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## COMMUNICATION

## REDESCRIPTION OF THE BUG ASCHISTOCORIS BREVICORNIS (HETEROPTERA: COREIDAE) AND FIRST REPORT ON ITS LIFE HISTORY FROM NORTHERN MAHARASHTRA, INDIA

Digvijay R. Jadhav, Renuka R. Khairnar, Balasaheb V. Sarode, Swapnil S. Boyane & Hemant V. Ghate

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## Redescription of the bug Aschistocoris brevicornis (Heteroptera: Coreidae) and first report on its life history from northern Maharashtra, India

Digvijay R. Jadhav 🐌, Renuka R. Khairnar 🐌, Balasaheb V. Sarode 🐌, Swapnil S. Boyane 🌆 & Hemant V. Ghate <sup>5</sup>

1-5 P.G. Research Centre, Department of Zoology, Modern College of Arts, Science & Commerce, Shivajinagar, Pune, Maharashtra 411005, India.

<sup>1</sup>digvijayjadhav777@gmail.com, <sup>2</sup>khairnarrenu1998@gmail.com, <sup>3</sup>balasahebs78@gmail.com, <sup>4</sup>boyane.swapnil@gmail.com, <sup>5</sup>hemantghate@gmail.com (corresponding author)

Abstract: We redescribe Aschistocoris brevicornis (Dallas, 1852) from northern Maharashtra, India, a species belonging to the tribe Homoeocerini (Heteroptera: Coreidae: Coreinae). Here we have provided detailed, well-illustrated morphology, including the male genitalia, and notes on its bionomics for the first time.

Keywords: Aschistocoris, Butea monosperma, Coreinae, Homoeocerini, life history.

#### Editor: Anonymity requested.

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Author details: JADHAV and KHAIRNAR are present MSc Zoology students while SARODE and BOYANE are past students of this department. BOYANE is now with ATREE (Bangalore) while Sarode is self-employed - both are actively looking at biodiversity of bugs. JADHAV and KHAIRNAR are at present doing MSc project on aquatic insects of Dhule area. H.V GHATE is a retired college teacher pursuing taxonomical work.

Author contribution: Jadhav and Khairnar studied life history in Dhule area and recorded the details presented here. Sarode initiated this work when he collected a pair. Sarode and Boyane helped in dissection, photography and preparation of illustrations. Ghate wrote the manuscript with inputs from all co-authors.

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(I)

## INTRODUCTION

The family Coreidae includes relatively robust, elongate bodied bugs, some of which are among the largest of Heteroptera, however, there are also some slender and delicate species in this family (Schuh & Slater 1995). During an ongoing search for Heteroptera in Maharashtra, a pair of bugs collected in Shahada (District Nandurbar, Maharashtra State, July 2017), on Palash Tree Butea monosperma (Lam.) Taub. (Fabaceae: Papilionaceae), proved to be Aschistocoris brevicornis, providing the opportunity to describe and figure this "apparently rare" species in detail. Recent surveys initiated in nearby areas, namely Shirpur and Nizampur (District Dhule, Maharashtra State, June to November 2020), revealed breeding populations of this bug at these two localities. We could then observe mating, egg-laying, and nymphal development on Butea, both in natural as well as 'home laboratory' conditions.

Stål (1873) founded the genus *Aschistus* for the species described by Dallas (1852) as *Ornytus? brevicornis* from 'North Bengal'. Later *Aschistus brevicornis* was briefly redescribed and figured by Distant (1902) with the same locality data as presented by Dallas. Subsequently, Distant (1908) described two more species, *Aschistus nepalensis* from '[Nepal]: Benikhola and Bijdura; [India]: United Provinces, Naini Tal Districts' and *A. sulcatus* from [Myanmar]: 'Pegu, Palon.'

Bergroth (1909) proposed the nominal genus Aschistocoris as a replacement name for Aschistus Stål, preoccupied by Aschistus Förster, 1868 (in Hymenoptera, as stated by Bergroth 1909; original paper by Förster not seen), and described another species, Aschistocoris bombaeus, from a male specimen collected in 'Bombay', India.

