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Cover: Whale Shark *Rhincodon typus* and Reef - made with poster colours. © P. Kritika.



First report of a coreid bug *Aurelianus yunnananus* Xiong, 1987 (Hemiptera: Heteroptera: Coreidae) from India

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Abstract: *Aurelianus yunnananus* Xiong, 1987 (Hemiptera: Heteroptera: Pentatomomorpha: Coreidae: Coreinae: Mictini) is reported for the first time from India. It was collected from Tripura, in the eastern part of our country. Brief redescription and several photos, including those of the male genitalia, are provided along with the images of the male holotype and female allotype. This report also adds the genus *Aurelianus* to the known Indian Coreidae genera.

Keywords: First record, leaf-footed bug, Mictini, Tripura, Yunnan.

Genus *Aurelianus* was erected by Distant with the only species *Aurelianus elongatus* Distant, 1902, originally described on the basis of two males collected from Bhamo, Myanmar (Distant 1902). The species then becomes the type species by monotype. For a long time, this genus had only this single species until Xiong (1987) described another species as *Aurelianus yunnananus* Xiong, 1987 from Yunnan, China.

One of us (Rahul Lodh) picked up this species while doing biodiversity survey in Agartala, Tripura (September, 2012). It was suspected to be another species of the genus

Aurelianus but the lack of appropriate literature delayed its scientific report. When Xiong (1987) paper became available and when we could also obtain the images of the type from Kunming Institute of Zoology, Yunnan (courtesy Dr. Kaiqin Li), China, it was confirmed that the collected specimen is *A. yunnananus*. There is no previous record of either the genus *Aurelianus* or this species, namely, *A. yunnananus*, from any part of India.

Xiong (1987) described both male and female of this species, provided habitus photos and drawings of some characters, including that of the pygophore (in posterior view) and female terminalia (in ventral view). We are providing several more photos of the only male we have, giving more details of the pygophore, the phallus and the parameres. Emphasis here is more on illustrations than the detailed redescription of the species, so the latter is kept to the minimum.

Material studied: One male. Collected by Rahul Lodh from Agartala, Tripura, in September 2012. Presently preserved in Modern College, Pune.

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Aurelianus yunnananus* Xiong, 1987*Redescription**

Elongate coreid bug with an apically truncate body, incrassate hind femora and amplified / dilated hind tibia.

Coloration: Overall reddish-brown or cinnamomeus (with a tinge of magenta at places). Head, part of pronotum and the first two pairs of legs ochraceous; labium ochraceous, only its tip black. General colour slightly darker on corium, metafemora and metatibiae dorsally and part of the thoracic sterna and abdomen ventrally; membrane, posterior part of connexivum, lateral marginal granules and apex of abdomen black. Pro- and meso-sternum medially of very light colour. Abdominal sternites medially lighter, with very small scattered black granules that are especially dense on posterior margin of fourth to seventh sternites medially; area around trichobothria of third to sixth segments pale; sixth and seventh abdominal sternites lighter than the rest and with bilaterally symmetrical pattern of dark black oblique lines. (Image 1A,B). All tarsal segments with a black band laterally on each side.

STRUCTURE

Head: Head almost quadrate, except for bulging eyes. Eyes large, globular. Ocelli situated closer to eyes than to each other. Antecellar pit distinct; antenniferous tubercles prominent, situated in front of eyes at the anterior margin of head (Image 2A); antennomere I stout, much longer than head but shorter than head and pronotum together. First three antennomeres slightly darker and covered with grey adpressed setae and black, sharp, needle-like semierect setae. Antennomere IV paler, spindle shaped, with similar setae.

Ventrally head covered with greyish setae, especially laterally; area underneath labium smooth without setae. Labium moderately stout reaching well beyond middle of mesosternum. Labial segment I stout, longer than the visible ventral portion of head, II and IV joints subequal, III shortest. Bucculae short (Image 2B).

Thorax: Pronotum trapezoidal, much narrowed and steeply declivous towards head, its anterior margin straight behind head, anterior angles not prominent; lateral margins straight with posteriorly directed, prominent, blunt black tuberculous spines. Humeral angles of pronotum rounded, posterior margin sinuate laterally but nearly straight over scutellum. Whole surface covered with golden setae. Anterior lobe of pronotum not well demarcated except that it is less setose. Calli not distinct (Image 2C).

