

NEW ACANTHARADUS AND KEMA SPECIES
(HEMIPTERA, HETEROPTERA, ARADIDAE)
FROM HALMAHERA ISLAND, INDONESIA

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Acantharadus flora sp. n. and *Kema pamae* sp. n. (Hemiptera: Heteroptera: Aradidae: Mezirinae) from Halmahera Island, Indonesia are described and figured. Photos of the male holotypes of *K. bloetei* Usinger et Matsuda, 1959 and *K. papuasica* Kormilev, 1971 and non-type females of *A. quaternarius* (Bergroth, 1886), male and female of *K. acutissima* Kormilev, 1971 as well as a female of *K. lobulata* (Kormilev, 1953) are presented, with comments and a key to *Kema* species. *A. quaternarius* is reported from Sumatra for the first time.

Key words: *Acantharadus*, *Kema*, flat bugs, taxonomy, L₅ larva, habitus photo, identification key.

INTRODUCTION

Due to a grant by the American Association of Museums (now American Alliance of Museums, AAM) in the International Partnership Among Museums program, the first author had an opportunity to visit US museums and, as an additional possibility, study the Aradidae (Hemiptera: Heteroptera) collection at the Smithsonian National Museum of Natural History in Washington, D.C. During this work he came across some peculiar specimens collected by entomologist Adam Cotton Messner and ethnographer Paul Michael Taylor in 1981 in Halmahera, Maluku Islands, Indonesia (PETERSON *et al.* 1990). They represent two new species, which are described in this paper. The second author made available for comparison specimens of the genus *Kema* Kormilev, 1971 from his collection (CEHI), which are figured in this paper contributing to the knowledge of this genus. *Acantharadus quaternarius* (Bergroth, 1886), widely distributed in the Pacific Region, has not yet been recorded from Sumatra; a female specimen at hand, though showing some unique features, is considered conspecific. Through the courtesy of fellow curators, photos of type specimens of *K. bloetei* Usinger et Matsuda, 1959 and *K. papuasica* Kormilev, 1971 as well as of non-type females of *A. quaternarius* and *K. acutissima* Kormilev, 1971 are presented, with a key to *Kema* species.

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MATERIAL AND METHODS

The studied specimens were partly pinned or card-mounted. Drawings were made using an Opton 47 50 52 – 9901 microscope supported by a drawing apparatus. Photographs of the specimens at hand were made partly in the HNHM with a NIKON D7200 digital camera, stacked photos were rendered by Helicon Focus, partly taken with Coolpix P 300 camera and improved with paint.net software (Figs 24, 26, 30, copyright E. Heiss).

We had the privilege of receiving dorsal habitus photos of *Kema bloetei* Usinger et Matsuda, 1959, *K. acutissima* Kormilev, 1971 and *K. papuasica* Kormilev, 1971 from RMNH and BPBM, respectively, with permissions of publishing.

In the formula of relative lengths of antennal joints 20 scale units = 1.0 mm.

Abbreviations for morphological terms: deltg = dorsal external laterotergite (conexivum); PE = posterior-exterior.

Abbreviations for depositories: BMNH = Natural History Museum, London; BPBM = Bernice P. Bishop Museum, Honolulu; CEHI = Collection of Ernst Heiss, Innsbruck; HNHM = Hungarian Natural History Museum, Budapest; NHMG = Natural History Museum, Geneva; RMNH = Naturalis Biodiversity Center, Leiden; USNM = National Museum of Natural History, Washington, D.C.

TAXONOMY

***Acantharadus flora* Vásárhelyi, sp. n.**

<http://zoobank.org/FA210E37-3F60-4226-ACCD-D11E85C2A363>

(Figs 1–6, 10–11, 12–14)

Description – ♂. Macropterous. Body oval, with spectacular lateral protuberances, spine- or tooth-like lobes along body margin from head to tip of abdomen. Dorsal side with scarce or in rows, respectively in groups arranged granulation of mostly setigerous tubercles. Colouration darker brown, with yellow colour on protuberances along body margin (head, pronotum, hemelytra, abdomen), on lateral lobes of pronotum, lateral corners of scutellum; deltg V posteriorly, VI entirely, VII anteriorly brownish yellow, as well as tip (last spine) on all segments of abdomen, glabrous areas yellowish.

Head distinctly longer than wide across eyes, slightly wider than long across antenniferous tubercles. Anterior process of head reaching about two thirds of first antennal joint, genae much surpassing clypeus, diverging, their lateral margin serrate. Antenniferous tubercles well developed, divergent, bispinose apically as well as postocular tubercles, latter ones surpassing eyes laterally. Preocular tubercles present, distinct, directed dorso-anterolaterally. Vertex and clypeus with two slightly convex rows of granules. Rostrum almost reaching to neck, folded into a posteriorly open rostral groove. Antennae slender except curved, club-shaped joint I; joint II subcylindrical, bulbous at tip; joint III thickening towards apex; joint IV fusiform. Relative lengths of antennal joints I to IV as 24:18:23.5:14 (♂) and 25:17:24:14 (♀).