Distant (1918) applied the genus name Aschistocoris to all four species but regarded A. bombaeus as possibly a variety of A. brevicornis; he also added a new locality for A. brevicornis: 'Central Prov.; Bhandara (on Dhak)' (now Bhandara District of Maharashtra State, India). Dhak is the local name of Butea monosperma. He also added 'N. India: Dehra Dun, Sabhawala' (Sabhawala is a village in Dehradun District, Uttarakhand State of India) to the locality data for A. sulcatus.

Ahmad & Perveen (1983) revised the genus Aschistocoris for the Oriental region and added two new species to the genus - A. neonepalensis from 'Nepal' and A. schaeferi from 'S. India: Pondicherry' (now Puducherry, a Union Territory on the eastern coast). They provided a key to the five species then included in the genus and discussed its relationship with Anhomoeus Hsiao, 1963. Perveen (1991) transferred both *A. nepalensis* and *A. sulcatus* to the genus *Anhomoeus*, leaving only *brevicornis, neonepalensis* and *schaeferi* in *Aschistocoris*, though the status of *A. bombaeus* remained unexamined. More & Ghate (2018) had discussed part of this issue earlier. All species of the genus *Aschistocoris*, as it is now constituted, are confined to India and Nepal.

In a recent paper, Biswas et al. (2014) reported this species from Raipur, Chhattisgarh State, India, and gave a brief diagnosis accompanied by a photograph of the dorsal habitus. Although they did not indicate the sex of their specimen it is apparent from the photograph that it is a female. Their photograph, however, does not show the median pale longitudinal line on the pronotum and scutellum that is present in our material and in the image of the female 'type' specimen of A. brevicornis available on the Coreoidea Species File website. We are unable to agree that the specimen in Biswas et al. (2014) belongs to this species and perhaps even to this genus. There are no other recent published reports of any species of Aschistocoris from India. Prabakar (2015) listed only A. brevicornis from India, citing the localities Madhya Pradesh and Sikkim; he made no mention of either A. bombaeus or A. schaeferi, the other two species known from India.

Here we redescribe *Aschistocoris brevicornis*, based on recently collected specimens from Maharashtra, with several illustrations. In addition, we provide information about bionomics of this bug for the first time.

### MATERIAL AND METHODS

## Part I

Material studied: MASCZ Het 150 & 151, 07.x.2017, 1 male and 1 female, Shahada (District Nandurbar), coll. Sarode, deposited in Modern College, Pune.

Bugs were studied under a Leica stereozoom (MZ6) microscope and also photographed with attached Canon Powershot S50 camera. Several images were stacked using CombineZP software and the images were processed with Adobe Photoshop CS5. Measurements were done with Erma stage and ocular micrometer and an accurate scale. The pygophore was dissected after treating the last three abdominal segments with hot 10% KOH, the phallic complex was dissected and the parameres and phallus were separated and mounted in polyvinyl lactophenol (PVLP) with lignin pink dye before photography. The dissected specimen was briefly rinsed with dilute acetic acid, followed by 70% alcohol, spread and mounted again.

## Part II

Field work was done at two places in Dhule District (Shirpur and Sakri-Nizampur) during 15 June-15 November 2020. Several areas that harbor wild Butea plants were surveyed. Many adults and breeding pairs along with nymphs of the various stages were observed in the field. Some pairs were collected and reared at home in large plastic containers covered with nylon mesh and fed ad libitum with fresh, tender Butea shoots and cut leaves daily. In the field the bugs were observed to prefer tender shoot, leaves, and even flower buds. The containers were kept in room, near well-ventilated area in window, in the natural light cycle; temperature was not controlled. Egg laying, eggs, hatching process and nymphal development was recorded on these home-grown bugs. Since all this work was done at home in lockdown period (Covid-19 pandemic), microscopic examination and detailed description/ photography of different stages could not be carried out. All photos of habitat, mating pairs, eggs, and nymphs were captured on mobile camera (Redmi Note 7 or Redmi Note 9) or digital SLR (Canon EOS 760D). Data presented here are based on observations of 14 mating pairs (11 pairs were studied in home at Shirpur (by D. Jadhav) and three pairs were studied at home in Sakri (by R. Khairnar). Observations on eggs and nymphs were carried out using a small lens. Representative material of all nymphal stages is preserved in 70% alcohol and will be processed for microscopy work at Modern College later. Presently the material is with DJ and RK.