Seen ventrally, prosternum short, region between procoxae very narrow, not sulcate. Prosternum laterally coarsely punctured, punctures sparse and obscured by

setae. Mesosternum with discal area smooth, lateral area setose and with punctures. Metasternum slightly elevated, shallowly sulcate medially, disc less setose, plural area densely setose (Image 2B). Metathoracic scent gland ostiole as wide, vertical slit-like opening; peritreme elevated from general plane with two disc like areas – anterior disc larger than posterior disc, evaporatorium rather small, mainly situated dorsal to ostiole, as shown in Image 2E.

Scutellum and hemelytra: Scutellum triangular, slightly convex at base, with transverse, fine rugae (Image 2C,D); punctures obscured by pubescence. Hemelytra well developed, just reaching tip of abdomen in single male specimen examined, leaving part of apical segment uncovered dorsally. Veins of corium elevated, prominent. Corium and clavus finely punctured and covered with dense, adpressed setae. Membrane with many parallel veins.

Legs: Procoxae closer to each other than meso- and meta-coxae, meta-coxae widest apart. Pro- and meso-femora slightly dilated distally while meta-femora swollen or incrassate considerably, slightly curved and with maximum width beyond middle, with a prominent preapical spine ventrally. Meso-femur also with sharp spine ventrally at apex while similar spine on pro-femur very small, indistinct. All tibiae compressed, all tarsi with the first segment longer, almost equal to segments II and III together; metatibia with lobe like expansion on dorsal as well as ventral margin, with a dorsal spine placed distally while the ventral margin finely granular, with narrow expansion and with an apical and preapical spine (Image 1B). Pulvilli prominent, claws black.

Abdomen: Abdomen more or less parallel-sided between second to fifth segment then considerably narrowed (Image 2F,G). Third segment with small, ventrolateral, blunt tubercle (Image 2I). Spiracles slightly closer to anterior margin than lateral margin of segment, transverse (Images 2G, 3A). All sternites with black, shining granules which are especially dense on the posterior margin of fifth segment (Image 2H). Extreme lateral margin (connexivum) of abdominal segments fourth to sixth covered with black granules. Of these granules, one at posterolateral corner of segment large and prominent (Image 3C). Connexivum of moderate size. Trichobothrial elevations prominent.

Male genitalia: Segment nine, or pygophore, almost completely covered dorsally by eighth tergum, with very narrow margin visible from above. The eighth tergite with wing like expansion on either side, seen in habitus images. Ventrally a large portion of pygophore is visible (Image 2G). Lateral view and posterior view of pygophore in situ



Image 1. Habitus of *Aurelianus yunnanensis*: A—Dorsal view | B—Ventral view. © Swapnil Boyane.

as in Images 3A,B. Detached pygophore appears almost squarish in dorsal and ventral view, respectively (Images 4A,B). Lateral view of the pygophore is shown in Image 4C, note that ventral surface is more setose.

Phallus just removed from pygophore (not everted) is shown here in dorsal, ventral and lateral views, respectively (Image 4D,E,F). Note large sclerotized area on ventral side of phallosome, dorsal surface has no such sclerotization. A well sclerotized articulatory apparatus occupies almost half length of phallus. An everted phallus showing different lobes of conjunctiva and a coiled vesica are seen in dorsal, ventral and lateral views, respectively, in Images 4G,H,I. Paramere well sclerotized, strongly bent almost at right angle and with long setae on all surfaces (Image 4J).

We are also providing, for comparison, images of the male holotype and the female allotype. The dorsal and ventral views of both these types are presented (Image 5A–D).

Measurements in mm (single male): Total length 26.50

Head: length 1.50, width including eyes 2.75, width between eyes 1.50, distance between ocelli 0.90; antennae: antennomere I – 4.75, II – 1.75, III – 3.50, IV – 4.85; labium: segment I – 2.0, II – 2.25, III – 0.75, IV – 1.50; pronotum: width at anterior angles 2.50, at humeral angles 7.50, length as seen from above 4.25; scutellum: length 3.5, width 3; abdominal width at base 8.00, width at 7th sternum 4.5.