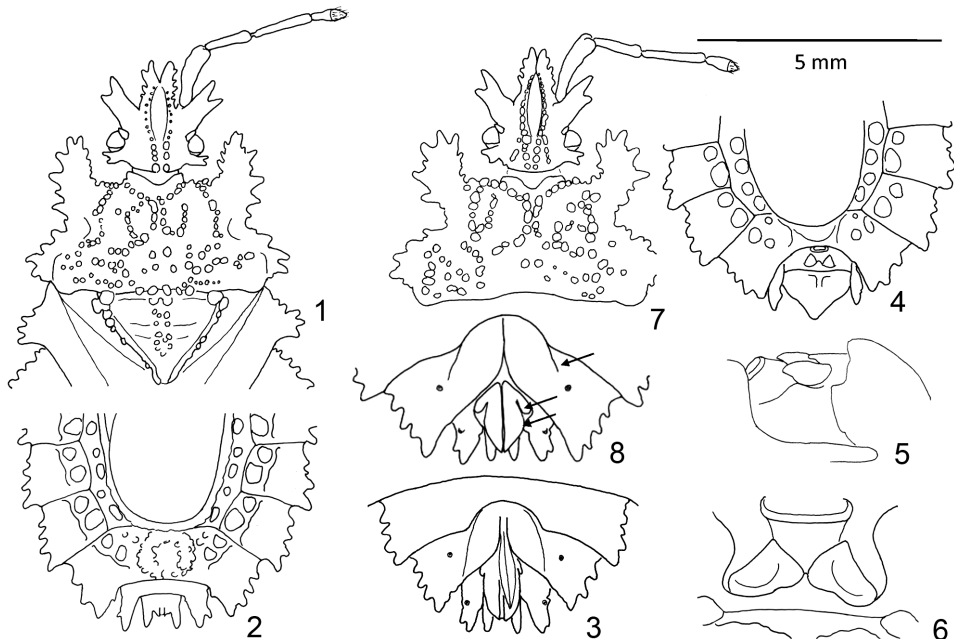
Pronotum with elevated hind disc, fore disc with two distinct callosities surrounded by granules, and two lateral callosities, partly hidden by granulation. Dorsal surface with granules arranged in a wide V behind neck, and in longitudinal rows coarsely forming lateral carinae. Anterolateral angles of pronotum with large lobe, anteriorly reaching beyond eyes. Anterior margin of pronotum not sinuate, but sharply arcuate on both sides, margins almost parallel. Lateral border with large teeth, irregularly with some smaller teeth between them. Posterior margin convex at its corners, distinctly produced posteriad, widely sinuate medially.

Scutellum triangular, apex somewhat protracted, all margins carinate except at apex. Anterior border convex, with some large granules overlapping hind margin of pronotum, with rough granulation at lateral angles. Surface irregular, with rugosity on both sides, scattered granules along a wide median ridge.

Hemelytra almost reaching tergum VII in female, approaching middle of tergum VII in male. Corium with strongly dilated, bluntly spined basal margin. Veins of corium with setigerous tubercles.

Abdomen wide, oval, with glabrous areas surrounded by granulation, depressed lateral margin of each segment with 3–4 (not necessarily symmetric) finger-like, apically rounded spines. Abdomen widest across segment IV (♂) or III–IV (♀), respectively; narrowing in posterior direction. Pygophore with protruding posterior edge medially, tergum VII strongly elevated until hind margin. Lobes VIII surpassing tip of pygophore. Female tergite VII medially with elevated area surrounded by granulation.

Measurements of adults – Holotype ♂: length of head 2.0 mm, width of head 1.8 mm, length of pronotum 1.8 mm, width of pronotum across fore lobe 4.0 mm, median width 3.2 mm, across hind lobe 5.0 mm, length of scutellum 2.0 mm, width of scutellum 2.5 mm, maximum width of abdomen 5.8 mm across segment IV, total length of body 11.5 mm. Paratype ♀: length of head 2.1 mm, width of head 1.8 mm, length of pronotum 1.8 mm, width of pronotum across fore lobe 4.1 mm, median width 3.3 mm, across hind lobe 4.9 mm, length of scutellum 2.1 mm, width of scutellum 2.5 mm, maximum width of abdomen 6.3 mm across segments III–IV, total length of body 12.6 mm.



Figs 1–8. *Acantharadus flora* sp. n. (1–6) and *A. quaternarius* (Bergroth, 1886) (7–8): 1, 7 = anterior part of body of female; 2, 4 = dorsal view of tip of abdomen (2 = female, 4 = male); 3, 8 = ventral view of female abdomen; 5, 6 = open pygophore of male (5 = lateral view, 6 = dorsal view). Figs 5–6 are out of scale