All the descriptions of eggs, nymphal stages and adults is entirely based on eggs that hatched at home. All the photos are also from the home reared population except the photo of the mating pair. There was no way to control temperature at home and so that variable is unknown. We regularly visited field populations nearby to check if the home grown nymphs are stunted or showing delayed development and we found no difference; however, these observations were done only with naked eye or with a small lens and are therefore 'gross'.

## TAXONOMY

Family Coreidae Leach, 1815 Subfamily Coreinae Leach, 1815 Tribe Homoeocerini Amyot & Serville, 1843 Genus *Aschistocoris* Bergroth, 1909 Species *Aschistocoris brevicornis* (Dallas)

## RESULTS

## Part I

## **Observations on morphology:**

Coloration and vestiture (male)

Body elongate, almost parallel-sided behind pronotum and slightly narrowed anteriorly. Colour ochraceous, ventrally mostly paler (except last 2 segments) than dorsal side. Entire body finely punctured, each puncture with fine, short, colourless seta; at some places, especially on head, lateral and anterior most side of pronotum, there are setigerous black granules; similar granules present on first three segments of antenna, fourth segment pilose; ventral part of head paler than dorsal side, setose but with very few blackish, setigerous granules; labium darker than adjoining area. Distinct, pale ochraceous line present along midline in posterior half of head dorsally, in anterior two-thirds of pronotum and entire length of scutellum.

Pronotum and scutellum sparsely covered with short, colourless setae arising from brown punctures. A few black setigerous granules also present on lateral margin, especially in anterior half, lateral margin pale, with fine granules. Ventrally all thoracic sterna more or less pale ochraceous with few scattered black setigerous granules on pro-, meso-, and meta-sterna laterally; one lateral black spot on each thoracic pleuron. Mesosternum and metasternum medially sub shining due to sparse setae, pleura setose like rest of the body; setae arising from colourless or black punctures. Hemelytra with corium and clavus as dark as pronotum, membrane translucent (revealing dark reddish brown tergites below), with prominent veins, shining with bronze tinge.

All legs identical in coloration, more or less matching dorsal coloration, spotted with black and finely setose: all coxae and basal two-thirds of femora pale ochraceous, distal third of femora, tibiae and tarsi reddish-brown; claws dark brown.

Abdomen with tergites dark brown, with pale border, and with two large median, round pale areas on segmental borders 4–5 and 5–6 (in both sexes), around the opening of "remnants of dorsal abdominal glands" (Schaefer 1964). Abdominal sternites medially with many black punctures with setae so that this part broadly appears greyish. This greyish median part flanked on each side by a pale stripe in which dark brown patches form an irregular pattern; further laterally connexivum pale in anterior half, slightly darker in posterior half. Overall posterior half of sixth and entire seventh sternum darker than preceding segments. Trichobothria prominent and in typical pattern: those on sternum three and four

closer to midline than those on the remaining sternites. Spiracles dark, situated closer to lateral than anterior margin of segment. Most of these coloration details are seen in (Image 1A,B) and (Image 2A–H).

Structure

## Head

Sub quadrate, almost as broad as long, slightly convex above with deep median longitudinal sulcus behind clypeus that continues along as fine sulcus in posterior part. Head dorsally covered with black setigerous granules arranged in pattern, with median and lateral smooth lines. Eyes large, rounded, close to anterior angles of pronotum; width of head across eyes greater than width of pronotum across anterior angles. Ocelli prominent, closer to eyes than to each other, situated almost in line with posterior margin of eye. Preocellar pits prominent. Antenniferous tubercles situated at apex of head, slightly elevated and glossy. Clypeus and mandibular plates slightly declivous, visible between antenniferous tubercles (Image 2A,B). Labium long, almost reaching mid coxae, with two rows of setae along its length; boundary between first and second segments indistinct. Bucculae small; head, prosternum, and mesosternum distinctly sulcate medially, beneath Antennae shorter than body, moderately labium. robust, antennal I segment broadest, II and III slightly slender, these three segments densely covered with black setigerous granules, IV segment slightly thicker, spindle-shaped and finely punctured.