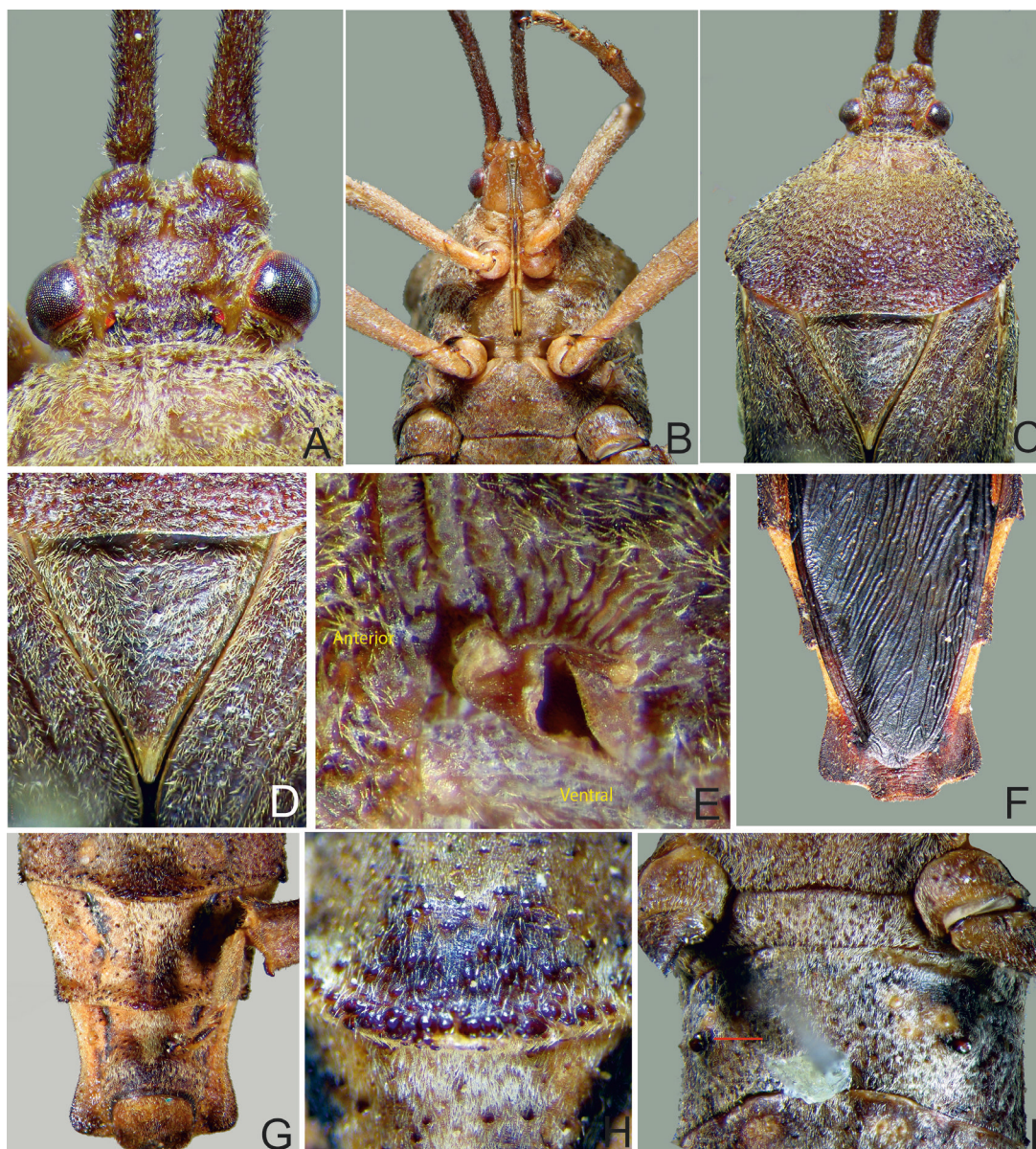


Image 2. Structure of *Aurelianus yunnananus*: A—Head in dorsal view | B—Head and thorax in ventral view | C—Head, pronotum and scutellum | D—Scutellum | E—Metathoracic gland opening | F—Abdomen in dorsal view | G—Apical segments of abdomen in ventral view showing pygophore | H—tubercles on abdominal sternite | I—Small tubercles on third abdominal sternite (pointer red line). © Hemant Ghate.