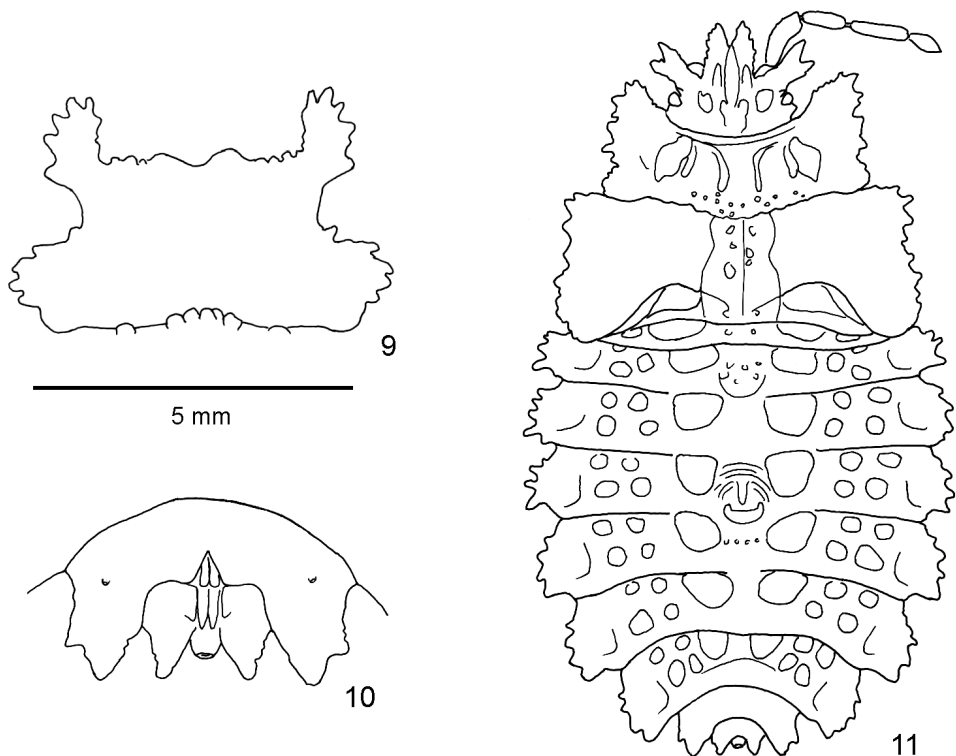
L₅ larva (Figs 10–11) – Body flat, oval contour broken anteriorly only. Antenniferous tubercles forming characteristically bifurcate lobes. Head distinctly wider than long across antenniferous tubercles, somewhat longer than wide across eyes. Eyes small, preocular tubercle present, postocular tubercle surpassing eye. Rostrum surpassing hind border of head.

Pronotum with a soft median longitudinal ridge, laterally depressed, showing signs of future anterolateral lobes. Apodemal impressions distinct on disc. Lateral border coarsely, irregularly serrate. Mesothoracic wing pads as typical in many last instar Mezirinae, almost reaching or slightly surpassing hind border of metanotum on the two specimens at hand, their lateral border also coarsely, irregularly serrate.

Abdomen with characteristic pattern of glabrous areas. Deltgs sclerotized, darker in colour, with 2–4 lateral projections/protuberances, forshadowing similar structures found in adults.

Structure of the ovipositor as characteristic of the last larval instars in Aradidae (Fig. 13). Length of the two L₅ larvae at hand 10.9 and 11.3 mm.

Type material – Holotype ♂, paratype ♀: “INDONESIA Halmahera / Isl. Jailolo Dist., / Kampung Pasir Putih / 0°53'N, 127°41'E // 1–14 June 1981 / AC Messer & PM Taylor”; deposited in the USNM (♂) and in the HNHM (♀). Designated as holotype and paratype and labelled accordingly. There are 2 ♀ L₅ larvae collected together with the adults, which are not designated as type specimens.



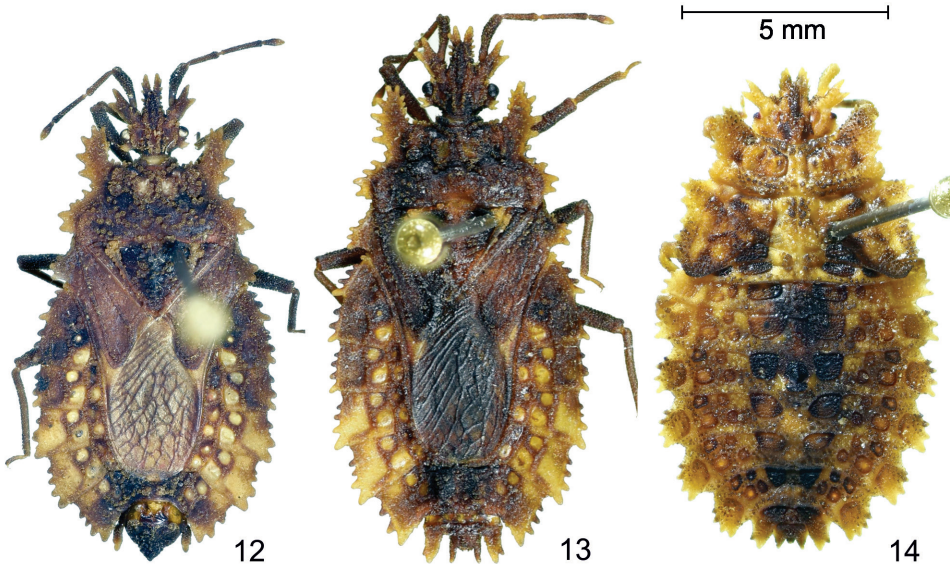
Figs 9–11. *Acantharadus quaternarius* (Bergroth, 1886) (9) and *A. flora* sp. n. (10–11): 9 = Outline of pronotum of the examined female from Sumatra; 10 = tip of female L₅ abdomen from below, with antecedent of ovipositor; 11 = habitus of female L₅

Etymology – This magnificent new species is dedicated to Flora, goddess for the ancient Romans and for the first author, the patron of flowers, thus, indirectly, of all pollinators as well.