## Thorax

Pronotum rhomboidal, slightly declivous towards head, its anterior margin emarginated behind head, posterior margin straight over scutellum, lateral margins straight; humeral angles slightly raised, sub shining (Image 2E,F). Scutellum as long as broad. Hemelytra with punctures on corium slightly larger than those on pronotum; clavus and corium identical in sculpture to scutellum, veins distinctly elevated and prominent, smooth and shining; membrane typically coreid with many longitudinal veins, not reaching apex of abdomen (in both sexes).

Metathoracic scent gland ostiole of characteristic shape, with well-developed peritremal lobes (Image 2I,J) but evaporatorium very small.

All legs slender, moderately long; fore coxae close together but mid and hind coxae well separated; femora slightly broadened distally, hind femora not reaching abdominal apex (Image 1A,B); tibiae of uniform diameter; tarsus three-segmented with first segment Jadhav et al. 🦯 🌔



Image 1A–B. Aschistocoris brevicornis (Dallas): A–Dorsal habitus male (left) female (right) | B–ventral habitus male (left) female (right). © Hemant V. Ghate

as long as remaining two, claws with globular, white pulvillus.

#### Pregenital abdomen

Abdomen nearly parallel sided in basal threequarters of its length, then slightly narrowed; abdominal segments almost as long as broad (Image 2G,H).

## Female

Female longer (Image 1A), slightly broader in abdominal segments 4, 5, and 6 (Image 2H); in coloration ventrally paler than male. Other structures (barring genital segments) are nearly identical.

#### **External genitalia**

Male - Pygophore more or less rounded, more convex ventrally, flattened dorsally, with median crownlike projection on ventro-posterior margin and lateral triangular projection on each side; only these three projections visible in dorsal view (Image 2E) while ventrally about one half length of pygophore is visible.



Image 2A–H. Aschistocoris brevicornis (Dallas) morphology: A&B– Dorsal view of head, male | B–female | C&D–ventral view of head, male | D–female | E&F–Dorsal view of abdomen, male | F– Female | G&H–ventral view of abdomen, male | H–female | I&J– Lateral view of meso- and meta-thoracic pleura, red arrow pointing metathoracic scent gland area. © Hemant V. Ghate

Eighth segment not visible. Detached pygophore appears as shown here in dorsal, ventral and lateral views, respectively (Image 3E–G); dorsal bridge of pygophore narrow, its basal (anterior) opening elliptical while posterodorsal (posterior) opening somewhat flask shaped, narrow at base and wide distally. Parameres with broad base and blade-like distal portion (Image 3H). Dorsal view of phallus, just removed from pygophore, is shown here (Image 3I) along with dorsal view of everted phallus (Image 3J); these images show well developed articulatory apparatus, partly sclerotized theca, conjunctiva with pair of sclerotized ventral processes and other blunt, membranous processes; vesica partly sclerotized, short, and coiled.

Female - Seventh tergite emarginated, partially covering genitalia dorsally; ventrally seventh sternite with a deep median notch, lateral side to this notch is bisinuate; eighth paratergite with spiracle, ninth without. Appearance of female external genital plates as shown here (Images 2H, 3D).



Image 3A–J. Aschistocoris brevicornis (Dallas) genitalia: A&B– genital segments of male | B–female, in dorsal view | C&D–genital segments of male | D–female, in ventral view | E–G–pygophore in dorsal, ventral and lateral view, respectively | H–Parameres | I– uneverted phallus in dorsal view | J–everted phallus in dorsal view. © Hemant V. Ghate

Measurement in mm of Shahada specimens (1 male / 1 female).