DISCUSSION

We obtained images of the male holotype of *A. yunnananus* and compared our specimen with these images as well as consulted the original description of the species. Both these things helped us to identify our specimen with certainty as *A. yunnananus* Xiong. The images of the type of *Aurelianus elongatus* Distant are also available on Coreoidea Species File website (2022) and it is possible to compare the general shape and a few other characters of the two species; it is also necessary to note here that neither *A. elongatus* nor *A. yunnananus* have been reported again from any region.

O'Shea & Schaefer (1980), while revising the Australian and Oriental Mictini, dissected male of *A. elongatus* and provided outline sketch of a paramere and the phallus but it is difficult to compare our photographs and their small drawings, the structures of the phallus and the parameres are only broadly comparable; the gross structure of the phallus is like other Mictini we have studied (H. Ghate, unpublished). O'Shea & Schaefer (1980) also state that in general Mictini possess "conjunctiva with distodorsal and distoventral sacs with distolateral lobes sometimes sclerotized, vesica helical; parameres heavily sclerotized with curved tips" and this is observed in *A. yunnananus*.

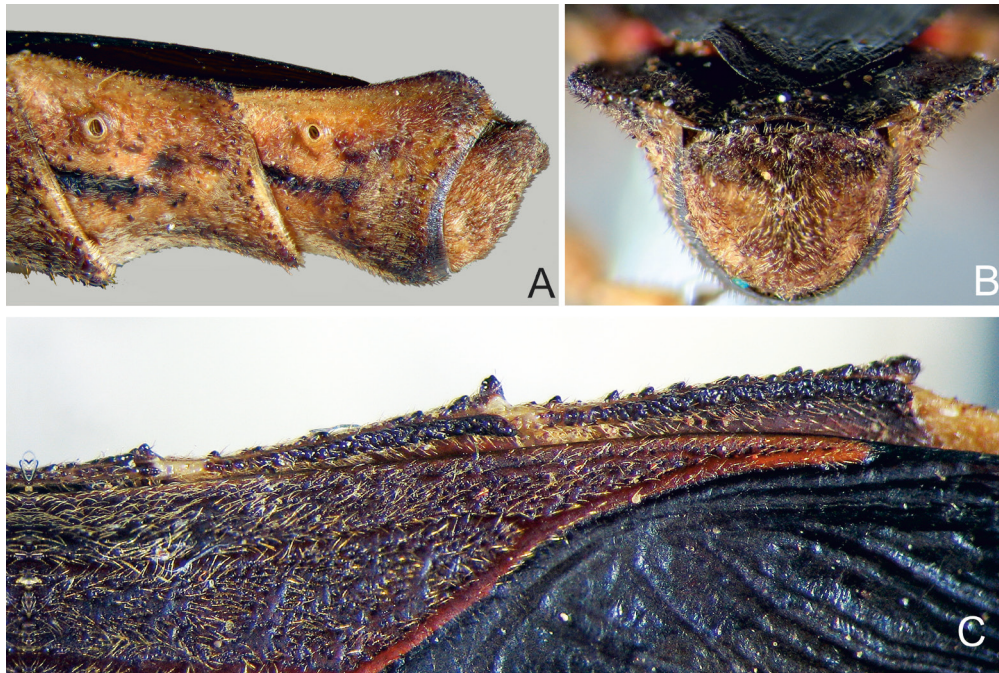


Image 3. Structure of *Aurelianus yunnananus*: A—Abdominal apex in lateral view showing spiracles and pygophore | B—Pygophore in posterior view | C—Lateral margin of abdomen showing tubercles. © Hemant Ghate.