Discussion – The genus *Acantharadus* Bergroth, 1886 was redescribed by USINGER and MATSUDA (1959) and its type species *A. quaternarius* illustrated. The new species *A. flora* sp. n. is distinguished from *A. quaternarius* by the following set of characters (character states of *A. quaternarius* are provided in brackets): smaller size, at most about 13 mm (15 mm or above), more slender habitus (more robust), anterolateral lobes of pronotum shorter, nearly straight, its margin with smaller teeth (Fig. 1) (more produced laterally and convex, provided with larger teeth, as in Fig. 7); abdomen widest across tergite IV (♂) or III–IV (♀) and narrowing posteriorly (tergite V widest, less narrowing posteriorly); posterior apex of pygophore more pointed (more rounded), and differences on the ventral side of female terminalia as indicated in Figs 3 and 8. The new species shares the presence of preocular tubercles with *A. quaternarius*; the posterior margin of the pronotum is convex at its corners, distinctly produced posteriad in both species.

Acantharadus quaternarius (Bergroth, 1886)
(Figs 7–9, 15–16)

Material examined – MALAYSIA: “SABAH: Poring Hot / Springs, 550–800 m / 5.V.1987 / Burckhardt – Löbl”, (1 ♀, NHMG); “Sandakan / Borneo / Baker // USNM” (1 ♀ with wings

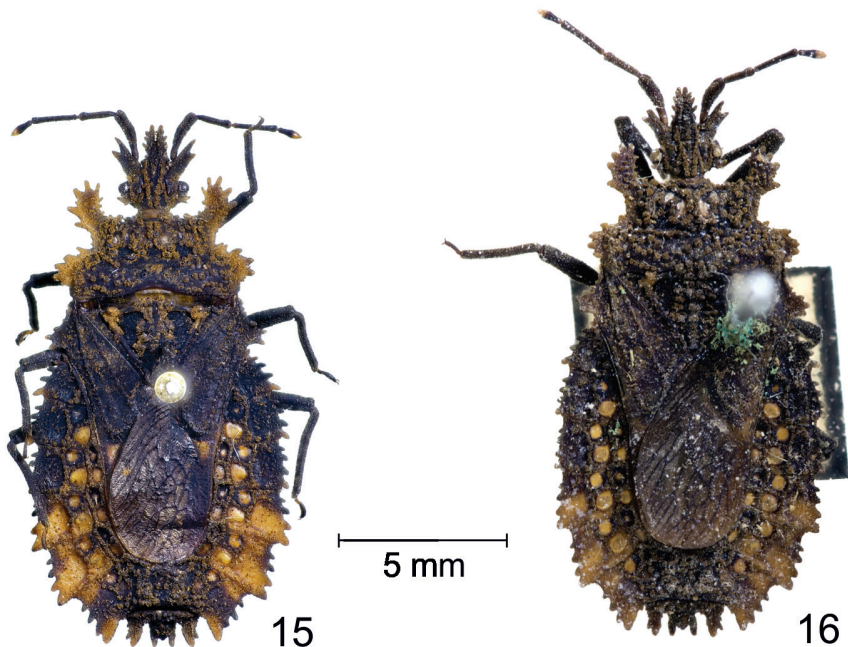


Figs 12–14. *Acantharadus flora* sp. n.: 12 = male, 13 = female, 14 = L₅ larva

removed, 1 ♂ with identification label as "*Acantharadus quaternarius* (Bergroth)", USNM); "Tabekang / 12-5-14 // Sarawak Mus. / J. C. Moulton // 24 // Distant Coll. 1911-383" (1 ♀, BMNH). INDONESIA: "Sumatra // 530/11 // *Dysodius quaternarius* Bergr." (1 ♀, HNHM).

Remarks – BERGROTH (1886) gave a small but good drawing of his *Dysodius quaternarius*. BANKS (1909) also gave a good habitus figure with the original description of *A. giganteus* Banks, 1909, now a junior synonym of *A. quaternarius* (Bergroth, 1886), since BERGROTH (1911) discovered that they are conspecific. (The type specimen of *A. giganteus* most probably perished during WWII.) The specimens from Borneo examined in the course of the present study match well with these figures and also with the text and illustration provided by USINGER and MATSUDA (1959), and accordingly, they are considered to represent *A. quaternarius*. Some excellent quality photos are available on the internet from further localities, showing clear characteristics of *A. quaternarius*; these helped to improve morphological information but are not considered as verified distribution data. Some additional features were given in the discussion of *A. flora* sp. n. above.

The single examined specimen from Sumatra bears a code "530/11". According to the associated inventory records deposited in the Hungarian Natural History Museum, no. 530 refers to materials collected by Dr I. G. Maschik in Sumatra in 1879. The specimen in concern shows a few differences from the



Figs 15–16. *Acantharadus quaternarius* (Bergroth, 1886): 15 = female from Borneo, Sandakan; 16 = female from Sumatra

material from Borneo: its pronotum is provided with a longer median sinus, its anterolateral lobes are directed anteriorly with almost straight, parallel inner margins (Fig. 9), its abdominal margin bears slightly shorter, finger-like, apically rounded spines; these spines are uniformly longer on all other specimens examined, see the photographic images (Figs 15–16). These differences, however, are considered insufficient for establishing a new taxon based on this single specimen, which is accordingly identified as *A. quaternarius*.