Total length – 13.8/16.5. Head length mediodorsally - 1.62/1.75; head width at antenniferous tubercles - 1.1/1.12; head width at eye - 1.62/1.7; head width between eyes - 0.87/0.92; eye diameter - 0.5/0.55; distance between ocelli - 0.5/0.5; antenna: first segment - 2.12/2.25; second segment - 3.0/3.37; third segment - 1.75/2.25; fourth segment - 1.8/2.25; labium: first segment - 0.37/0.75; second segment-1.0/0.87; third segment - 1.5/1.87; fourth segment - 1.25/1.37; pronotum breadth at anterior angles -1.37/1.5; pronotum width at humeral angles -3.0/3.25; median length of pronotum - 2.75/3.0; scutellum width at base - 1.37/1.5; scutellum median length - 1.62/1.75; prosternum - 1.0/1.1; mesosternum - 1.5/1.87; metasternum - 1.0/1.37; legs: fore coxa - 0.25/0.25; fore femur -2.5/3.0; fore tibia -2.0/2.25; tarsus with claw – 1.5/1.4; mid coxa – 0.5/0.5; mid femur – 2.8/3.0; mid tibia – 2.4/2.75; tarsus with claw – 1.5/1.75; hind coxa – 0.5/0.5; hind femur – 5.0/5.0; hind tibia – 3.5/4.0; tarsus with claw - 1.6/2.0; visible part of pygophore up to apex of crown-like projection -0.82.

## Part II

## Observations on natural history Habitat

Bugs were found in areas where there were many smaller, shrub-like *Butea* of about 2–6 feet ( $^{60}$ –175 cm)

height for dispersal, not usually found on a solitary tree. Bugs were observed to feed on petiole (mainly on petiole of 3 leaves which joins to the branch), on leaf veins of young parts, even flower buds and in the region where new branching is present. *Butea* trees are common in most areas; small (below 6 feet) and large trees are seen on the sides of roads, farms, and river banks, even on any vacant plot in the residential zones. These plants are, in fact, abundant at many places in Dhule District (Image 4A,B).

## Mating and life cycle

Individual bugs as well as mating pairs of Aschistocoris were found in areas where at least 5 to 6 small (~1.8m) plants of Butea were present, in late June 2020 (first mating pair was located in Shirpur on 26 June while the most recent mating pair was observed on 10 November in the same area). Many mating pairs were found on central branch which was well covered by leaves; but pairs were also seen in the open on leaves or near apex of tender shoots and buds. Mating was typical of coreid bugs; the stout female and slender male could be easily identified (Image 4C). Eggs were laid on leaves or petioles or slender stems in wild; many stages of nymphs were also observed from July. This indicates that the breeding season for this bug is late June (perhaps depending on first pre-monsoon showers) to November. Since eggs laid in late November would develop to imago in December, part of December can be considered as equally important period.

The information presented below is based on 14 pairs reared at home and about 160 eggs that hatched successfully. Due to lack of sufficient preservative during this lockdown, only very limited material was preserved for future microscopic examination and over 80% nymphs or adults were released back to nature to avoid crowding in limited space. Observations were carried out with the help of a small lens only. -Typically total development took place in 25 to 27 days. Hatching success was 100% but nymphal mortality (especially in I and II instar) was observed in about 20 to 30% cases. Because many nymphs had to be released to avoid crowding, exact percentage of mortality in home reared eggs could not be documented. Photographs and brief morphological features of eggs and all five instars (nymphs) are presented here. Accurate measurement under microscope could not be carried out.

## Eggs

Eggs are copper red, oval, with one side flat by which these are attached to the substratum (Size: length about

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Image 4A–E. Aschistocoris brevicornis (Dallas) bionomics: A&B– Habitat | C–Mating pair, dorsal view (female on the left) | D–Eggs deposited on petiole by lab reared female (on graph paper with 1X1 mm squares) | E–All five nymphs together to show size increment and other features. © 4D by R. Khairnar; rest all by D. Jadhav.

2mm, width 1mm). In nature eggs were deposited in clusters of 6 to 9 on leaf or 10 to 14 on petiole or tender stems in single or double line. Once eggs were found on nearby vegetation (grass leaves in close approximation). In home reared pairs, petiole and leaf surface were preferred as substratum, though some eggs were deposited on the wall of the plastic container. A partly double line of 14 eggs is seen on petiole (Image 4D) found in home reared pairs is illustrated here.

#### **First instar**

Eggs hatched in 4 or 5 days. The first instar measures about 3mm from tip of head to tip of abdomen, with antenna about 2.5mm in length. Overall coloration of the first instar is pale greenish-yellow dorsally with prominent red dots on dorsal side, antennae and legs; ventral coloration pale green. Short erect setae arise from these red dots. The dorsal abdominal glands (DAGs) present on boundary between 4/ 5 and 5/ 6 segments appear as two round, red dots. First instar duration was of 1 to 2 days (Image 5A).