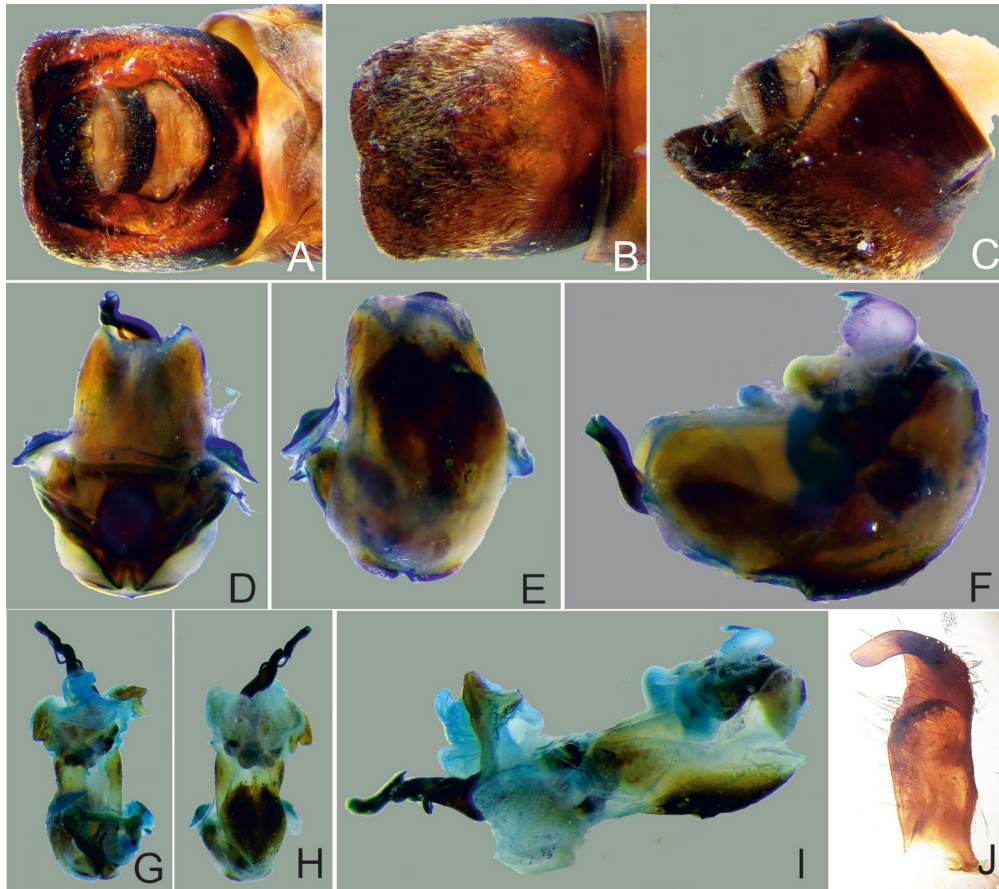


Image 4. Male genitalia of *Aurelianus yunnananus*: A, B & C—Pygophore in dorsal, ventral and lateral views | D, E & F—Uneverted phallus in dorsal, ventral and lateral views | G, H & I—Everted phallus in dorsal, ventral, and lateral views | J—Paramere. © Hemant Ghate.



Image 5. *Aurelianus yunnananus* male holotype and female allotype: A—Male holotype, dorsal view | B—As in A, ventral view | C—Female allotype, dorsal view | D—As in C, ventral view. © Kunming Institute of Zoology, Yunnan, China. © Kaiqin Li.

Xiong (1987) did not dissect the male genitalia of *A. yunnananus* but the posterior view of the pygophore, given with the original description by Xiong, is identical with what we have presented here; same is the case with the line drawing of hind leg of the male.

Northeastern Indian states often harbor many insect species that are originally described from the nearby countries like Bangladesh, Myanmar, Bhutan, Nepal, and China, so the presence of *Aurelianus yunnananus* in northeastern India was always likely. What is interesting is that this species is as yet not recorded from the other northeastern states, like Mizoram, Manipur, and Nagaland, which are closer to Myanmar and Yunnan. Intensive surveys in northeastern India are necessary to document the present biodiversity. We recently reported *Epidaus wangi* Chen, Zhu, Wang & Cai, 2016, a Tibetan species, from Arunachal (Boyane & Ghate 2020). We also have some reduviid and coreid bugs collected from northeastern India but are originally described from the neighbouring countries (Ghate et al. 2017; H. Ghate, unpublished). Nevertheless, it is important to record the presence of the genus *Aurelianus* and the species *A.*

yunnananus from India for the first time since the original description by Xiong (1987). Further, the details of the structure of the pygophore, phallus and parameres were not illustrated originally hence the illustrations we provide here are an addition to the knowledge about this species.

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