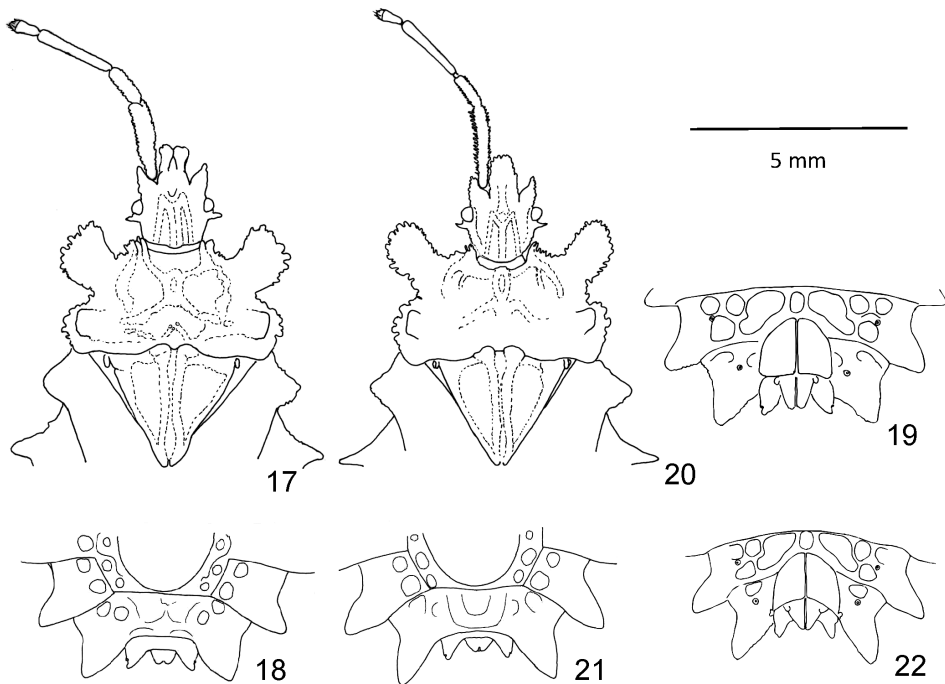
***Kema pamae* Vásárhelyi, sp. n.**

<http://zoobank.org/5151127B-D4A8-4964-B210-CE283A52935E>

(Figs 17–19, 23–24)

Description – ♀. Macropterous, large, with characteristic pattern of decorative setigerous tubercles or granules along and on the body, arranged in rows or circles, sometimes randomly on surfaces; with almost wing-like fore lobes on pronotum; and with acute, caudally increasingly protruding PE angles of deltgs. Body in general dark brown, with paler colour on glabrous areas and deltgs on posterior segments of abdomen.

Head distinctly longer than wide, on vertex with an M formed by granules. Anterior process of head slightly widening anteriorly, reaching about 1/3 of first antennal joint,



Figs 17–22. *Kema pamae* sp. n. (17–19), *K. acutissima* Kormilev, 1971 (20–22): 17, 20 = anterior part of body of female; 18, 21 = tip of abdomen, dorsal view; 19, 22 = tip of abdomen, ventral view

clypeus elevated above genae. Antenniferous tubercles reaching about to middle of genae. Postocular spines much surpassing lateral outline of eyes. Rostral groove closed, surrounded by multiple rows of granules. First two antennal joints densely covered by granules. Relative lengths of antennal joints I to IV as 40:19:36:14.

Pronotum about one third as long as wide across anterolateral lobes, with anteriorly protruding collar, somewhat wider across anterior lobes than posterior lobes. Anterolateral lobes widening towards apex. On the fore disc granules forming longitudinal rows on lateral carina and an X-shaped pattern, enclosing a small elevated area medially. Hind disc with elevating, short lateral carinae and transversely scattered granules in median part. Granules particularly coarse along edges of lobes.

Scutellum large, triangular, apex somewhat protracted, slightly longer than wide, with two strong, subparallel longitudinal rows of granules medially, overlapping hind border of pronotum, and with coarse granulation on anterior angles. Margins carinate except at apex. Surface of disc uneven, not rugose, except near apex.

Hemelytra reaching posterior border of tergum VII, with protruding, triangular lobe basolaterally, anterior border concave, posterior border convex. Corium almost reaching hind border of deltg IV, bearing sporadic setigerous granules, dark brown in colour except basally.