## Second instar

The second instar is about 5mm long, with width of head at eye about 0.5mm, maximum width of thorax 0.8mm and maximum width of abdomen 1mm. Overall body color is yellowish-brown. Antennae are 4-segmented, about 3.2mm long, first two segments are yellow brown with scattered red spots, III antennal segment is black in distal half while IV segment is red. The first three segments of antennae are cylindrical while the last segment is spindle shaped. Dark green patch develops on thorax where future wing pads begin to develop. Red coloration is seen on the lateral side of thorax as well. Dorsally two median red lines are seen from base of head along all thoracic segments. DAGs appear distinctly swollen, each with two dark brown spots. Body is light green ventrally with few red and black spots. Second instar duration was between 3 to 5 days (Image 5B).

## Third instar

Third instar measures 7–8 mm in length from tip of head to tip of abdomen, width of head at eye 1.1mm, maximum width of thorax 1.4mm and maximum width of abdomen 2mm. Antenna measures about 5mm. Eyes become more globular and become bright red. Red lining on the dorsal side of thorax becomes darker. Wing pads begin to appear clearly in the third instar, are small, translucent and with few red spots; these just reach the first abdominal segment (see Image 6A). Body segmentation has become more pronounced. The DAGs are prominent, with two large lateral black spots and one small median black spot. Many dorsal red spots are partly black in posterior part while spots on legs become black. In about three days the nymph becomes darker, the black dots become prominent and show a symmetrical pattern; a median longitudinal pale line starts becoming prominent along entire length. The third instar required 5-6 days to go to the next stage (Image 5C).

## Fourth Instar

The fourth instar measures about 10mm in length from tip of head to tip of abdomen, with maximum width of thorax 2–2.2 mm and maximum width of abdomen 3.5mm. Antenna is about 6mm long and pale brown. The nymph starts becoming grayish-green with dorsal red dots turning entirely brown. Wing pads grow up to 1.5–2 mm, are light green in color and possess border of brown dots. Wing pads can be observed easily by Jadhav et al



Image 5A–F. Aschistocoris brevicornis (Dallas) nymphs: A–I instar fresh, immediately after hatching | B–F–instars II, III, IV, V (after 2 or 3 days in that stage) and imago, respectively. (Graph paper in background with 1x1 mm squares). © R. Khairnar

naked eyes from 13<sup>th</sup> or 14<sup>th</sup> day. Cream colored areas are mixed with brown dots on abdomen dorsally. Before entering 5<sup>th</sup> instar, nymph becomes overall much darker gray with brown spots; thorax is slightly darker than abdomen, DAGs are very prominent, enlarged and with dark triangular area in front. Fourth instar duration was 8–9 days and was the longest instar duration (Image 5D).

## Fifth Instar and adult or imago

Fifth instar shows body features similar to an adult except for the wing pads (see Image 6B) and body size. Overall color is darker than all previous stages and appears more grayish-green; entire lateral margin is pale cream like that of an imago. Eyes are large, round; wing pads reach middle of 3<sup>rd</sup> abdominal segment, appear greenish-gray with three stripes of dark brown color in early period (due to density of spots), but later become dark overall. The pale median longitudinal line observed on entire thorax is continued on to abdomen and is only interrupted by the DAGs and this line is flanked on either side by dark greenish area enclosing dark brown spots.



Image 6A–C. Aschistocoris brevicornis (Dallas) nymphal colouration: A–Wing pads III instar | B–Wing pads early V instar; note the color pattern | C–Coloration in live early III instar; note red spots, median red lines on thorax and the two DAGs. © R. Khairnar

Entire body is finely setose except the median pale line; body segments are well defined; abdominal glands bordered posteriorly with white, half circular lining, with two median red dots. Fifth instar is about 13mm, from tip of head to tip of abdomen; head width at eye 1.5–1.7 mm, maximum width of thorax 3.2–3.5 mm and maximum width of abdomen 3.5mm; antenna 8–9 mm long. Fifth instar lasts 4–5 days (Image 5E).

