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SHORT COMMUNICATION

FIRST RECORD OF A COREID BUG *ANHOMOEUS FUSIFORMIS* HSIAO (HEMIPTERA: HETEROPTERA: COREIDAE: COREINAE: ANHOMOEINI) FROM INDIA

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FIRST RECORD OF A COREID BUG *ANHOMOEUS FUSIFORMIS* HSIAO (HEMIPTERA: HETEROPTERA: COREIDAE: COREINAE: ANHOMOEINI) FROM INDIA

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Abstract: A coreid bug *Anhomoeus fusiformis* Hsiao, 1963 is recorded for the first time from India; the species is described with several illustrations, including information about male and female genitalia.

Keywords: Additional description, *Anhomoeus*, *Dalbergia sissoo*, male-female genitalia.

A coreid bug, collected in Chandgad District of Kolhapur, was identified as *Anhomoeus fusiformis* Hsiao, 1963. The species was originally described from China. Two other species of the genus in India are *A. sulcatus* (Distant, 1908) and *A. nepalensis* (Distant, 1908); each species is known so far from Uttarakhand (Prabakar 2015). Distant (1908) had originally described these two species under the genus *Aschistus* Stål, 1873. Distant (1902 vol I page 369) also treated *Ornytus? brevicornis* Dallas, 1852 as *Aschistus brevicornis*: a species now treated as *Aschistocoris brevicornis* (Dallas) ([see Coreoidea SF Team; *Coreoidea Species File Online*. Version 5.0/5.0, for synonymy [retrieval date May 20, 2018], Prabakar 2015). The other species of the genus

are *Anhomoeus haripurensis* Ahmad & Sheikh, 1983 and *Anhomoeus schaeferi* Ahmad & Sheikh, 1983; both these species are from Pakistan and the host plant recorded was *Dalbergia sissoo* Roxb. (Ahmad & Shaikh 1983). *A. fusiformis* has never been reported from India so far. Coreoidea Species File classifies *Anhomoeus* under Coreinae, tribe Anhomoeini Hsiao, 1964, and this classification is followed here.

The original description of *A. fusiformis* is in Chinese and is followed by an English translation. It is brief and without illustration (except general habitus drawing / photo). Here it is described with additional characters and adequately illustrated for the benefit of Indian students. Additional information on male genitalia is also included.

MATERIALS AND METHODS

Material examined: One male and one female [(coll. More, Chandgad, March 2017 (female); April 2017 (male)]. Host Plant *Dalbergia sissoo* Roxb.

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Anhomoeus fusiformis* Hsiao, 1963*Additional description and Illustrations****Colouration and vestiture**

Overall colour ochraceous with coarse and closely set black punctures on head, pronotum, scutellum, and corium. Punctures on head and pronotum closer together than on scutellum, clavus and corium. The punctures on scutellum, clavus and corium are also larger than those on head and pronotum.

Head and antenna with setigerous black granules while pronotum and the rest with setigerous punctures. Head with lateral ochraceous line in front of the eyes, median ochraceous line at base which is continued on pronotum and scutellum as a thin line. Pronotum also shows two pale lines lateral to median line in posterior half. Eyes pale brown, ocelli pink. Pronotal margin entirely ochraceous and thin ochraceous line continued on outer margin of corium, at least in basal half. Scutellum more ochraceous than rest of dorsal surface. All antennomeres and legs covered with fine black setigerous granules. Hemelytra with corium and clavus ochraceous, membrane pale brown, not reaching tip of abdomen; abdominal tip truncate in male with pygophoral tip visible from above.

Abdominal segments dorsally pale ochraceous (female) or reddish (male); ventrally with pale or ochraceous median, broad band flanked on either side by band of fine black setigerous granules, lateral margin also with band of black setigerous punctures with wavy outline on inner side. The area between two lateral bands marked by several black markings on ochraceous (female) or cream (male) background, markings symmetrical. Spiracles are closer to lateral than to anterior border.

Part of head beneath labium with fine black granules; similar fine black granules present laterally in front of eyes and below; rest of head ochraceous underneath. Prosternum with few black granules in front of coxae and also on lateral side; pleural area also has black setigerous punctures. Mesosternum medially shallowly sulcate, this sulcus with fine black punctures; lateral area more or less smooth with few black granules; extreme lateral side coarsely punctured, punctures black or ochraceous; few black granules also present. Metasternum identical except there is no median sulcus. Pygophore medially pale with lateral ochraceous band.