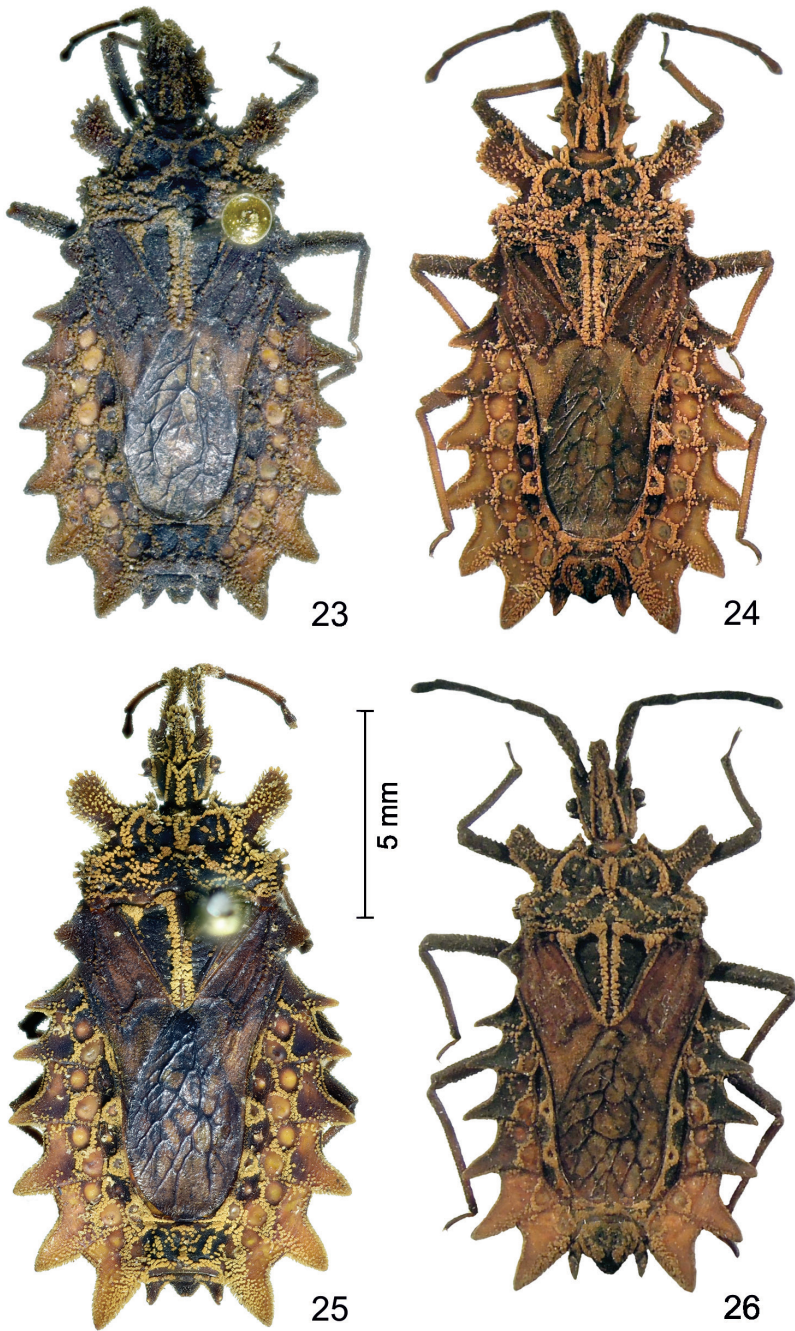
Abdomen with acute PE angles of deltgs, increasingly developed from segments II to VII. Glabrous areas irregularly surrounded by granules, which are small and scattered on PE angles. Deltg VIII slightly surpassing segment IX. Spiracle VIII near to tip, visible also from below, in male ventral, not visible from above.

Measurements – holotype ♀: length of head 2.7 mm, width of head 2.0 mm, length of pronotum 1.8 mm, width of pronotum across fore lobe 5.5 mm, width of pronotal disc 3.8 mm, width of pronotum across hind lobe 5.1 mm, length of scutellum 3.0 mm, width of scutellum 2.8 mm, maximum width of abdomen across segment IV 8.0 mm, total length of body 14.2 mm. Paratypes ♂: body length 12.0 and 13.0 mm.

Type material – Holotype ♀: “INDONESIA Halmahera / Isl., Tobelo Dist. / Kampung Ruko / 11 April, 1981 / AC Messer & PM Taylor”; deposited in the USNM. Paratypes: “Sidangoli / Batu putih, 100m / 22-23 XI 1999 // N-Moluccas / Halmahera / leg. A. Riedel” (2 ♂♂, CEHI). The holotype and paratypes were provided with type labels accordingly.

Etymology – This magnificent new species is dedicated to Ms Pam Tooley, earlier serving as a museum educator of the Heard Natural Science Museum and Wildlife Sanctuary in McKinney, Texas, who, together with her husband Dr W. Tooley, helped and hosted the first author generously during his stay, thus finally he could pay short visits to the Hemiptera Collections in New York and Washington.

Discussion – In the key of KORMILEV (1971) the examined individuals run to *K. acutissima* on the basis of the shape of the pronotum and the body size. *K. pamae* sp. n. differs, however, by the following characters (character states for *K. acutissima* are provided in brackets): antennal joint II being flattened laterally and distinctly thicker in dorso-ventral direction (subcylindrical). Anterior process of head slightly widened anteriorly (parallel); anterolateral lobes of pronotum wider and more widening towards apex (less so); surface of disc uneven, but not rugose on most part (distinctly rugose); deltg VIII slightly surpassing segment IX (more strongly surpassing); spiracle VIII placed near to tip, visible also from below in female (visible from above only).



Figs 23–26. *Kema* spp.: 23–24 = *K. pamae* sp. n., holotype female and paratype male, 25–26 = *K. acutissima* Kormilev, 1971, 23, 25 = females, 24, 26 = males

Considering the ratio of the widths of the anterior and posterior lobes of the pronotum and the length and pointed nature of PE angles of deltgs, the female holotype is transitional between *K. acutissima* and *K. lobulata* (Figs 23–26, 29–30). The midlateral row of glabrous areas is about half as wide as the exterolateral one in *K. lobulata*, (similarly to *K. bloetei*), they are narrowing posteriorly in *K. papuasica*, whereas they are similar in width in the other two species. The anterior lateral lobes of pronotum are most widening towards apex in *K. pamae* sp. n.