Imago measures about 14–17 mm long (accurate measurement under microscope not done), releases pungent smell if disturbed; female is larger than male (Image 5F, female; also see mating pair Image 4C for size difference). Two days after metamorphosis the imago assumes all adult coloration as illustrated in Image 1A,B; the other morphological features of all these *Aschistocoris* specimens from Dhule are identical to the specimens from Shahada that are described in detail in Part I. Thus there is no doubt that both Shahada and Dhule specimens belong to the same species *A. brevicornis*.

## DISCUSSION

The material newly available to us accords well with the habitus photograph of the type specimen of *A. brevicornis* (Dallas) and with the recent redescription of the genus provided by Ahmad & Perveen (1983), which was based on material held by the Natural History Museum, London, originating from the localities mentioned by Dallas (1902) and Distant (1908, 1918). We are confident that our material is conspecific with the London specimens and so we have been able to redescribe and figure the species here in greater detail. The image of the type is available on Coreoidea Species File.

The male genitalia of A. brevicornis are in general very similar to those described by Ahmad & Perveen (1983) for the two species: A. schaeferi and A. neonepalensis mentioned earlier; especially the general appearance of the pygophore with a heart like or crown like apical structure, and the parameres, are very comparable; the everted phallus shown here is without thecal appendages; the conjunctiva with one pair of sclerotized, moderately long appendages and other short, lobe like appendages is also similar. Details of female genitalia could not be studied under present conditions but the gross appearance in ventral view differs from that described and illustrated by Ahmad & Perveen (1983) for the above two species. Perveen (1991) provided brief description of morphology with several line drawings of A. brevicornis specimens from NHM, London. Here again the diagrams are comparable to what we have presented here as images.

Differences from the related Indian and Nepalese species, namely *A. schaeferi* and *A. neonepalensis*, are indicated by Ahmad & Perveen (1983); however the status of the nominal species *Aschistocoris bombaeus* Bergroth remains unresolved. Bergroth (1909) described the species on the basis of a male collected in 'Bombay'(probably a larger area known as 'Bombay Presidency' at that time) while the type of *A. brevicornis* is a female. Bergroth's original description hints that his species is fairly similar to *A. brevicornis*; but actual type material must be studied to check if it is really a valid species or only a 'variety' as suggested by Distant (1918) or even if this is just a difference between male and female.

Occurrence of this species in Nandurbar and Dhule districts (which formerly were together as Dhule District), Maharashtra State, can be regarded as an addition to the known distribution of the species; it has now been collected again from the same host plant, *Butea* 

monosperma. Besides, entire life history is completed on this plant in nature as well as in home reared individuals, establishing the fact that Butea is a host plant for this bug. Bhandara, one of the earlier localities known since the time of Distant, is about 600km east from Shahada. Apparently, this appears to be an overlooked species as there are no recent published records or a detailed, well-illustrated redescription of this species from any part of India, in spite of the fact that Butea is very widely distributed in India. In fact, according to Lohot et al. (2016) 'palas' (Marathi name for Butea) is found throughout the drier parts, often gregarious in forests, open grasslands and wastelands. It is a characteristic tree of the plains, often forming pure patches in grazing grounds and other open places, escaping extermination owing to its resistance to browsing and its ability to reproduce from seed and root suckers".

As far as the life history is concerned, the bug appears to be monophagous because it was not observed feeding on any other nearby plant, at least in different areas visited in Dhule District. Even then, none of the *Butea* plants that harboured 15–20 bugs at a time were seriously damaged or showed wilting or yellowing. Lohot et al. (2016) do not record this bug as a pest but they have recorded two other coreid bugs, *Anoplocnemis phasianus* (Fabricius, 1781) and *Physomerus grossipes* (Fabricius, 1794), as pests; however, none of these two species were found during the survey of several *Butea* plants in Dhule. In Dhule area the local name for *Butea* is 'khakra' and its red flowers (called as 'keshula' locally) are used in making natural color for festivals.

It is important to note here that there is no recently published information on this species from India, in spite of the fact that this is not a very rare bug in the areas surveyed. There was also no previous information on life history of this bug. Earlier work cited above only gives diagrams while we have provided many details of morphology of this bug, in the form of digital photographs, for the first time. Thus this note adds significant new information about *A. brevicornis*.

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Member

