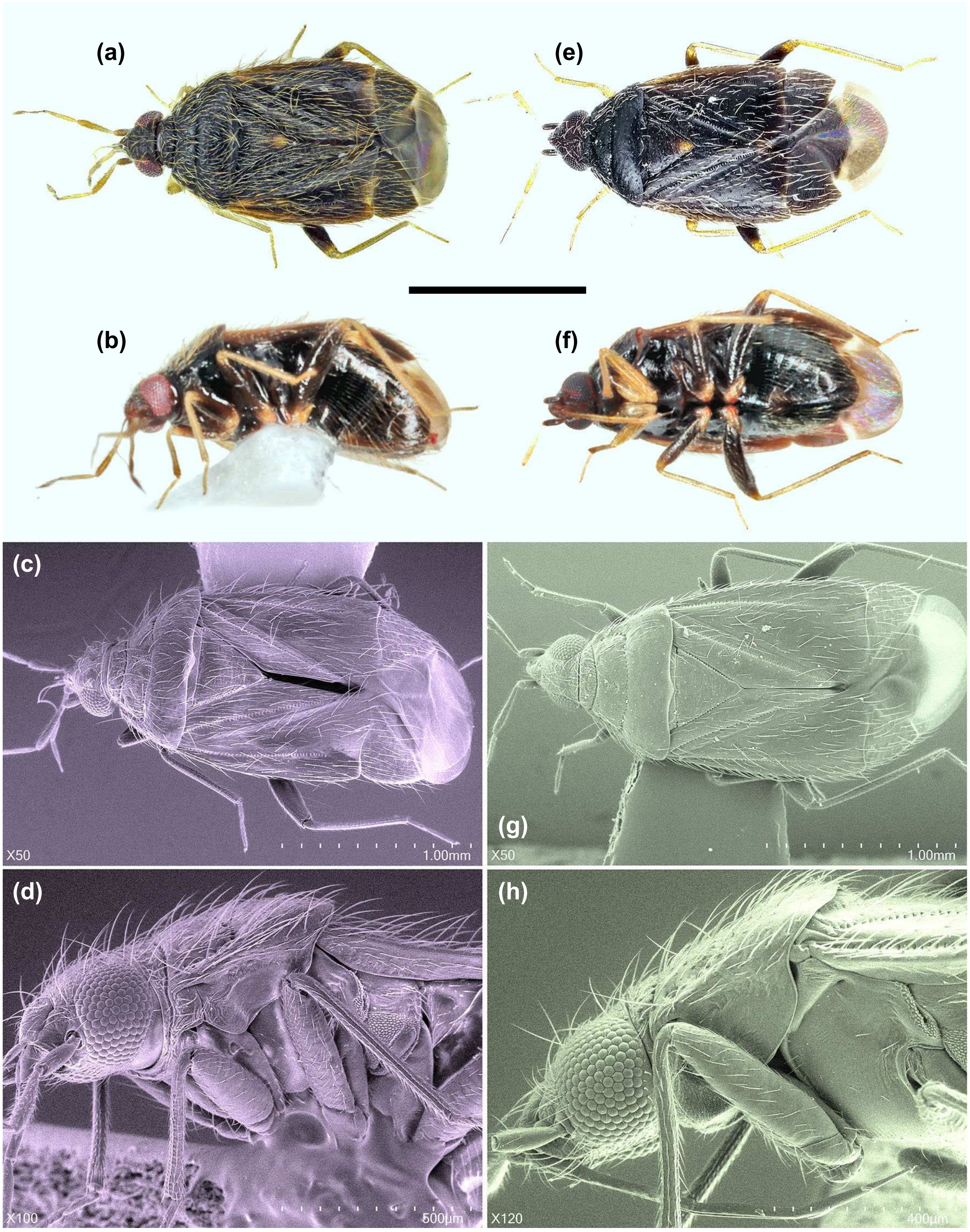

FIGURE 1. Habitus images (scanning electron micrographs in c-d, g-h) of: (a)-(d) *Kundakimuka arimotoana* **sp. nov.**, holotype female; (e)-(h) The sibling known species *K. pallipes* (Miyamoto, 1965), female from Saitama, Japan. / (a), (c), (e), (g) Dorsal view; (b), (f) Ventral view; (d), (h) Left lateral view (of anterior body). [Scale bar: (a)-(b), (e)-(f) = 1 mm]