Female overall colouration slightly different from that of male dorsally and ventrally, ventral pattern of colouration similar in both sexes but bold in female. Eyes pale, antennae with slight reddish tinge in female.

Terminalia in female slightly darker than rest of ventral area (for coloration see Image 1 A–I).

Morphology

Elongate fusiform insects (especially female) with almost parallel sided body behind pronotum; legs moderately robust; fore, mid, and hind femora of nearly the same diameter (none incrassate); tibiae slightly more slender than femora. Antennae long with first segment slightly incrassate but not thicker than femora, remaining segments slender except fourth which is slightly thicker; first three segments triquetral (or three cornered), fourth spindle shaped. Ventrally with body laterally slightly compressed.

Head

Head more or less rectangular, almost as long as broad; eyes of moderate size, semi-globose. Ocelli closer to eye than to each other; distinct transverse pre-ocellar groove present in front of each ocellus; longitudinal median sulcus present on vertex. Antenniferous tubercles prominent, visible from above, situated at distance from eyes, almost at the tip of head (Image 1B). Clypeus slightly sloping, projecting beyond mandibular plates (but these are seen only in frontal view, not in dorsal view). Antenna four segmented, first and second segments sub-equal, third shorter than second, fourth shortest. Bucculae very short, triangular. First segment of labium moderately thickened, remaining three slightly slender. First segment of labium not reaching base of head, second segment not reaching base of fore coxae; labium reaching slightly beyond middle of mesosternum, its tip black (Image 1D,E).

Thorax

Pronotum rhomboidal, slightly narrow at anterior angles, moderately sloping. Anterior margin slightly concave behind head, lateral margin straight but granular and slightly raised. Entire dorsal surface covered with fine black setigerous punctures. A median levigate, pale line along entire midline and two indistinct similar lines starting from behind calli and ending indistinctly much before base; posterior margin truncate, slightly concave over scutellum. Humeral angles blunt but raised above like small tubercle (Image 1C). Prosternum coarsely granular, slightly sulcate in front of coxae, pleura vertical, coarsely punctured, with setae. Mesosternum slightly tumescent with a median wide and shallow sulcus; this sulcus with small fine punctures, lateral raised areas of sulcus with very few granules and setae. Pleura coarsely punctured, some punctures black others colourless and