Kema acutissima Kormilev, 1971
(Figs 20–22, 25–26)

Material examined – PHILIPPINES: “P. I. MISAMIS OR. / Hindangon, 20 km. / S of Gingoog, 500– / 700m, 20–24. IV. 1960 // H. Torrevillas collector // *Kema bloetei* Usinger M., Det. / N. Kormilev 66 // N. Kormilev Collection” (1 ♀, USNM). INDONESIA. “Modoinding / Gg. Ambang / 1100-1450m / 6 XII 1999 // N.Sulawesi / leg. A. Riedel / Kotamobagu” (1 ♂, CEHI).

Remarks – The species was described on the basis of a male holotype and a female allotopotype (= an individual of the opposite sex, collected with the holotype). Only a few features and measurements were given for the female, without figures. A non-type female specimen from a locality near the type locality was examined. The specimen was misidentified by N. Kormilev as *K. bloetei* five years before the description of *K. acutissima* was published. A comparison with the photo of the female allotopotype concluded that it definitely represents *K. acutissima*. The opportunity is taken to provide additional characters and illustrations of the male and female of this species upon exceptionally preserved specimens.

Body in general dark brown, with paler, even yellowish colour on glabrous areas and deltgs on the posterior segments of abdomen. Decorative yellow granules are arranged in rows or circles, sometimes randomly on surfaces, and along edges of the body. Ventral side similar.

Rostral groove surrounded by multiple rows of granules. First two antennal joints densely covered by granules. Edge of pronotum with long granules, even twice as long as those scattered on the surface of the anterior lobes.

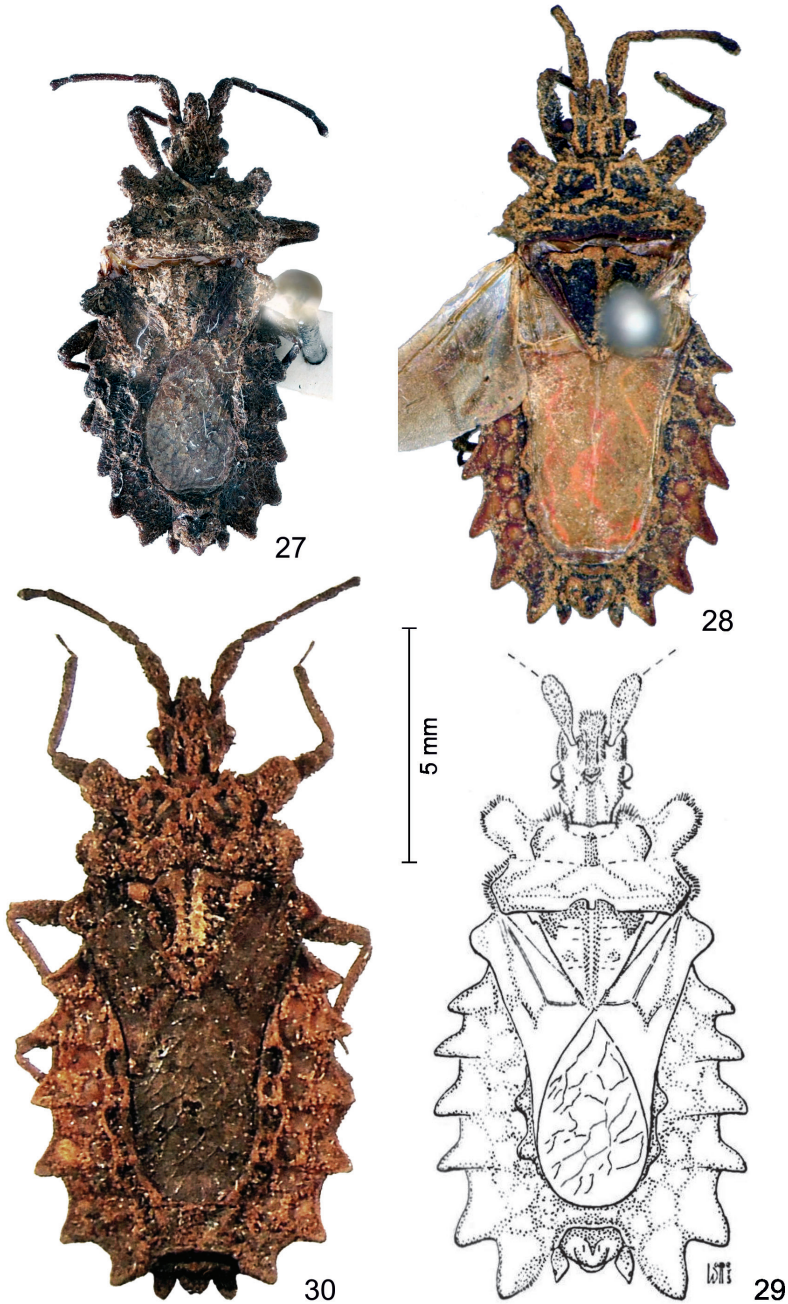
Glabrous areas irregularly surrounded by granules, which are small and scattered on PE angles. Spiracle VIII visible from above only, near to tip.

Total length 14.8 mm (♀), 12.8 mm (♂), width of abdomen 8.4 mm (♀), 6.4 mm (♂).