	Body	Head	VTX	PRN		Max	Antennomere L				LBM	Mesoleg L		Metaleg L	
	L	W	W	L	W	W	I	II	III	IV	L	F	T	F	T
arimotoana **sp. nov.**	**2.30**	**0.44**	**0.22**	**0.49**	**0.89**	**1.10**	**0.13**	**0.32**	**0.22**	**0.22**	**0.86**	**0.55**	**0.51**	**0.74**	**0.82**
pallipes	2.46	0.42	0.20	0.49	0.87	1.09	0.15	0.31	0.21	0.20	0.74	–	0.53	0.72	0.82
females	2.59	0.44	0.21	0.50	0.88	1.14	0.15	0.34	–	–	0.86	0.61	0.55	0.74	0.88
(holotype)	2.46	0.44	–	0.55	0.86	1.11	0.15	0.32	0.21	0.21	–	–	–	–	–

TABLE 1. Measurements for *Kundakimuka arimotoana* **sp. nov.**, holotype female, and the sibling known species *K. pallipes* (Miyamoto, 1965) [for holotype of *K. pallipes* based on original description by Miyamoto (1965)] (Abbreviations: F = femur; L = length; LBM = labium; PRN = pronotum; T = tibia; VTX = vertex (interocular space); W = width).

Distribution:

Japan (Okinawa Pref.: Zamami Island).

Biology:

The single female specimen was collected at subtropical broadleaf forest. No other information is currently available.

Discussion

This compact genus has hitherto been known by five members as mentioned above. Three of these are restricted to the Australian Region and *K. sudanensis* occurs in Sudan, which implies that this generic group is principally composed of the Old World Gondwanan elements, in addition to a few undescribed congeners from Hawaii, India and Papua New Guinea suggested by Cassis (1995). Due to isolated distribution patterns of two Asian (or Japanese) species in the Japan Archipelago, the generic placements of these taxa currently accommodated by *Kundakimuka* will require further verification; the genus group was defined mainly by the male characters (*e.g.* meso- and metafemora with distinct pointed processes that are absent in females). Although both Japanese species, *K. arimotoana* **sp. nov.** and *K. pallipes*, are currently represented only by females, the overall features, such as ovoid body, pattern of punctures on pronotum and hemelytra, shape of metathoracic scent efferent system, and pretarsal structure, may support their placement in *Kundakimuka*.

Cassis (1995) and Cassis *et al.* (2011) reported that an Australian species, *K. queenslandica*, preys on small-sized lepidopteran larvae, such as *Poliopaschia lithochlora* (Lower, 1896) (Pyralidae). In Japan, *K. pallipes* has been found in residential zones in Saitama Prefecture (Nozawa, 2023) and Fukuoka City (Miyamoto, 1965). We presume that *Kundakimuka* members may be distributed widely over southern Japan. Further field investigation is encouraged to discover the male specimens and ascertain the host associations.

Incidentally, Nozawa (2023) documented that the general coloration of *K. pallipes* is dark brown. The holotype female specimen (currently considered missing, not found in the depository, Kyushu University Entomological Collection, Fukuoka, Japan mentioned in the original description) is presumed to be teneral; Miyamoto (1965) described as «hemelytra brown, darkened along claval suture and interior to embolium, cuneus dark brown». In addition, the 6th congener is herein described, and, thus, a key to species (2nd couplet) of *Kundakimuka* provided by Cassis *et al.* (2011) is revised as follows:

(2a) Midline of callar region on pronotum punctate (Japan) **2b**

– Midline of callar region usually not demarcated, at most with impressed, impunctate line **3**

(2b) Dorsum with noticeable wooly, golden setae; procoxa and profemur darkened; known from subtropical Ryukyus . . . . ***K. arimotoana*** **sp. nov.**

– Dorsum with silvery setae, lacking golden setae; procoxa and profemur pale; known from temperate zone (Honshu and Kyushu) . . . . ***K. pallipes*** **(Miyamoto)**