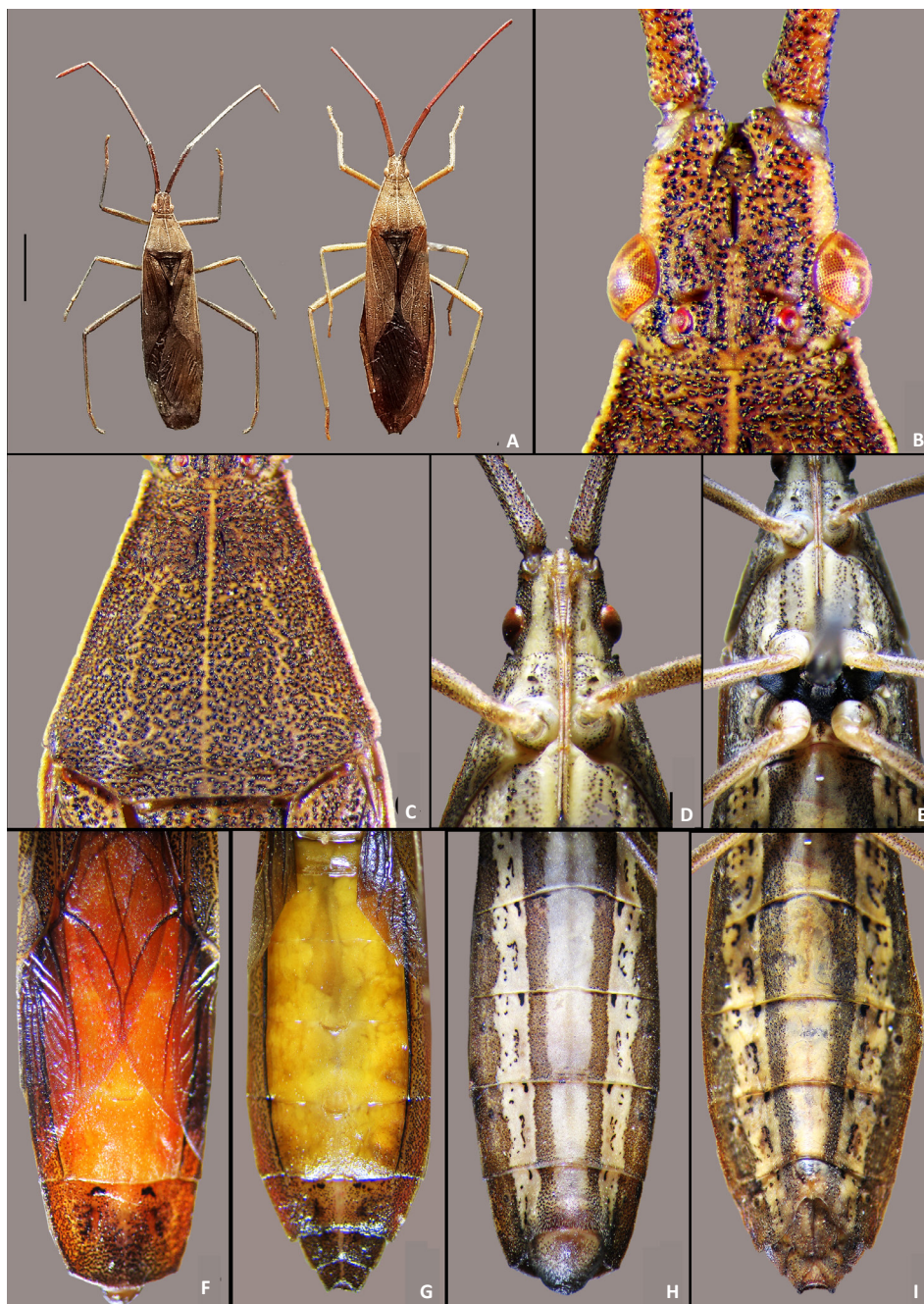


Image 1. *Anhomoeus fusiformis* coloration and morphology. A: dorsal habitus male (left) female (right); B: head dorsal view, details; C: pronotum dorsal view, details; D, E: head ventral view and prosternum details; F to I abdomen - F: tergites, male; G: tergites, female; H: sternites, male; I: sternites, female.

setose.

Mesocoxae with few black granules and setae (Image 1E). Metasternum moderately convex with median dark band of punctures; lateral area to these punctures smooth, followed by another area of black punctures at margin. Metathoracic pleural area coarsely punctured, meta-coxae as well as adjacent pleural area with fine black granules. Metathoracic scent gland prominent with small evaporatory area (Image 3B, C).

Scutellum triangular with narrow apex, slightly

longer than broad, its entire surface coarsely punctured; extreme lateral margin and tip of scutellum without punctures.

All coxae globular; fore coxae very close to each other; meso-coxae and meta-coxae well separated (Image 1E). All femora and tibiae narrow at base, slightly dilated distally and covered with setigerous black granules. All tarsi long, first segment as long as remaining two; tarsal segments densely setose; claws widely separated with a prominent oval pulvillus at base.



Image 2. *Anhomoeus fusiformis* pygophore and female terminalia. A: pygophore in situ. B: female terminalia in ventral view; C to E pygophore structure- C: dorsal, D: ventral & E: lateral view; F to H phallus – F: dorsal, G: ventral & H: lateral view; I: everted phallus, dorsal view; J: parameres in dorsal & ventral views

Hemelytron long, its external angle sharp, its inner angle rounded; clavus and corium uniformly punctured, extreme outer margin raised throughout, veins prominent; membrane with prominent parallel veins.

Abdomen

Abdominal segments laterally moderately compressed; segments three to seven almost equal in length and breadth. Abdominal tergites with a semi-circular elevation on posterior border of fourth and fifth tergite (= openings of dorso-abdominal glands) as shown in Image 3A. First visible abdominal sternite (actual second) compressed laterally and distinctly raised medially. Boundary between tergite and latero-tergite raised and almost brownish black. Pygophore

globular; spiracles prominent, situated laterally, closer to lateral margin than to anterior margin; trichobothria not very prominent (Image 1H, I).

Female slightly longer and broader with slightly broad connexivum; connexivum finely, blackly punctate, ventrally pale coloured but with identical bands of black punctures and spots. Metasternum appears entirely black. Abdomen more rounded, and less laterally compressed. Abdominal tergites in female ochraceous throughout except for last three segments which are spotted with black punctures.