The head, pronotum, tip of abdomen of the female are illustrated and a habitus photo of both sexes are provided (Figs 20–22, 25–26).

Kema bloetei Usinger et Matsuda, 1959
(Fig. 28)

Remarks – The species was described on a single male specimen (USINGER & MATSUDA 1959). As locality “Forsten” was given, with “a handwritten nota-



Figs 27–30. *Kema* spp.: 27 = *K. papuasica* Kormilev, 1971, holotype male; 28 = *K. bloetei* Using-
 er et Matsuda, 1959, holotype male; 29 = *K. lobulata* (Kormilev, 1953) holotype male (repro-
 duced from KORMILEV, 1953); 30 = *K. lobulata*, female from Sulawesi

tion which is illegible", and was considered of unknown origin (*patria ignota*). Oscar Vorst (RMNH) was kind enough to clear this with great probability. The specimen is now registered in their database, registration number RMNH.INS.1274565. "Forsten" refers to the collector E. A. Forsten. Considering his collecting journey and that the label probably reads: "Bel. Amour." which is short for Belang Amoerang, the specimen was probably collected in 1840 in NE Celebes (now Sulawesi, Indonesia). Though the habitus drawing accompanying the original description is excellent, a photo (taken by Bibiche Berkholtst) is provided here (Fig. 28) to facilitate the identification of this species.

Kema papuasica Kormilev, 1971
(Fig. 27)

Remarks – This small size (male 10.0 mm) species was set in the key of the four species of the genus, and described without illustration (KORMILEV 1971). Due to the kind help of Jeremy Frank (BPBM), a habitus photo of the holotype (taken by Lisha Jasper) is published here (Fig. 27).

Kema lobulata (Kormilev, 1953)
(Fig. 30)

Remarks – Genus *Kema* was erected by KORMILEV (1955) for the species he described as *Acantharadus lobulatus* KORMILEV, 1953, based on a single male from N Celebes (Sulawesi). Its total length (in median line) 11.3 mm. No further specimen has been recorded since. Now three females are available from CEHI, which share the characters given for the male and are considered to represent the opposite sex. Total length: 12.8, 13.2, 13.7 mm, respectively.

Material examined – "PC.Palopo / Gg. Sampung / 800–1050 m // S-Sulawesi / leg. A. Riedel / 15-16 IX 1997" (1 ♀, CEHI and 1♀ HNHM). "L. Poso, Tentena / Tonusu Bada-road / 800-1000 m // C-Sulawesi / leg. A. Riedel / 1 IX 1997" (1 ♀, CEHI).

Key to species of the genus *Kema* Kormilev, 1971
(Developed from KORMILEV (1971: 115))

- 1 (4) Width across anterolateral lobes of pronotum less than across humeri (across hind lobes). Anterolateral lobe of pronotum about as wide apically as basally, anterior and posterior margin parallel. Body length shorter than 13 mm.

- 2 (3) Anterior process of head reaching about basal 1/4 of antennal joint I, latter as long as III. Medio-lateral row of glabrous areas about half as wide as extero-lateral row. All PE angles of abdomen pointed, including II. (Indonesia: Sulawesi) *K. bloetei*
- 3 (2) Anterior process of head reaching about basal 3/5 of antennal joint I, latter much shorter than III. Basolateral lobe of hemelytra hemicircular. Medio-lateral row of glabrous areas wider anteriorly than posteriorly. All PE angles of abdomen blunt, except VII, II only slightly protruding, rounded. (New Guinea) *K. papuasia*
- 4 (1) Width across anterolateral lobes of pronotum greater than across humeri. Anterolateral lobe of pronotum about as wide as, or distinctly wider apically than basally, anterior and posterior margin parallel or lobe axe-form, dilating apically. Body length 11.6–14.5 mm.
- 5(6) (♂♀) Anterolateral lobe of pronotum slightly longer than wide, anterior and posterior margins parallel. Medio-lateral row of glabrous areas about half as wide as extero-lateral row. PE angles II protruding, but blunt apically. 12.8–13.7 mm (Indonesia: Sulawesi) *K. lobulata*
- 6(5) Anterolateral lobe of pronotum much longer than wide, anterior and posterior margins diverging apically. Medio-lateral row of glabrous areas about as wide as extero-lateral row. PE angles II protruding, pointed apically.
- 7(8) (♂, ♀) Antennal joint I club-shaped, about 2 times as thick apically, than basally. Anterolateral lobe of pronotum much longer than wide, anterior and posterior margins diverging apically, 1.3 times as wide apically, than basally. In dorsal view of ♀ PE angles VII posteriorly produced, about as long as wide (Fig. 24). Paratergite VIII more surpassing pygophore posteriorly. Spiracle VIII in male on ventral side near to tip, not visible from above. 14.0 mm. (Indonesia: Halmahera) *K. pamae* sp. n.
- 8(7) (♂, ♀) Antennal joint I subcylindrical. Anterolateral lobe of pronotum much longer than wide, anterior and posterior margins diverging apically, 1.2 times as wide apically, than basally. In dorsal view of ♀ PE angles VII posteriorly produced, about twice as long as wide (Fig. 26). Paratergite VIII less surpassing pygophore posteriorly. Spiracle VIII is near to tip, visible from above only. 12.8–14.5 mm. (Philippines, Indonesia: Sulawesi) *K. acutissima*

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