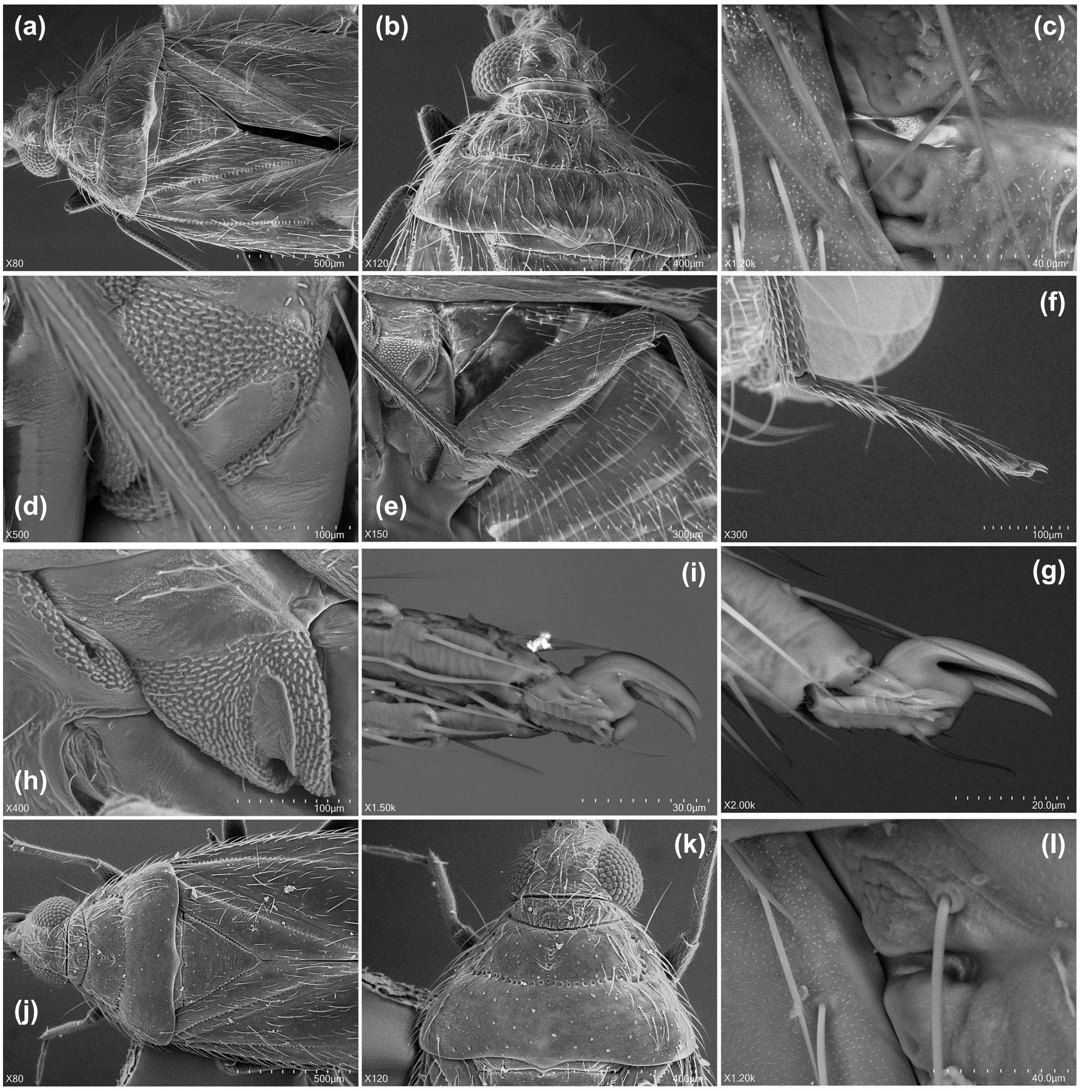

Figure 2. Scanning electron micrographs for: (a)-(g) *Kundakimuka arimotoana* **sp. nov.**, holotype female; (h)-(l) *K. pallipes* (Miyamoto, 1965), female / (a), (j) Anterior body, dorsal view; (b), (k) Head and pronotum, dorsal view; (c), (l) Mesoscutal-scutellar fovea; (d), (h) Metathoracic scent efferent system; (e) Posterior body, left lateral view; (f) Metatarsus; (g), (i) Pretarsal structure of metaleg.

Acknowledgements

We are grateful to Dr. K. Arimoto (Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan) for collecting and providing valuable material; Mr. M. Nozawa (Saitama, Japan) for sharing specimens of *Kundakimuka pallipes* and their digital images; Dr. R.K. Duwal (Agriculture Canada, Ottawa, Ontario) for information on the holotype of *K. pallipes*; and Mr. D. Terada and Ms. A. Nihei (CSR Division, Hitachi High-Tech, Minato-Ward, Tokyo, Japan) for generously allowing the first author to use a tabletop scanning electron microscope (Miniscope® TM4000 plus II, demo unit). Thanks are extended to reviewers and Dr. S. Pagola-Carte (editor of Heteropterus Rev. Entomol.) for improving the manuscript.

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Received / Recibido / Hartua: 28/04/2024
Accepted / Aceptado / Onartua: 1/05/2024
Published / Publicado / Argitaratua: 30/06/2024