Male and Female genitalia

Appearance of pygophore in situ, as seen from ventral side, is like shown in Image 2A. Pygophore oval

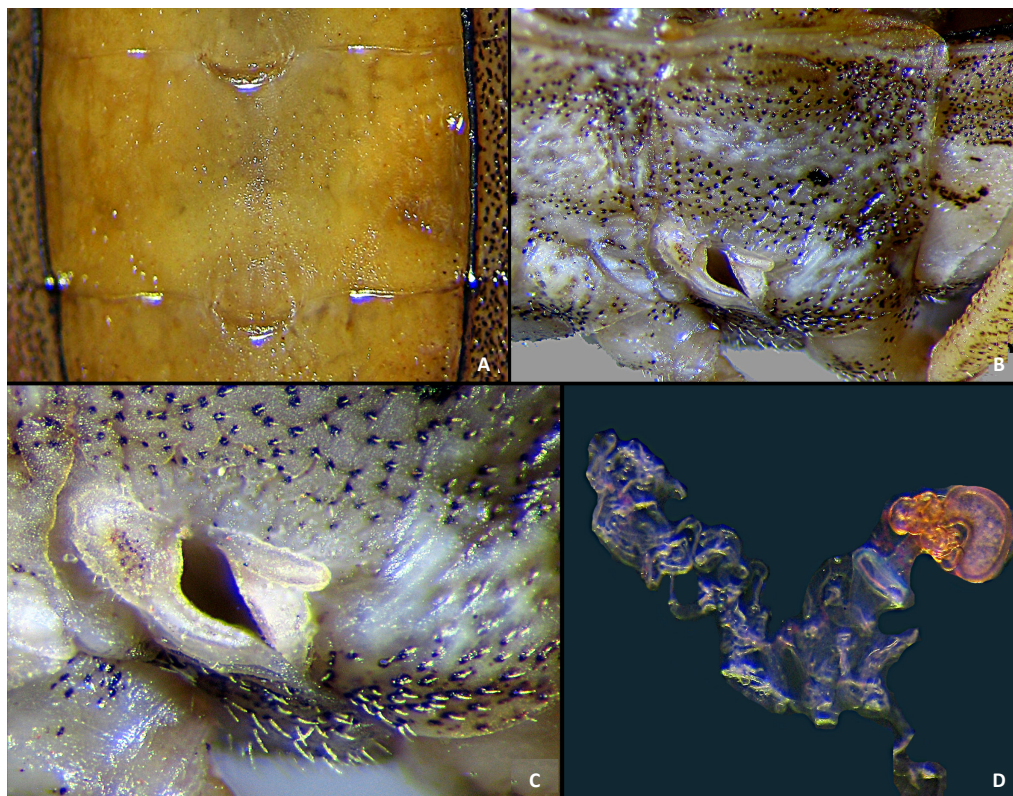


Image 3. *Anhomoeus fusiformis*. A. Adult dorsal abdominal glands; B, C. Metathoracic scent gland; D. Spermatheca

in dorsal (Image 2C) and ventral (Image 2D) view and is convex on ventral side, as seen in lateral view (Image 2E) but more or less flat on dorsal side. Ventral and ventrolateral surface has many black granules that are more or less evenly spaced. Its posterior opening is oval and anterior dorsal bridge relatively narrow. It is shown here with the eighth segment not removed. The un-everted phallus is also oval in dorsal (Image 2F) and ventral view (Image 2G) and occupies major portion of the pygophore. Lateral view of the phallus is shown in Image 2H. Phallus in everted state (Image 2I) is typical coreid type with short vesica (with one coil) and conjunctiva has one dorso-lateral pair of appendages, one frontal pair and one small dorsal pair; two of these pairs are with moderate sclerotisation. Parameres, shown here from outer and inner face, are moderately setose and with broad base and slender distal portion that expands at tip like a button (Image 2J).

Female terminalia are as shown in Image 2B. The eighth and ninth paratergites are clearly visible along with the first gonocoxae. Spermatheca is with extremely coiled distal and less coiled proximal duct and has round bulb (Image 3D).

Measurements

Measurements in millimetres (male / female): Total length 17 / 19; antenna: length of first segment 3.5 / 3.5, second segment 4.5 / 4.35, third segment 3 / 3, fourth segment 2.5 / 2.5; total length of labium 3.75 / 4, length of first segment of labium 1 / 1.25, second segment 0.75 / 1, third segment 1 / 0.75, fourth segment 1 / 1; fore leg lengths: fore coxa 0.625 / 0.5, fore femur 3.75 / 4.25, fore tibia 3.5 / 3.75, fore tarsus with claw 1.85 / 1.75; mid leg lengths: mid coxa 0.625 / 0.75, mid femur 3.75 / 4, mid tibia 3.5 / 3.75, mid tarsus with claw 1.75 / 1.6; hind leg lengths: hind coxa 0.625 / 0.9, hind femur 5.75 / 6, hind tibia 5.5 / 6.25, hind tarsus with claw 1.85 / 2; total length of head 1.5 / 1.75, head breadth at eye 1.65 / 1.65, interocular distance 1 / 1.4, inter-ocular distance 0.5 / 0.6; pronotum: length 2.75 / 3.75, breadth at anterior angles 1.5 / 1.5, breadth at humeral angles 3.5 / 4; scutellum: length 1.85 / 1.75, breadth at base 1.5 / 1.1; hemelytra length 7.5 / 9.5.

DISCUSSION

On the basis of the original description by Hsiao and the image of the type, the Chandgad specimens are treated here as *A. fusiformis*. Coloration of head

and pronotum in our specimens is identical with *A. fusiformis*, especially the original description mentions the two indistinct ochraceous lines lateral to median ochraceous line on pronotum, that are also clear in our specimens (Image 1C) as well as in the photo of female holotype of Hsiao's *A. fusiformis* available on Coreoidea SF online. These lines are neither mentioned by Distant (1908) nor by Ahmad & Shaikh (1983) in their two species; Distant did not provide any line drawings but the line drawings of Ahmad & Shaikh also do not show these lines in the species they described. Hsiao also mentions 'dorsum red' and in our male it is similar but in the female it is ochraceous. Ventral coloration is not fully described for *A. fusiformis*, *A. haripurensis* and *A. schaeferi* but Distant gave a more complete description of his two species; our specimens show ventral pattern similar to that described by Distant (1908). The length and ratio of antennal segments, head proportions and pronotal measurements in our specimen are almost the same as of *A. fusiformis* and not like those of the species from Pakistan or India. The phallus (aedeagus) and female terminalia as well as spermatheca are broadly similar to those described by Ahmad & Shaikh (1983).

As there is no previous record of such a distinctly different *Anhomoeus* from India, this becomes the first illustrated report of this species for India. The type locality of this species is Yunnan (Pu-er County), China, and there are no subsequent reports, at least in English. Attempts to trace records in other places of China were not successful. In an unpublished thesis (Gupta 2012) available on 'Shodhganga' website (<http://shodhganga.inflibnet.ac.in/handle/10603/10215>) gives description of morphology and genitalia of other *Anhomoeus* species (*A. nepalensis* and *A. sulcatus*) from northern India (Punjab and Himachal Pradesh). There is no other information about these two species from any other part of India either. The presence of *Anhomoeus* in Maharashtra itself is a considerable southward extension as all previous records are from northern parts of India.

Diagnosis of different species

There are now three species of *Anhomoeus* in India. These can be separated easily on the basis of size;

A. fusiformis is the largest species. Brief diagnostic characters of the other two species, based on original descriptions by Distant, are given below.

Anhomoeus nepalensis (Distant): size 14mm; head with mandibular plates somewhat widely divergent apically; labium scarcely passing fore coxae; breadth at humeral angles 3mm; connexivum spotted. [According to thesis of Gupta 2012 (cited above) -- total length: 11.50mm in male; female 12.9–14.70 mm. Material studied from Punjab, Uttarakhand and Jammu & Kashmir].

Anhomoeus sulcatus (Distant): size 15.50mm; antennomeres I to III sulcate and relative proportional lengths of antennomeres different than that of *A. nepalensis*; apices of mandibular plates of the head upturned, sub-tuberculous; labium distinctly passing fore coxae; connexivum unspotted; breadth at humeral angles 3mm; [According to Gupta a single male found in Himachal Pradesh was 13.30mm]

Anhomoeus fusiformis Hsiao: size 17mm (male) and 19mm (female); breadth at humeral angles 3.5–4 mm; pronotum with three levigate pale lines; labium passing much beyond fore coxae, reaching to the middle of mesosternum.

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